Using Help

About Help

Adobe Systems Incorporated provides complete documentation in an Adobe PDF-based help system. This help system includes information on all tools, commands, and features of an application. It is designed for easy on-screen navigation and can also be printed and used as a desktop reference. Additionally, it supports third-party screen-reader applications that run in a Windows environment.

Navigating in Help

Help opens in an Adobe Acrobat window with the Bookmarks pane open. (If the Bookmarks pane is not open, click the Bookmarks tab at the left edge of the window.) At the top and bottom of each page is a navigation bar containing links to this page (Using Help), the table of contents (Contents), and the index (Index).

To move through pages sequentially, you can click the Next Page ▶ and the Previous Page ◀ arrows; click the navigation arrows at the bottom of the page; or click Back to return to the last page you viewed.

You can navigate Help topics by using bookmarks, the table of contents, the index, or the Search (Acrobat 6) or Find (Acrobat 5) command.

To find a topic using bookmarks:

1 In the Bookmarks pane, click the plus sign (+) (Windows) or the right-facing arrow (Mac OS) next to a bookmark topic to view its subtopics.

2 Click the bookmark to go to that topic.

To find a topic using the table of contents:

1 Click Contents in the navigation bar.

2 On the Contents page, click a topic to go to that topic.

3 To view a list of subtopics, click the plus sign (+) (Windows) or the right-facing arrow (Mac OS) next to the topic name in the Bookmarks pane.

To find a topic using the index:

1 Do one of the following:

• Click Index in the navigation bar, and then click a letter at the top of the page.

• In the Bookmarks pane, expand the Index bookmark to view the letter subtopics; then click a letter.

2 Locate the entry you want to view, and click the page number to go to that topic.

3 To view other entries for the same topic, click Back to return to the same place in the index, and then click another page number.

To find a topic using the Search command (Acrobat 6):

1 Choose Edit > Search.

2 Type a word or phrase in the text box and click Search. Acrobat searches the document and displays every occurrence of the word or phrase in the Results area of the Search PDF pane.

To find a topic using the Find command (Acrobat 5):

1 Choose Edit > Find.

2 Type a word or phrase in the text box and click Find. Acrobat searches the document, starting from the current page, and displays the first occurrence.

3 To find the next occurrence, choose Edit > Find Again.

Printing Help

Although Help is optimized for on-screen viewing, you can print selected pages or the entire file.

To print Help:

Choose File > Print, or click the Print icon in the Acrobat toolbar.

Contents

Learning Photoshop CS

Welcome

Welcome to Adobe® Photoshop® CS and Adobe ImageReady®CS, the professional image-editing standard for photographers, professional designers, and graphics producers.

Photoshop and ImageReady provide a consistent work environment with other Adobe applications including Adobe Illustrator®, Adobe InDesign®, Adobe GoLive®, Adobe LiveMotion™, Adobe After Effects®, and Adobe Premiere®.

Getting help

Adobe provides a variety of options for you to learn Photoshop and ImageReady.

Finding help on Photoshop features	
If you...	**Try this...**
Are new to Photoshop	• Browse through the information in "Working with Photoshop and ImageReady" on page 6. • See "Looking at the Work Area" on page 12 to get familiar with the work area and tools. • Click Learn the Basics from the Welcome screen. (Choose Help > Welcome Screen.) • Use the How To tips in Help for instructions on common tasks such as fixing photos, working with layers, or painting. Choose one of the How To tips from the Photoshop or ImageReady Help menu.
Are upgrading from an older version of Photoshop	• See the What's New information on the Photoshop Welcome screen. Choose Help > Welcome Screen. • Browse through the information in "Working with Photoshop and ImageReady" on page 6.
Are looking for a detailed information about a feature	• Try searching for the feature in Help or looking it up in the index.

Finding help on Photoshop features	
If you...	**Try this...**
Want to learn new techniques for using Photoshop and ImageReady	• See the tutorials on the Adobe Studio Web site at www.studio.adobe.com. • Try one of the techniques in "Tips and Tricks from the Experts." Choose Help > Welcome Screen and click the Tips and Tricks link.
Want a PDF version of the Photoshop/ImageReady Help	• See the *PhotoshopCSHelp.pdf* file on the CD.
Want information on keyboard shortcuts	• See the Keyboard Shortcuts section of Photoshop Help.

Finding Photoshop training resources	
If you...	**Try this...**
Want to obtain in-depth training	• See the tutorials on the Adobe Studio Web site at www.studio.adobe.com. • Browse the Adobe Press materials at www.adobepress.com (English only), and the available training resources at www.adobe.com (choose Support > Training). • For step-by-step lessons, consider the Adobe Classroom in a Book series. • For in-depth reference information, consider the RealWorld series.
Are looking for background information on Web design	See the Adobe Press section of the Adobe Web site at www.adobe.com/misc/books.html.
Want to access the Developer Knowledgebase or software developer kits (SDKs)	See the Adobe Solutions Network (ASN) section of the Adobe Web site at http://partners.adobe.com/asn/photoshop/ (English only).
Want information about becoming an Adobe Certified Expert, Adobe Certified Instructor, or Adobe Authorized Learning Provider	Visit the Partnering with Adobe Web site at www.partners.adobe.com. Certification is available for several different geographical regions.

Finding support for Photoshop	
If you...	**Try this...**
Want customer or technical support	• Refer to the technical support card provided with your software. • Register your software and receive technical support for up to 90 days from the date of your first call (terms may vary depending on country of residence). • See the Adobe Photoshop support page at www.adobe.com/support/products/photoshop. html. • Read the ReadMe file installed with Photoshop for information that became available after this guide went to press.
Want answers to common trouble-shooting questions	Search the Adobe Support Knowledgebase and Photoshop Top Issues at www.adobe.com/support/products/photoshop. html.
Want to register your copy of Photoshop	• Fill out and return the registration card included with your software package. • Access the online registration form at any time by choosing Help > Registration.
Want access to a multitude of Photoshop-specific information, such as downloads, updates, patches, plug-ins, and links to user forums	Visit the Photoshop pages on Adobe Studio at www.studio.adobe.com.

Working with Photoshop and ImageReady

Photoshop provides a rich graphics toolset for digital photography, print production, Web design, and video production.

If you work with digital photos

- Read "Basic steps for correcting images" on page 174. You'll get an overview of the many tonal and color correction tools in Photoshop.

- Process digital camera raw files within Photoshop to get the most control and best image quality from these files. See "Working with camera raw image files" on page 71.

- Retouch photos, remove dust spots, and correct image flaws while preserving tonality and texture. See "Using the Healing Brush tool (Photoshop)" on page 271.

- Quickly fix red eye caused by photo flash. See "Using the Color Replacement tool" on page 274.

- Create panorama photos by stitching multiple images together. See "Creating panoramic images using Photomerge (Photoshop)" on page 284.

- Manage and preview photos on a digital lightbox using the file browser. See "Using the File Browser (Photoshop)" on page 90.

- Create a contact sheet of images. See "Creating contact sheets" on page 594.

- Present your photos in a digital slideshow. See "Creating a PDF presentation" on page 598.

- Quickly create a gallery of images for your Web site using one of several professionally designed page templates. See "Creating Web photo galleries (Photoshop)" on page 500.

If you want the color on your prints and monitor to match

- Read "An introduction to color management" on page 108.

- Use a printer color profile as described in "Basic steps for producing consistent color" on page 110 and then use the Photoshop print setting and your printer driver color management settings. See "Using color management when printing" on page 612.

If you design Web pages

- Read the overview of Photoshop and ImageReady Web design tools and learn about the ImageReady object-based design tools. See "About designing Web pages with Photoshop and ImageReady" on page 471.

- Optimize images for efficient Web download. See "About optimization" on page 531.

- Manage slices, rollovers, image maps, and animations in the Web Content palette. See "Using the Web Content palette" on page 510.

- Create instant GIF and SWF animations from layered Photoshop files. See "Animations" on page 518.

- Export ImageReady designs, animations, and graphics to the Macromedia Flash format. See "Saving files in SWF format (ImageReady)" on page 576.

If you design video graphics

- Use video document presets with action-safe and title-safe guides. See "Saving images for use in video" on page 604.

- View images on your computer monitor and NTSC external monitor simultaneously without distortion. See "Saving images for use in video" on page 604.

If you perform the same tasks on several files

- Learn to record and play back actions to automate repetitive tasks. See "About actions" on page 627.

- Write scripts using Visual Basic, Applescript, or Javascript. See the documentation in your Photoshop CS/Scripting Guide folder.

- Automate graphic production using data sets. See "Creating templates for data-driven graphics (ImageReady)" on page 649.

What's New in Photoshop CS

Photoshop CS for All Users

No matter how you use Photoshop CS, you can take advantage of improved file management, and better ways to track and securely share your work.

Enhanced File Browser In Adobe Photoshop CS, the File Browser comes into its own as your digital imaging hub. With flags, keywords, and editable metadata, you can now use the File Browser to quickly organize and locate the image assets you need. Perform batch procedures on groups of images without having to first open the image files in Photoshop. (See "Using the File Browser (Photoshop)" on page 90.)

Easily customize your keyboard shortcuts Create, edit, and save multiple keyboard shortcut sets for menu items, tools, and palette commands, so the functions that you use most are always at your fingertips. (See "Customizing keyboard shortcuts" on page 54.)

Quickly create, view, and edit custom file information Use the File Browser to quickly search for files using editable metadata, without having to open each file. Fully customize your image metadata with custom panels and fields in the File Info dialog, and use the File Browser to edit the metadata of one or many images at a time. (See "Adding metadata to files" on page 99.)

Create slide shows and PDF presentations Easily bind multiple files into a single, multi-page Adobe PDF document, complete with optional page transitions and security. (See "Creating a PDF presentation" on page 598.)

Collaborate with Web photo galleries Use professionally-designed Web Photo Gallery templates, including support for client feedback with no extra Web coding required. (See "Creating Web photo galleries (Photoshop)" on page 500.)

Track your editing history Save your editing history in a external log file and in metadata attached to individual files. (See "Working with the Edit History Log" on page 38.)

Easily access and use multiple filters The new Filter Gallery brings Photoshop CS filters into a single, easy-to-use dialog. Now you can access, control, and apply multiple filters at once, with a new, larger preview for easier planning of stacked filter effects. (See "Using the Filter Gallery" on page 415.)

Use enhanced scripting Save time by automating repeated tasks, such as outputting your layers to files or saving Layer Comps as separate pages of an Adobe PDF file, using custom or new built-in scripts. See the documentation available in your Photoshop CS/ Scripting Guide folder.

Customize the Help menu Use the new how-to topics by choosing them from the Help menu. Or, create your own how-to topic and have it appear in the Help menu. (For more information, choose Help > How to Create How Tos.)

Photoshop CS for photographers

New tools, enhanced features, richer images—Adobe Photoshop CS meets the needs of today's photographer.

Control your raw camera images The new generation Camera Raw plug-in is incorporated directly into Photoshop CS, allowing direct manipulation of raw camera data, for the ultimate control over image preprocessing. Camera Raw features new color calibration controls, batch processing through the File Browser, and support for most major digital camera models. (See "Working with camera raw image files" on page 71.)

Comprehensive 16-bit editing All core Photoshop features are now available to 16-bit images, including layers, painting, text, and shapes.

Match colors fast Apply the color scheme of one image to another, or one layer to another, to easily achieve a consistent look between shots in fashion or commercial photography. (See "Using the Match Color command (Photoshop)" on page 206.)

View live histograms as you work View an image and its histogram simultaneously with the new Histogram palette, allowing you to monitor the changes in your image as you make them. (See "Using a histogram to view the tonal range of an image (Photoshop)" on page 176.)

Create lens blur effects Easily produce the effect of highlights taking on the shape of the camera lens aperture. Lens Blur can be applied to an entire image or selection, or it can use an alpha channel as a depth map. (See "Blur filters" on page 421.)

Simulate photo filter effects Customize filter adjustment layers to simulate the effect of standard photographic lens filters. (See "Using the Photo Filter command (Photoshop)" on page 203.)

Easily correct exposure problems Use the Shadow/Highlight adjustment to modify shadows and highlights while preserving existing image midtones, easily correcting over- and underexposed areas in any image. (See "Using the Shadow/Highlight command (Photoshop)" on page 204.)

Quickly replace color Effortlessly change the color of any area of an image, while retaining the original texture and shading, with the new Color Replacement tool. (See "Using the Color Replacement tool" on page 274.)

Automatically crop and straighten Take the pain out of scanning multiple images. Place one or more photos onto a scanner bed, scan them into Photoshop, and then run Crop and Straighten to let Photoshop automatically copy each image into its own document and rotate it as necessary. (See "Using the Crop and Straighten Photos command (Photoshop)" on page 264.)

Create panoramas fast Combine images into seamless panoramas, with each image optionally preserved to a separate layer for even more control over the final output. (See "Creating panoramic images using Photomerge (Photoshop)" on page 284.)

Customize your picture packages Picture Package gives you a variety of ways to easily combine multiple images, or multiple instances of one image, in a single print. For Photoshop CS, the Picture Package window now allows you to interactively edit existing layouts, making it easy to precisely control image position and spacing. (See "Creating picture packages" on page 595.)

Photoshop CS for graphic Designers

Explore new possibilities and streamline your work with Photoshop CS innovations for graphic designers.

Place editable text on a path and in a shape Create and manipulate fully editable text on any path, or inside any shape, for eye-catching typographic designs. (See "Creating text on a path (Photoshop)" on page 445.)

Create alternate designs in a single image Capture multiple design variations as individual Layer Comps in a single file; then quickly output them to provide alternates for client review. (See "Working with layer comps" on page 405.)

Think big with huge document support Create and work with images up to 300,000 by 300,000 pixels, with up to 56 channels per file. (See "Large Document Format (PSB)" on page 586.)

Photoshop CS for video and filmmakers

Remove the guesswork from designing for DVD, video, and film, and achieve tighter integration with motion graphics software such as Adobe® Premiere® and Adobe® After Effects®.

Create non-square pixel documents Work with different aspect ratios without the distortion caused by viewing non-square images on a computer monitor, seeing them exactly as they will appear when viewed on a standards-compliant external monitor. (See "Saving images for use in video" on page 604.)

Choose from video document presets with automatic guides Use new, customizable document presets in standard video sizes and aspect ratios, with automatic action-safe and title-safe guides, for easier setup and creation of files for DVD, video, and film. (See "Saving images for use in video" on page 604.)

Easily export layers to files Integrate your layered Photoshop CS artwork with a variety of editing and compositing systems more efficiently, using the Export Layers to Files command. (See "Exporting layers as files (ImageReady)" on page 579.)

ImageReady CS for Web professionals

Prepare Web graphics quickly and efficiently with the improved ImageReady CS features and interface for Web design and production.

Enjoy a Web-focused interface Easily select, group, and manipulate multiple objects using automatic Smart Guides, and organize nested object groups up to five levels deep. (See "About designing Web pages with Photoshop and ImageReady" on page 471.)

Export to Macromedia® Flash™ (SWF) Export directly to Flash (SWF), with preserved vectors and dynamic text including embedded fonts. Export each layer to its own SWF file, allowing each file to be opened in Flash as its own symbol on its own layer. (See "Saving files in SWF format (ImageReady)" on page 576.)

Output enhanced HTML Create leaner, more easily edited HTML, with new controls for nested tables, XHTML, and more. (See "About designing Web pages with Photoshop and ImageReady" on page 471.)

Create and edit interactive elements easily with the new Web Content palette.
Fine-tune your control over remote rollover slices with the new point-and-shoot targeting system. Create multiple slice sets in a single document, and combine slice sets and layer comps to quickly switch among and export different document configurations.
(See "Using the Web Content palette" on page 510.)

Create dynamic content fast with variables and data sets Directly define and edit variables and data sets, and easily import database and spreadsheet content for automated graphics production. (See "Creating templates for data-driven graphics (ImageReady)" on page 649.)

Enjoy enhanced automation with conditional actions Using the Insert a Step button in the Actions palette, conditional logic can now be inserted in ImageReady CS actions. With conditional logic, ImageReady CS will scan for certain image characteristics (aspect ratio, dimensions, filename, etc.) and perform a step only if the characteristics match the setting in the step. (See "Inserting Conditionals (ImageReady)" on page 631.)

Easily export multiple files from selected states Instantly create separate HTML pages for each selected state, by outputting multiple files for slices containing selected states. This new capability of ImageReady CS makes quick work of designing Web pages where different images are displayed in the same area by the state of different rollovers.
(See "Saving selected rollover states to Web pages" on page 518.)

Looking at the Work Area

Using the Welcome window

When you launch Photoshop or ImageReady, the Welcome window automatically appears. Use this window to learn about Photoshop or ImageReady by reading tutorials, or viewing a movie about new features. In Photoshop, you can also learn how to set up a color management system.

To use the Welcome window:

1 Choose Help > Welcome Screen to display the window if it's not already open.

2 Select one of the options in the window to learn more about Photoshop or ImageReady.

Getting familiar with the work area

The Photoshop and ImageReady work area is arranged to help you focus on creating and editing images.
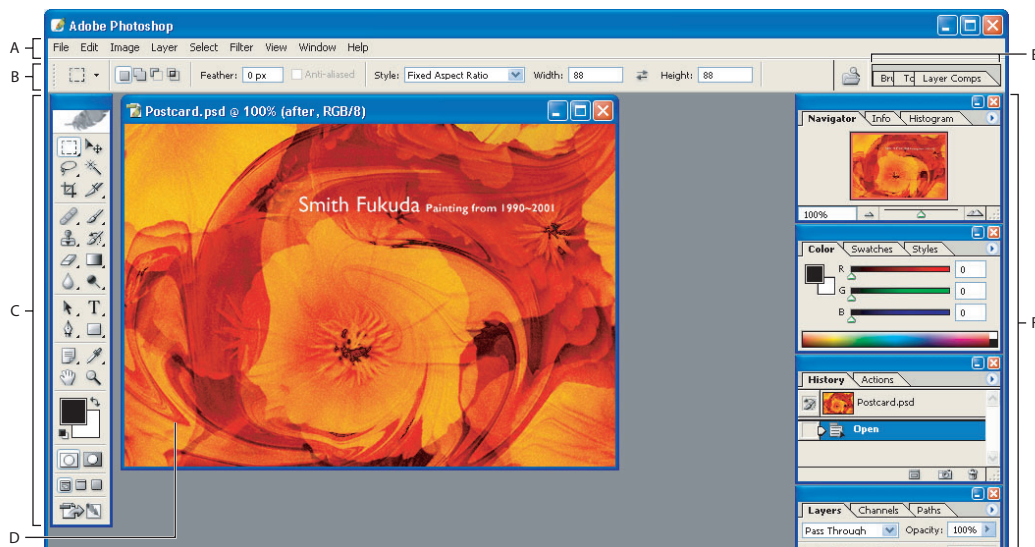
Photoshop work area
A. Menu bar **B.** Options bar **C.** Toolbox **D.** Active image area **E.** Palette well **F.** Palettes

About the work area
The work area consists of the following components:

Menu bar The menu bar contains menus for performing tasks. The menus are organized by topic. For example, the Layers menu contains commands for working with layers.

Options bar The options bar provides options for using a tool. (See "Using the options bar" on page 18.)

Toolbox The toolbox holds tools for creating and editing images. (See "Using the tools" on page 17.)

Palette well (Photoshop) The palette well helps you organize the palettes in your work area. (See "Using the palette well" on page 19.)

Palettes Palettes help you monitor and modify images. (See "Using palettes" on page 21.)

Using the toolbox

The first time you start the application, the toolbox appears on the left side of the screen. Some tools in the toolbox have options that appear in the context-sensitive tool options bar. (See "Using the options bar" on page 18.) These include the tools that let you use type, select, paint, draw, sample, edit, move, annotate, and view images. Other tools in the toolbox allow you to change foreground/background colors, go to Adobe Online, work in different modes, and jump between Photoshop and ImageReady applications.

For more information on the foreground and background color controls, see "Choosing foreground and background colors" on page 351.

Toolbox overview (1 of 3)

* Photoshop only

§ ImageReady only

The marquee tools make rectangular, elliptical, single row, and single column selections.

The Move tool moves selections, layers, and guides.

The lasso tools make freehand, polygonal (straight-edged), and magnetic* (snap-to) selections.
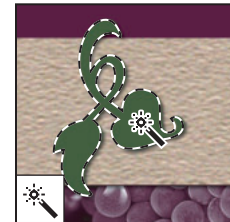
The Magic Wand tool selects similarly colored areas.

The Crop tool trims images.
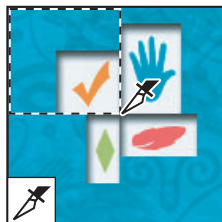
The Slice tool creates slices.

The Slice Select tool selects slices.
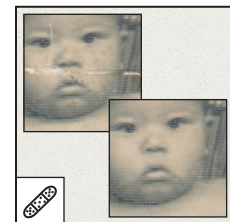
The Healing Brush tool* paints with a sample or pattern to repair imperfections in a image.
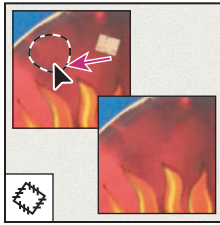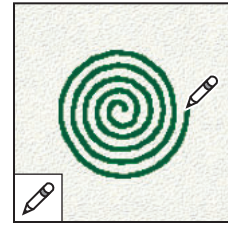
The Patch tool* repairs imperfections in a selected area of an image using a sample or pattern.
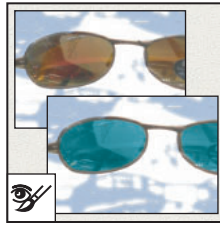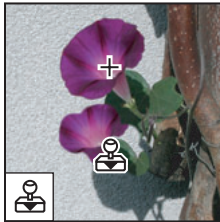

The Color Replacement tool* replaces a selected color with a new color.
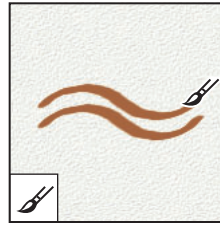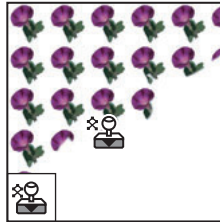

The Brush tool paints brush strokes.

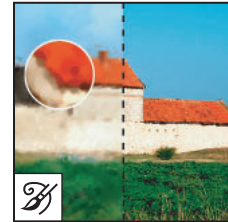**The Pencil tool** paints hard-edged strokes.

The Clone Stamp tool paints with a sample of an image.

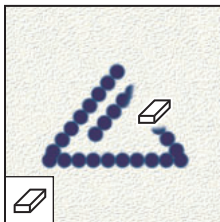**The Pattern Stamp tool*** paints with part of an image as a pattern.

The History Brush tool* paints a copy of the selected state or snapshot into the current image window.

The Art History brush tool* paints with stylized strokes that simulate the look of different paint styles, using a selected state or snapshot.

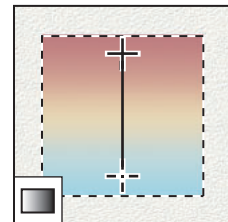## Toolbox overview (2 of 3)

* Photoshop only

§ ImageReady only

The Eraser tool erases pixels and restores parts of an image to a previously saved state.
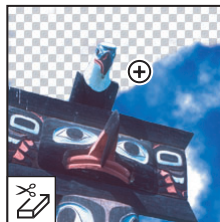
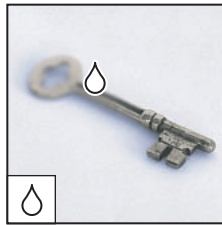**The Background Eraser tool*** erases areas to transparency by dragging.
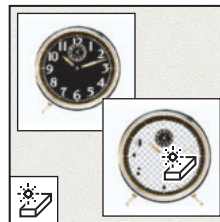
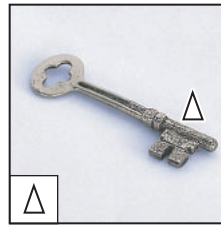**The Magic Eraser tool** erases solid-colored areas to transparency with a single click.

The gradient tools* create straight-line, radial, angle, reflected, and diamond blends between colors.
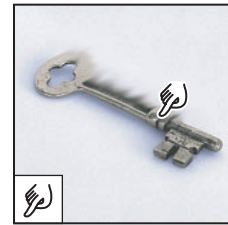
The Paint Bucket tool fills similarly colored areas with the foreground color.
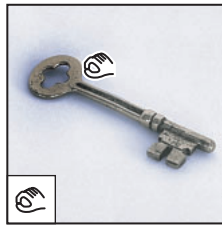
The Blur tool* blurs hard edges in an image.

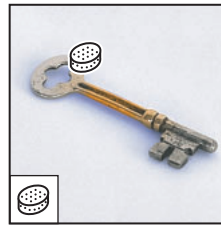**The Sharpen tool*** sharpens soft edges in an image.

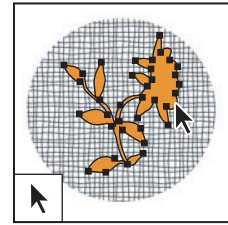**The Smudge tool*** smudges data in an image.

The Dodge tool* lightens areas in an image.

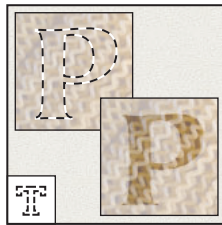**The Burn tool*** darkens areas in an image.

The Sponge tool* changes the color saturation of an area.
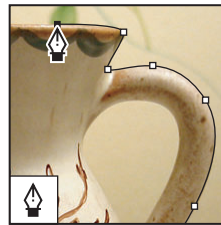
The path selection tools* make shape or segment selections showing anchor points, direction lines, and direction points.

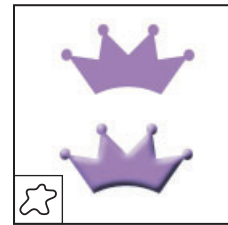**The type tools** create type on an image.

The type mask tools* create a selection in the shape of type.

The pen tools* let you draw smooth-edged paths.

The Custom Shape tool* makes customized shapes selected from a custom shape list.
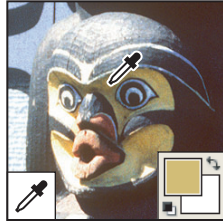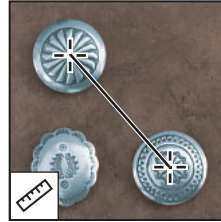
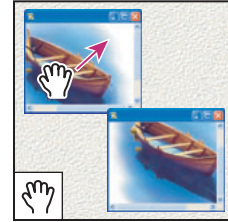## Toolbox overview (3 of 3)

* Photoshop only

§ ImageReady only

The annotation tools* make notes and audio annotations that can be attached to an image.

The Eyedropper tool samples colors in an image.

The Measure tool* measures distances, locations, and angles.

The Hand tool moves an image within its window.
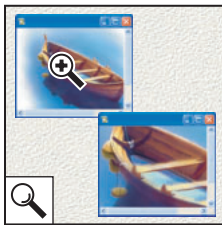
The Zoom tool magnifies and reduces the view of an image.
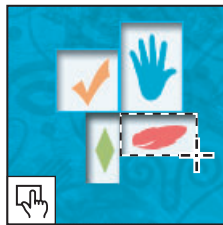
The image map tools§ define image map areas in an image.
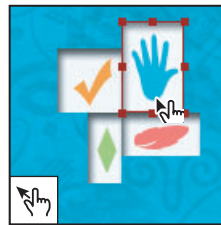
The Image Map Select tool§ selects image maps.
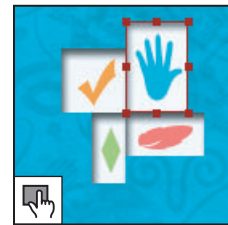
The Toggle Image Map Visibility tool§ toggles between showing and hiding image maps.
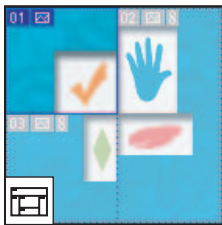
The Toggle Slices Visibility tool§ toggles between showing and hiding slices in an image.
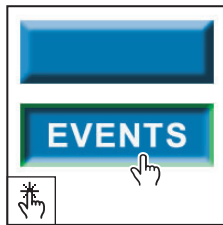
The Preview Document tool§ previews rollover effects directly in ImageReady.
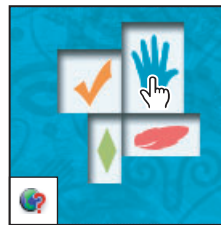
The Preview in Default Browser tool§ previews animations in a Web browser.
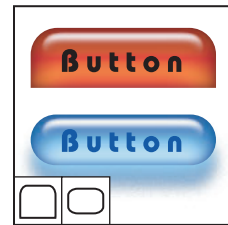
The Tab Rectangle tool§ draws a long rectangles with the top corners rounded. **The Pill Rectangle tool**§ draws a rectangle with rounded corners.

Using the tools

You select a tool by clicking its icon in the toolbox. A small triangle ◢ at the lower right of a tool icon indicates hidden tools. Positioning the pointer over a tool displays a tool tip with the tool's name and keyboard shortcut.
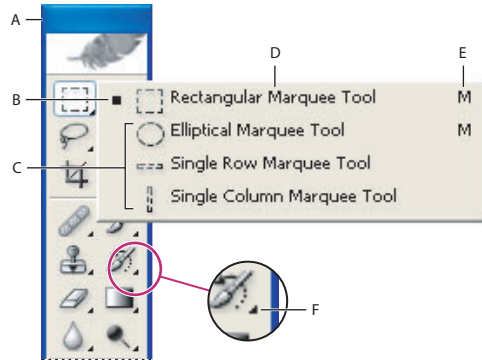
Using the selecting tools
A. Toolbox **B.** Active tool **C.** Hidden tools **D.** Tool name **E.** Tool shortcut **F.** Hidden tool triangle

To show or hide the toolbox:

Choose Window > Tools. In the menu, a check mark indicates that the item is showing.

To move the toolbox:

Drag the toolbox by its title bar.

To select a tool:

Do one of the following:

• Click the tool's icon. If the icon has a small triangle at its lower right corner, hold down the mouse button to view the hidden tools. Then, click the tool you want to select.

• Press the tool's keyboard shortcut. The keyboard shortcut is displayed in its tool tip. (See "Keyboard Shortcuts" on page 656.) To cycle through hidden tools, hold down Shift and press the tool's shortcut key.

To enable or disable cycling through a set of hidden tools (Photoshop):

1 Do one of the following:

• In Windows, choose Edit > Preferences > General.

• In Mac OS, choose Photoshop > Preferences > General.

2 Select or deselect Use Shift Key for Tool Switch.

To display or hide tool tips:

1 Do one of the following:

• In Windows, choose Edit > Preferences > General.

• (Photoshop) In Mac OS, choose Photoshop > Preferences > General.

• (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 Select or deselect Show Tool Tips.

Note: *Tool tips may not be available in dialog boxes.*

Using the tool pointers

When you select most tools, the pointer matches the tool's icon. The marquee pointer appears by default as cross hairs +, the text tool pointer appears as an I-beam Ⱦ, and painting tools default to the Brush Size icon.

Each default pointer has a different *hotspot*, where an effect or action in the image begins. With most tools, you can switch to precise cursors, which appear as cross hairs centered around the hotspot.

To set tool pointer appearance:

1 Do one of the following:

- (Photoshop) In Windows, choose Edit > Preferences > Display & Cursors.
- (Photoshop) In Mac OS, choose Photoshop > Preferences > Display & Cursors.
- (ImageReady) In Windows, choose Edit > Preferences > Cursors.
- (ImageReady) In Mac OS, choose ImageReady > Preferences > Cursors.

2 Choose a tool pointer setting in the Preferences screen:

- Click Standard under Painting Cursors, Other Cursors, or both to display pointers as tool icons.
- Click Precise under Painting Cursors, Other Cursors, or both to display pointers as cross hairs.
- Click Brush Size under Painting Cursors to display the painting tool cursors as brush shapes representing the size of the current brush. Brush Size cursors may not display for very large brushes.

3 Click OK.

The Painting Cursors options control the pointers for the following tools:

- (Photoshop) Eraser, Pencil, Paintbrush, Healing Brush, Rubber Stamp, Pattern Stamp, Smudge, Blur, Sharpen, Dodge, Burn, and Sponge tools
- (ImageReady) Paintbrush, Pencil, and Eraser tools

The Other Cursors options control the pointers for the following tools:

- (Photoshop) Marquee, Lasso, Polygonal Lasso, Magic Wand, Crop, Slice, Patch, Eyedropper, Pen, Gradient, Line, Paint Bucket, Magnetic Lasso, Magnetic Pen, Freeform Pen, Measure, and Color Sampler tools
- (ImageReady) Marquee, Lasso, Magic Wand, Eyedropper, Paint Bucket, and Slice tools

To toggle between standard and precise cursors in some tool pointers, press Caps Lock. Press Caps Lock again to return to your original setting.

Using the options bar

Most tools have options that are displayed in the options bar. The options bar is context sensitive and changes as different tools are selected. Some settings in the options bar are common to several tools (such as painting modes and opacity), and some are specific to one tool (such as the Auto Erase setting for the Pencil tool).

You can move the options bar anywhere in the work area using the gripper bar, and dock it at the top or bottom of the screen. Tool tips appear when you hold the pointer over a tool.
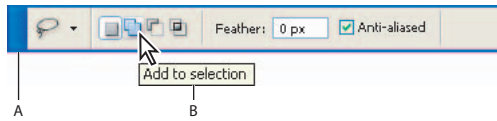
Lasso options bar
A. Gripper bar **B.** Tool tip

To view tool options in the options bar:

Do one of the following:

- Choose Window > Options.
- Click a tool in the toolbox.

To return a tool or all tools to the default settings:

Do one of the following:

- Click the tool icon on the options bar, and then choose Reset Tool or Reset All Tools from the context menu.
- (ImageReady) In Windows, choose Edit > Preferences > General, and then click Reset All Tools. In Mac OS, choose ImageReady > Preferences > General, and then click Reset All Tools.

To move the options bar:

Drag the options bar by the gripper bar at its left edge.

Using the palette well

The Photoshop options bar includes a palette well that helps you organize and manage palettes. The palette well stores, or docks, palettes that you use frequently, without having to keep them open on the work area.

The palette well is available only when using a screen resolution greater than 800 pixels x 600 pixels (a setting of at least 1024 x 768 is recommended).

To dock palettes in the palette well:

Drag the palette's tab into the palette well so that the palette well is highlighted.
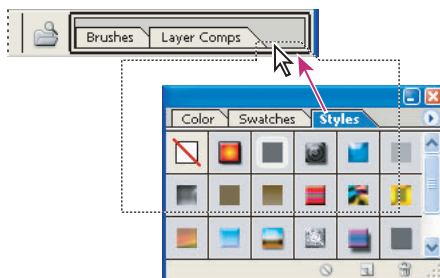
Docking a palette in the palette well

To use a palette in the palette well:

Click the palette's tab. The palette remains open until you click outside it or click in the palette's tab.
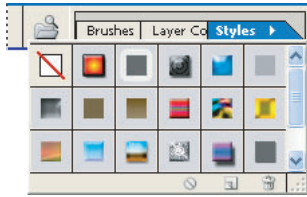
Docked palette in the palette well

Using tool presets (Photoshop)

You can load, edit, and create libraries of tool presets using the Tool Preset picker in the options bar, the Tool Presets palette, and the Preset Manager. You can also save and reuse tool settings using tool presets.
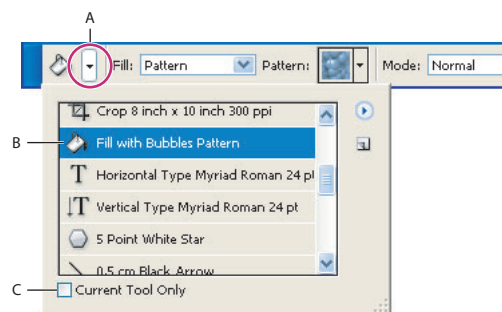
Viewing the Tool Preset picker
A. Click the Tool Preset picker in the options bar to show the Tool Preset pop-up palette. **B.** Select a preset to change the tool's options to the preset settings, which will apply each time you select the tool (until you choose Reset Tool from the palette menu). **C.** Uncheck to show all tool presets; check to show presets for only the tool selected in the toolbox.

To create a tool preset:

1 Choose a tool, and set the options you want to save as a tool preset in the options bar.

2 Click the Tool Preset button ⌐ on the left side of the options bar, or choose Window > Tool Presets to display the Tool Presets palette.

3 Do one of the following:

• Click the Create New Tool Preset button ⌐.

• Choose New Tool Preset from the palette menu.

4 Enter a name for the tool preset, and click OK.

To choose a tool preset:

Do one of the following:

• Click the Tool Preset picker in the options bar, and select a preset from the pop-up palette.

- Choose Window > Tool Presets, and select a preset.

To change the list of presets in the Tool Preset pop-up palette:

Do one of the following:

- To show all loaded presets, choose Show All Tool Presets from the palette menu.

- To sort the presets by tool, choose Sort By Tool from the palette menu.

- To show only the loaded presets for the active tool, choose Show Current Tool Presets from the palette menu, or click the Current Tool Only button.

- To create, load, and manage libraries of tool presets, see "Using pop-up palettes" on page 24 and "Managing libraries with the Preset Manager (Photoshop)" on page 52.

- To change the display of presets in the pop-up palette, choose Text Only, Small Text, or Large Text from the palette menu.

Using palettes

Palettes help you monitor and modify images. You can choose which palettes are visible. By default, palettes appear stacked together in groups. You can move palette groups, rearrange palettes in their groups, and remove palettes from groups.

Palettes can also be docked (see "Docking palettes together" on page 22) to keep them organized.

Tips for rearranging the palette display

You can rearrange your palettes to make better use of your work area using the following techniques:

- To make a palette appear at the front of its group, click the palette's tab, or choose the palette name from the Window menu.

- To move an entire palette group, drag its title bar.

- To rearrange or separate a palette group, drag a palette's tab. Dragging a palette outside of an existing group creates a new group.

- To move a palette to another group, drag the palette's tab to that group.

- To display a palette menu, position the pointer on the triangle ⊙ in the upper right corner of the palette, and press the mouse button.

- To change the size of a palette, drag any corner of the palette (Windows) or drag the size box at its lower right corner (Mac OS). Not all palettes can be resized.

- To collapse a group to palette titles only, click the Minimize/Maximize box (Windows) or the Zoom box (Mac OS), or double-click a palette's tab. You can still access the menu of a collapsed palette.
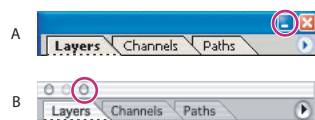
Click to collapse or expand palette.
A. Windows **B.** Mac OS

Adobe Photoshop CS Help   **Looking at the Work Area**

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- (ImageReady) To show or hide options for palettes that include hidden options (the Optimize, Layer Options, and Slice palettes), click the Show Options button ⬍ on the palette tab to cycle through palette displays, or choose Show Options or Hide Options from the palette menu.

Showing and hiding palettes

Sometimes palettes take up too much screen space when you're working on large images. You can easily hide them to give you more room.

To show or hide palettes:

Do one of the following:

- To show a hidden palette, choose the palette name in the Window menu (palette names marked with a check are showing in the work area). If the palette you chose was docked with other palettes, the docked group will display.
- To hide a palette, choose the palette name in the Windows menu.
- To minimize a palette, click the Minimize button.
- To show or hide all open palettes, the options bar, and the toolbox, press Tab.
- To show or hide all palettes, press Shift+Tab.

Docking palettes together

Docking palettes together lets you view multiple palettes at the same time and move them as a group. Entire palette groups cannot be docked together at once, but you can dock the palettes from one group to another, one at a time.

In Photoshop, docked palettes and their locations are saved when you save a workspace.

💡 In Photoshop, you can also store palettes in the palette well of the tool options bar. (See "Using the options bar" on page 18.)

To dock palettes together:

Drag a palette's tab to the bottom of another palette so that the bottom of the target palette is highlighted. To move an entire docked group, drag its title bar.

Saving workspaces

The positions of all open palettes and movable dialog boxes are saved when you exit the application. By saving a screen layout as a workspace, you'll be able to return to it, even if you move a palette or close the toolbox. Saved workspaces also work with the File Browser, allowing you to save your preferred File Browser setup.

💡 You can assign keyboard shortcuts to each workspace so you can then flip through them using the keyboard (see "Customizing keyboard shortcuts" on page 54).

To save the current workspace layout:

1 Choose Window > Workspace > Save Workspace.

2 Enter a name for the workspace, and click OK.

To choose a workspace:

Choose Window > Workspace, and choose a workspace from the submenu.

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To delete a workspace:

1 Choose Window > Workspace > Delete Workspace.

2 Select the workspace you want to delete, and click Delete.

To reset palettes to the default positions:

Choose Window > Workspace > Reset Palette Locations.

To save palette locations:

Do one of the following:

- In Windows, choose Edit > Preferences > General, and then select Save Palette Locations.

- (Photoshop) In Mac OS, choose Photoshop > Preferences > General, and then select Save Palette Locations.

- (ImageReady) In Mac OS, choose ImageReady > Preferences > General, and then select Save Palette Locations.

To always start with the default palette and dialog box positions:

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.

- (Photoshop) In Mac OS, choose Photoshop > Preferences > General.

- (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 Deselect Save Palette Locations. The change takes effect the next time you start the application.

Using pop-up sliders

A number of palettes and dialog boxes contain settings that use pop-up sliders (for example, the Opacity option in the Layers palette). Pop-up sliders give you a lot of control over options. Often a text box accompanies the pop-up slider, so you can type in a specific value.
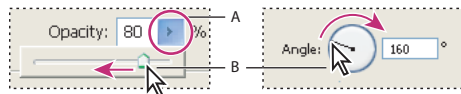
Using different kinds of pop-up sliders
A. Click to open pop-up slider box. **B.** Drag slider or angle radius.

💡 You can also "scrub" on pop-up sliders in several palettes. For example, if you hold the pointer over the word "Fill" or "Opacity" in the Layers palette, the pointer changes to the hand icon 👋. Then you can move the pointer left or right to change the fill or opacity percentage.

To use a pop-up slider:

Click the triangle next to the setting to open the pop-up slider box, and drag the slider or angle radius to the desired value. Click outside the slider box or press Enter or Return to close the slider box. To cancel changes, press the Escape key (Esc).

> To increase or decrease values in 10% increments when the pop-up slider box is open, hold down Shift and press the Up Arrow or Down Arrow key.

Using pop-up palettes

Pop-up palettes provide easy access to available options for brushes, swatches, gradients, styles, patterns, contours, and shapes. You can customize pop-up palettes by renaming and deleting items and by loading, saving, and replacing libraries. You can also change the display of a pop-up palette to view items by their names, as thumbnail icons, or with both names and icons.
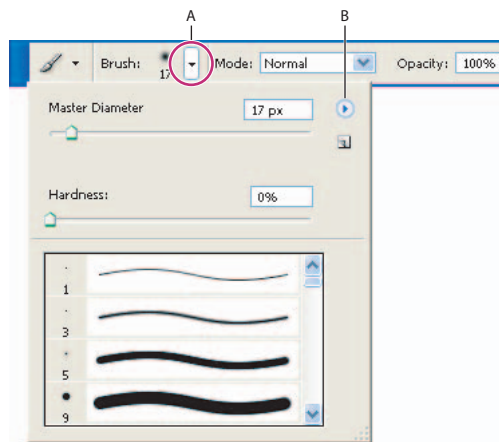
Viewing the Brush pop-up palette in the options bar
A. Click to open the pop-up palette. **B.** Click to view the pop-up palette menu.

To select an item in a pop-up palette:

1 Click the thumbnail image in the options bar.

2 Click an item in the pop-up palette.

To rename an item in a pop-up palette:

Select an item, click the triangle ⊙ in the upper right corner of the pop-up palette, and choose the Rename command from the palette menu. Enter a new name.

To delete an item in a pop-up palette:

Do one of the following:

• Select an item, click the triangle ⊙ in the upper right corner of the pop-up palette, and choose the Delete command from the palette menu.

• Hold down Alt (Windows) or Option (Mac OS) and click an item.

To customize the list of items in a pop-up palette:

1 Click the triangle ⊙ in the upper right corner of the pop-up palette to view the palette menu.

2 To return to the default library, choose the Reset command. You can either replace the current list or append the default library to the current list.

3 To load a different library, do one of the following:

- Choose the Load command to add a library to the current list. Then select the library file you want to use, and click Load.

- Choose the Replace command to replace the current list with a different library. Then select the library file you want to use, and click Load.

- Choose a library file (displayed at the bottom of the palette menu). Then click OK to replace the current list, or click Append to append the current list.

4 To save the current list as a library for later use, choose the Save command. Then enter a name for the library file, and click Save.

💡 (Mac OS) You can specify that a file extension is always appended to a library file by setting Append File Extension to Always in the File Handling Preferences. You should put the extension on a library filename so that you can easily share the libraries across operating systems.

To change the display of items in a pop-up palette:

1 Click the triangle ⊙ in the upper right corner of the pop-up palette to view the palette menu.

2 Select a view option: Text Only, Small Thumbnail, Large Thumbnail, Small List, or Large List.

Using the Info palette

The Info palette displays information about the color values beneath the pointer and, depending on the tool in use, other useful measurements.

To display the Info palette:

Choose Window > Info.

The Info palette displays the following information:

- When displaying CMYK values, the Info palette displays an exclamation point next to the CMYK values if the color beneath the pointer or color sampler is out of the printable CMYK color gamut. (See "Identifying out-of-gamut colors (Photoshop)" on page 184.)

- When you use the Marquee tool, the Info palette displays the *x*- and *y*-coordinates of the pointer position and the width (W) and height (H) of the marquee as you drag.

- When you use the Crop tool or Zoom tool, the Info palette displays the width (W) and height (H) of the marquee as you drag. The palette also shows the angle of rotation of the crop marquee.

- When you use the Line tool, Pen tool, or Gradient tool or when you move a selection, the Info palette displays the *x*- and *y*-coordinates of your starting position, the change in X (DX), the change in Y (DY), the angle (A), and the distance (D) as you drag.

- When you use a two-dimensional transformation command, the Info palette displays the percentage change in width (W) and height (H), the angle of rotation (A), and the angle of horizontal skew (H) or vertical skew (V).

- When you use any color adjustment dialog box (for example, Curves), the Info palette displays the before and after color values of the pixels beneath the pointer and beneath color samplers. (See "Viewing the color values of pixels (Photoshop)" on page 181.)

(ImageReady) The Info palette displays the following information:

- The RGB numeric values for the color beneath the pointer.

- The Opacity value for the pixels beneath the pointer

- The hexadecimal value for the color beneath the pointer

- The index color table position for the color beneath the pointer

- The *x*- and *y*-coordinates of the pointer

- The *x*- and *y*-coordinates of your starting position (before you click in the image) and your ending position (as you drag in the image) when you use the Marquee tool, the shape tools, the Crop tool, and the Slice tool

- The width (W) and height (H) of the selection as you drag when you use the Crop tool, the shape tools, the Slice tool, or the Zoom tool

- The percentage change in width (W) and height (H), the angle of rotation (A), and the angle of horizontal skew (H) or vertical skew (V) when you use a Transform or Free Transform command

To change the Info palette options:

1 Choose Palette Options from the Info palette menu.

2 For First Color Readout, choose one of the following display options:

- Actual Color to display values in the current color mode of the image.

- Total Ink to display the total percentage of all CMYK ink at the pointer's current location, based on the values set in the CMYK Setup dialog box.

- Opacity to display the opacity of the current layer. This option does not apply to the background.

- Any other option to display the color values in that color mode.

3 For Second Color Readout, choose a display option listed in step 2.

4 For Ruler Units, choose a unit of measurement.

5 If you want to see values for 16-bit images, select Show 16 bit values.

6 Click OK.

    To change measurement units, click the crosshair icon in the Info palette for a menu of options. To change color readout modes, click the eyedropper icon.

Using context menus

In addition to the menus at the top of your screen, context menus display commands relevant to the active tool, selection, or palette.
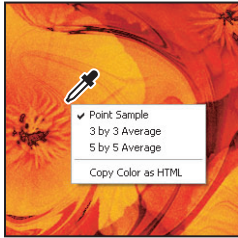
Viewing the context menu for using the Eyedropper tool

To display context menus:

1 Position the pointer over an image or palette item.

2 Click with the right mouse button (Windows) or Control-click (Mac OS). The context menu appears where you clicked.

Viewing images

You can change the screen display mode to change the appearance of the Photoshop or ImageReady work area. The Hand tool, the zoom tools, the Zoom commands, and the Navigator palette let you view different areas of an image at different magnifications. You can open additional windows to display several views at once (such as different magnifications) of an image.

Changing the screen mode

You can use the screen mode options to view your images on your entire screen. You can show or hide the menu bar, title bar, and scroll bars. You can choose from the following:

- The Standard screen mode is the default view, with menu bars, scrolls bars, and other screen elements visible.

- Full Screen with Menu Bar view enlarges your view of an image but keeps the menu bar in view.

- Full Screen mode allows you to move the image around the screen to view different areas.
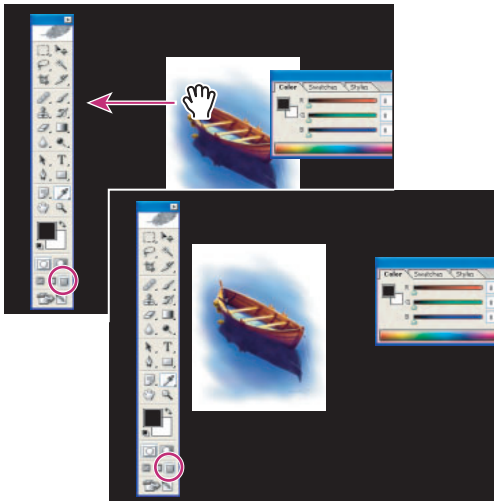
Dragging an image in Full Screen mode

To change the screen display mode:

Do one of the following:

- To display the default window, with the menu bar at the top and scroll bars on the side, choose View > Screen Mode > Standard, or click the Standard button ▣ in the toolbox.
- To display a full-screen window with a menu bar and a 50% gray background, but no title bar or scroll bars, choose View > Screen Mode > Full Screen with Menu Bar view, or click the Full Screen with Menu Bar button ▢ in the toolbox.
- To display a full-screen window with only a black background (no title bar, menu bar, or scroll bars), choose View > Screen Mode > Full Screen, or click the Full Screen button ▢ in the toolbox.

Viewing multiple images

The document window is where your images appear. You can open multiple windows to display different views of the same file. A list of open windows appears in the Window menu. Available memory may limit the number of windows per image.

💡 In Photoshop, you can use the Hand tool's Scroll All Windows option to scroll through all open images. Select it in the options bar and drag in one image to scroll through all visible images.

In ImageReady, the document window allows you to switch easily between original and optimized views of an image using tabs, and to view the original image and multiple versions of an optimized image simultaneously.

To view other open images:

Choose the file name from the bottom of the Windows menu.

To open multiple views of the same image:

Do one of the following:

• Choose Window > Documents > New Window.

• (ImageReady) Drag any tab away from the document window.

To arrange multiple windows:

Do one of the following:

• Choose Window > Documents > Cascade to display windows stacked and cascading from the upper left to the lower right of the screen.

• Choose Window > Documents > Tile to display windows edge to edge.

To zoom in or out on multiple images (Photoshop):

1 Open one or more images, or copies of a single image.

2 Choose Window > Arrange > Tile to display the images edge to edge.

3 Select the Zoom tool, and then do one of the following:

• Select Zoom All Windows in the options bar, and then click in one of the images. The other images zoom in or out at the same magnification.

• Choose Window > Arrange > Match Zoom. Hold Shift and click on one of the images. The other images zoom in or out at the same magnification.

To match the location between images (Photoshop):

1 Open one or more images, or multiple copies of a single image.

2 Choose Window > Arrange > Tile.

3 Select the Hand tool, and then do one of the following:

• Select Scroll All Windows in the options bar, and then click an area in one of the images. The other images snap to the corresponding area.

• Choose Window > Arrange > Match Location. Hold Shift and click an area of an image. The other images snap to the corresponding area.

To match the zoom and location between images (Photoshop):

1 Open one or more images, or multiple copies of a single image.

2 Choose Window > Arrange > Tile.

3 Choose Window > Arrange > Match Zoom and Location.
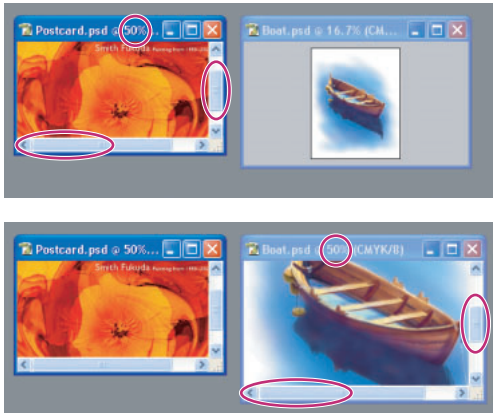
Without Match Zoom and Location (left), and after Match Zoom and Location selected (right)

4 Select the Zoom tool 🔍 or the Hand tool ✋.

5 Select one of the images, and then choose Window > Arrange > Match Zoom and Location.

6 Hold Shift and click an area of an image. The other images magnify to the same percentage, and snap to the corresponding area you clicked.

To close windows:

Choose a command:

• Choose File > Close to close the active window.

• Choose File > Close All to close all windows.

Navigating the view area

If the entire image is not visible in the document window, you can navigate to bring another area of the image into view.

In Photoshop, you can also use the Navigator palette to quickly change the view of an image.

To view another area of an image:

Do one of the following:

• Use the window scroll bars.

- Select the Hand tool 🖐 and drag to pan over the image.
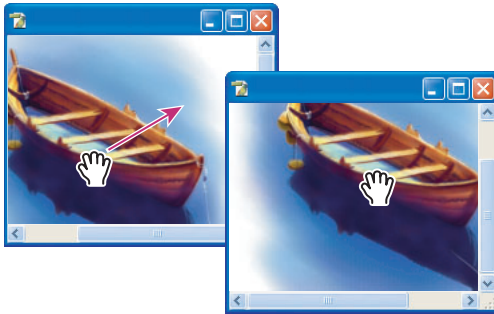

Dragging the Hand tool to view another area of an image

💡 To use the Hand tool while another tool is selected, hold down the spacebar as you drag in the image.

To move the view of an image using the Navigator palette (Photoshop):

1 Choose Window > Navigator.

2 Do one of the following:

- Drag the view box in the thumbnail of the image, which represents the boundaries of the image window.

- Click in the thumbnail of the image. The new view includes the area you click.

To change the color of the Navigator palette view box (Photoshop):

1 Choose Palette Options from the Navigator palette menu.

2 Choose a color:

- To use a preset color, choose an option for Color.

- To specify a different color, click the color box, and choose a color.

Magnifying and reducing the view

You can magnify or reduce your view using various methods. The window's title bar displays the zoom percentage (unless the window is too small for the display to fit), as does the status bar at the bottom of the window.

Note: The 100% view of an image displays an image as it will appear in a browser (based on the monitor resolution and the image resolution). (See "Understanding image size and resolution" on page 62.)

To zoom in:

Do one of the following:

- Select the Zoom tool 🔍. The pointer becomes a magnifying glass with a plus sign 🔍 in its center. Click the area you want to magnify. Each click magnifies the image to the next preset percentage, centering the display around the point you click. When the image has reached its maximum magnification level of 1600%, the magnifying glass appears empty.

- (Photoshop) Click the Zoom In button 🔍 in the options bar to magnify to the next preset percentage. When the image has reached its maximum magnification level, the command is dimmed.

- Choose View > Zoom In to magnify to the next preset percentage. When the image has reached its maximum magnification level, the command is dimmed.

- (Photoshop) Enter a magnification level in the Zoom text box at the lower left of the window.

- (ImageReady) Click the Zoom Level pop-up menu at the bottom left of the document window, and choose a zoom level.

To zoom out:

Do one of the following:

- Select the Zoom tool. Hold down Alt (Windows) or Option (Mac OS) to activate the Zoom Out tool. The pointer becomes a magnifying glass with a minus sign in its center 🔍. Click the center of the area of the image you want to reduce. Each click reduces the view to the previous preset percentage. When the file has reached its maximum reduction level, the magnifying glass appears empty.

- Click the Zoom Out button 🔍 in the options bar to reduce to the previous preset percentage. When the image has reached its maximum reduction level, the command is dimmed.

- Choose View > Zoom Out to reduce to the previous preset percentage. When the image reaches its maximum reduction level, the command is dimmed.

- (Photoshop) Enter a reduction level in the Zoom text box at the lower left of the window.

- (ImageReady) Click the Zoom Level pop-up menu at the lower left of the document window, and choose a zoom level.

To magnify by dragging:

1 Select the Zoom tool.

2 Drag over the part of the image you want to magnify.
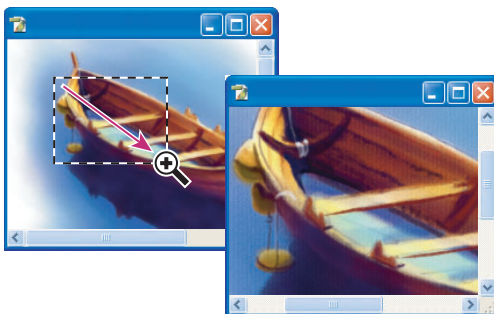
Dragging the Zoom tool to magnify the view of an image

The area inside the zoom marquee is displayed at the highest possible magnification. To move the marquee around the artwork in Photoshop, begin dragging a marquee and then hold down the spacebar while dragging the marquee to a new location.

To display an image at 100%:

Do one of the following:

- Double-click the Zoom tool.

- Choose View > Actual Pixels (Photoshop) or View > Actual Size (ImageReady).

To change the view to fit the screen:

Do one of the following:

- Double-click the Hand tool.

- Choose View > Fit on Screen.

These options scale both the zoom level and the window size to fit the available screen space.

To automatically resize the window when magnifying or reducing the view:

With the Zoom tool active, select Resize Windows to Fit in the options bar. The window resizes when you magnify or reduce the view of the image.

When Resize Windows to Fit is deselected (the default), the window maintains a constant size regardless of the image's magnification. This can be helpful when using smaller monitors or working with tiled views.

To automatically resize the window when zooming in or out using keyboard shortcuts (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.

- In Mac OS, choose Photoshop > Preferences > General.

2 Select Keyboard Zoom Resizes Windows.

Correcting mistakes

Most operations can be undone if you make a mistake. Alternatively, you can restore all or part of an image to its last saved version. But available memory may limit your ability to use these options.

For information on how to restore your image to how it looked at any point in the current work session, see "About the History palette" on page 34.

To undo the last operation:

Choose Edit > Undo.

If an operation can't be undone, the command is dimmed and changes to Can't Undo.

To redo the last operation:

Choose Edit > Redo.

  You can set the Redo keystroke preference to be the same for Photoshop and ImageReady. In the General area of the Preferences dialog box, select a preference for the Redo key. You can also set the key to toggle between Undo and Redo.

To free memory used by the Undo command, the History palette, or the Clipboard (Photoshop):

Choose Edit > Purge, and choose the item type or buffer you want to clear. If already empty, the item type or buffer is dimmed.

Important: The Purge command permanently clears from memory the operation stored by the command or buffer; it cannot be undone. For example, choosing Edit > Purge > Histories deletes all history states from the History palette. Use the Purge command when the amount of information held in memory is so large that Photoshop's performance is noticeably diminished.

To revert to the last saved version:

Choose File > Revert.

Note: Revert is added as a history state in the History palette and can be undone.

To restore part of an image to its previously saved version (Photoshop):

Do one of the following:

- Use the History Brush tool ✎ to paint with the selected state or snapshot on the History palette. (See "Painting with a state or snapshot of an image (Photoshop)" on page 38.)

- Use the Eraser tool ✐ with the Erase to History option selected. (See "Using the Eraser tool" on page 335.)

- Select the area you want to restore, and choose Edit > Fill. For Use, choose History, and click OK. (See "Filling and stroking selections and layers" on page 344.)

Note: To restore the image with a snapshot of the initial state of the document, choose History Options from the Palette menu and make sure that the Automatically Create First Snapshot option is on.

About the History palette

The History palette lets you jump to any recent state of the image created during the current working session. Each time you apply a change to an image, the new state of that image is added to the palette.

For example, if you select, paint, and rotate part of an image, each of those states is listed separately in the palette. You can then select any of the states, and the image will revert to how it looked when that change was first applied. You can then work from that state.

Tips for using the History palette

Note the following guidelines when using the History palette:

- Program-wide changes, such as changes to palettes, color settings, actions, and preferences, are not changes to a particular image and so are not added to the History palette.

- By default, the History palette lists the previous 20 states (Photoshop), or 32 states (ImageReady). You can always change the number of states in Preferences. Older states are automatically deleted to free more memory for Photoshop. To keep a particular state throughout your work session, make a snapshot of the state. For more information, see "Making a snapshot of an image (Photoshop)" on page 37.

- Once you close and reopen the document, all states and snapshots from the last working session are cleared from the palette.

- By default, a snapshot of the initial state of the document is displayed at the top of the palette.

- States are added from the top down. That is, the oldest state is at the top of the list, the most recent one at the bottom.

- Each state is listed with the name of the tool or command used to change the image.

- By default, selecting a state dims those below. This way you can easily see which changes will be discarded if you continue working from the selected state. For information on customizing the history options, see "Setting history options (Photoshop)" on page 36.

- By default, selecting a state and then changing the image eliminates all states that come after.

- If you select a state and then change the image, eliminating the states that came after, you can use the Undo command to undo the last change and restore the eliminated states.

- By default, deleting a state deletes that state and those that came after it. If you choose the Allow Non-Linear History option, deleting a state deletes just that state. For more information, see "Setting history options (Photoshop)" on page 36.

Using the History palette

You can use the History palette to revert to a previous state of an image, to delete an image's states, and (in Photoshop) to create a document from a state or snapshot.
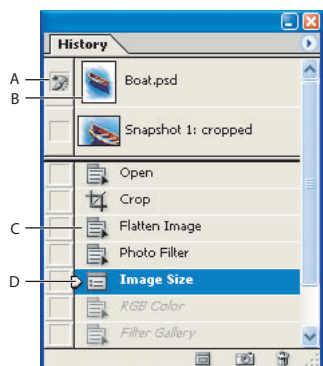
Photoshop History palette
A. Sets the source for the history brush **B.** Thumbnail of a snapshot **C.** History state
D. History state slider

To display the History palette:

Choose Window > History, or click the History palette tab.

To revert to a previous state of an image:

Do any of the following:

- Click the name of the state.

- Drag the slider ▷ at the left of the state up or down to a different state.

- (Photoshop) Choose Step Forward or Step Backward from the palette menu or the Edit menu to move to the next or previous state.

To delete one or more states of the image (Photoshop):

Do one of the following:

- Click the name of the state, and choose Delete from the History palette menu to delete that change and those that came after it.

- Drag the state to the Trash button 🗑 to delete that change and those that came after it.

- Choose Clear History from the palette menu to delete the list of states from the History palette, without changing the image. This option doesn't reduce the amount of memory used by Photoshop.

- Hold down Alt (Windows) or Option (Mac OS), and choose Clear History from the palette menu to purge the list of states from the History palette without changing the image. If you get a message that Photoshop is low on memory, purging states is useful, since the command deletes the states from the Undo buffer and frees up memory. You can't undo the Clear History command.

- Choose Edit > Purge > Histories to purge the list of states from the History palette for all open documents. You can't undo this action.

To delete all of an image's states (ImageReady):

Choose Clear Undo/Redo History from the History palette menu.

Important: *This action cannot be undone.*

To create a new document from the selected state or snapshot of the image (Photoshop):

Do one of the following:

- Drag a state or snapshot onto the New Document button 🖼.

- Select a state or snapshot, and click the New Document button.

- Select a state or snapshot, and choose New Document from the History palette menu.

The history list for the newly created document will be empty.

💡 To save one or more snapshots or image states for use in a later editing session, create a new file for each state you save, and save each in a separate file. When you reopen your original file, plan to open the other saved files also. You can drag each file's initial snapshot to the original image and thus access the snapshots again from the original image's History palette.

To replace an existing document with a selected state (Photoshop):

Drag the state onto the document.

Setting history options (Photoshop)

You can specify the maximum number of items to include in the History palette and set other options that customize the way you work with the palette.

To set history options:

1 Choose History Options from the History palette menu.

2 Select an option:

• Automatically Create First Snapshot to automatically create a snapshot of the initial state of the image when the document is opened.

• Automatically Create New Snapshot When Saving to generate a snapshot every time you save.

• Allow Non-Linear History to make changes to a selected state without deleting the states that come after. Normally, when you select a state and change the image, all states that come after the selected one are deleted. This enables the History palette to display a list of the editing steps in the order you made them. By recording states in a nonlinear way, you can select a state, make a change to the image, and delete just that state. The change will be appended at the end of the list.

• Show New Snapshot Dialog By Default to force Photoshop to prompt you for snapshot names even when using the buttons on the palette.

Making a snapshot of an image (Photoshop)

The Snapshot command lets you make a temporary copy (or *snapshot*) of any state of the image. The new snapshot is added to the list of snapshots at the top of the History palette. Selecting a snapshot lets you work from that version of the image.

Snapshots are similar to the states listed in the History palette, but they offer additional advantages:

• You can name a snapshot to make it easy to identify.

• Snapshots can be stored for an entire work session.

• You can compare effects easily. For example, you can take a snapshot before and after applying a filter. Then select the first snapshot, and try the same filter with different settings. Switch between the snapshots to find the settings you like best.

• With snapshots, you can recover your work easily. When you experiment with a complex technique or apply an action, take a snapshot first. If you're not satisfied with the results, you can select the snapshot to undo all the steps.

Important: Snapshots are not saved with the image—closing an image deletes its snapshots. Also, unless you select the Allow Non-Linear History option, selecting a snapshot and changing the image deletes all of the states currently listed in the History palette.

To create a snapshot:

1 Select a state.

2 To automatically create a snapshot, click the New Snapshot button on the History palette, or if Automatically Create New Snapshot When Saving is selected in the history options, choose New Snapshot from the History palette menu.

3 To set options when creating a snapshot, choose New Snapshot from the History palette menu, or Alt-click (Windows) or Option-click (Mac OS) the New Snapshot button.

4 Enter the name of the Snapshot in the Name text box.

5 For From, select the snapshot contents:

• Full Document to make a snapshot of all layers in the image at that state

• Merged Layers to make a snapshot that merges all layers in the image at that state

- Current Layer to make a snapshot of only the currently selected layer at that state

To select a snapshot:

Do any of the following:

- Click the name of the snapshot.
- Drag the slider at the left of the snapshot up or down to a different snapshot.

To rename a snapshot:

Double-click the snapshot and enter a name.

To delete a snapshot:

Do one of the following:

- Select the snapshot, and choose Delete from the palette menu.
- Select the snapshot, and click the Trash button 🗑.
- Drag the snapshot to the Trash button.

Painting with a state or snapshot of an image (Photoshop)

The History Brush tool lets you paint a copy of one state or snapshot of an image into the current image window. This tool makes a copy, or sample, of the image and then paints with it.

For example, you might make a snapshot of a change you made with a painting tool or filter (with the Full Document option selected when you create the snapshot). After undoing the change to the image, you could use the History Brush tool to apply the change selectively to areas of the image. Unless you select a merged snapshot, the History Brush tool paints from a layer in the selected state to the same layer in another state.

The History Brush tool copies from one state or snapshot to another, but only at the same location. In Photoshop, you can also paint with the art history brush to create special effects. (See "Using the Art History Brush tool (Photoshop)" on page 315.)

To paint with a state or snapshot of an image:

1 Select the History Brush tool ✒️.

2 Do one of the following in the options bar:

- Specify the opacity and blending mode. (See "Setting options for painting and editing tools" on page 331.)
- Choose a brush and set brush options. (See "Working with brushes" on page 317.)

3 In the History palette, click the left column of the state or snapshot to use as the source for the History Brush tool.

4 Drag to paint with the History Brush tool.

Working with the Edit History Log

If you need to keep careful track of what's been done to a file in Photoshop, either for your own records, client records, or legal purposes, the Edit History Log keeps a textual history of what has been done to an image. You can view the Edit History Log metadata using the File Browser or the File Info dialog box (see "Adding metadata to files" on page 99).

You can choose to export the text either in an external log file, or you can store the information in the metadata of edited files. Logging many editing operations into a file's metadata can increase file size and slow the opening and saving of the file.

💡 If you need to be able to prove that the log file hasn't been tampered with, keep the edit log in the file's metadata, and then use Adobe Acrobat to digitally sign the log file.

To set Edit History Log options:

1 In Windows, choose Edit > Preferences > General. In Mac OS, choose Photoshop > Preferences > General.

2 In the History Log Options pane, choose one of the following options:

• Metadata to store entries in the metadata of each image.

• Text File to export the text into an external file. You'll be prompted to name the log file and choose the location on your computer where you want to store the file.

• Both to store metadata in the file, and create a text file.

3 From the Edit Log items pop-up menu, choose one of the following options:

• Sessions to include entries for each time Photoshop is launched or exited, and each time files are opened and closed (each image's file name is included).

• Concise to include the text that appears in the history palette in addition to the Sessions information.

• Detailed to include the text that appears in the actions palette in addition to the Concise information. Choose Detailed if you need to keep a complete history of what has been done to files.

• None to turn off the log.

To save the Edit History Log:

1 In Windows, choose Edit > Preferences > General. In Mac OS, choose Photoshop > Preferences > General.

2 In the History Log Options pane, click the Choose button.

3 Choose the location where you want to save the log, and then click OK.

Duplicating images

You can duplicate an entire image (including all layers, layer masks, and channels) into available memory without saving to disk. In ImageReady, you can also duplicate optimized versions of an image.

💡 Using duplicates in ImageReady lets you experiment and then compare several versions of the optimized image to the original.

To duplicate an image (Photoshop):

1 Open the image you want to duplicate.

2 Choose Image > Duplicate.

3 Enter a name for the duplicated image.

4 If you want to duplicate the image without merging the layers, select Duplicate Merged Layers Only.

5 Click OK.

To duplicate an image in Photoshop and automatically append the name "copy" to its filename, hold down Alt (Windows) or Option (Mac OS) when you choose Image > Duplicate.

To duplicate an original image (ImageReady):

1 Open the image you want to duplicate.

2 Select the Original tab at the top of the image window.

3 Hold down Alt (Windows) or Option (Mac OS), and drag the Original tab from the image window, or choose Image > Duplicate.

4 Name the duplicate, specify whether to flatten the layers, and click OK.

To duplicate an optimized image (ImageReady):

1 Open the image you want to duplicate.

2 Select the Optimized tab at the top of the image window.

3 Hold down Alt (Windows) or Option (Mac OS), and drag the Optimized tab from the image window, or choose Image > Duplicate Optimized.

4 Name the duplicate, and click OK.

Note: When you duplicate an image in Optimized, 2-Up, or 4-Up view, the duplicate image appears in the Original view in the duplicate image window. If you want a duplicate optimized image to appear in the Optimized, 2-Up, or 4-Up view, duplicate the original image, and then select the Optimized, 2-Up, or 4-Up tab in the duplicate image window.

Using rulers, columns, the Measure tool, guides, and the grid

Rulers, columns, the Measure tool, guides, and the grid help you position images or elements precisely across the width or length of an image.

Note: You can also align and distribute parts of an image using the Layers palette. (See "Aligning layers" on page 378.)

Using rulers

When visible, rulers appear along the top and left side of the active window. Markers in the ruler display the pointer's position when you move it. Changing the ruler origin (the (0, 0) mark on the top and left rulers) lets you measure from a specific point on the image. The ruler origin also determines the grid's point of origin.

To display or hide rulers:

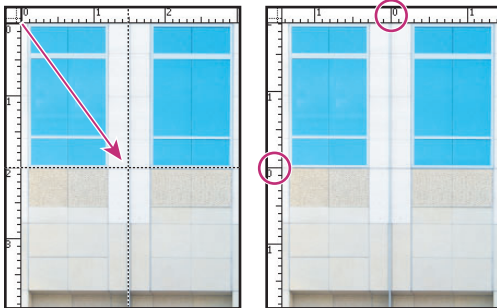Choose View > Rulers.

To change the rulers' zero origin:

1 To snap the ruler origin to guides, slices, or Document bounds, choose View > Snap To, then choose any combination of options from the submenu. (See "Using the Snap command" on page 246.)

(Photoshop) You can also snap to a grid in addition to guides, slices, and Document bounds.

2 Position the pointer over the intersection of the rulers in the upper left corner of the window, and drag diagonally down onto the image. A set of cross hairs appears, marking the new origin on the rulers.

To make the ruler origin snap to the ruler ticks (Photoshop), hold down Shift as you drag.

Note: *To reset the ruler origin to its default value, double-click the upper left corner of the rulers.*

Dragging to create new ruler origin and result

To change the rulers' settings (Photoshop):

1 Do one of the following:

• Double-click a ruler.

• In Windows, choose Edit > Preferences > Units & Rulers.

• In Windows, right-click the ruler and then choose a new unit from the context menu.

• In Mac OS, choose Photoshop > Preferences > Units & Rulers.

2 For Rulers, choose a unit of measurement.

Note: *Changing the units on the Info palette automatically changes the units on the rulers.*

3 For Point/Pica Size, choose from the following options:

• PostScript (72 points per inch) if you are printing to a PostScript device.

• Traditional to use printer's 72.27 points per inch.

4 Click OK.

Using columns (Photoshop)

The New, Image Size, and Canvas Size commands let you specify image width in terms of columns. Using columns is convenient when you plan to import an image into a page layout program, such as Adobe InDesign®, and you want the image to fit exactly within a certain number of columns.

To specify columns for an image:

1 Do one of the following:

• In Windows, choose Edit > Preferences > Units & Rulers.

• In Mac OS, choose Photoshop > Preferences > Units & Rulers.

2 Enter values for Width and Gutter.

Using the Measure tool (Photoshop)

The Measure tool calculates the distance between any two points in the work area. When you measure from one point to another, a nonprinting line is drawn and the options bar and Info palette show the following information:

• The starting location (X and Y)

• The horizontal (W) and vertical (H) distances traveled from the *x*- and *y*-axes

• The angle measured relative to the axis (A)

• The total distance traveled (D1)

• The two distances traveled (D1 and D2), when you use a protractor

All measurements except the angle are calculated in the unit of measure currently set in the Units & Rulers preference dialog box. For information on setting the unit of measure, see "Using rulers" on page 40.

To display an existing measuring line:

Select the Measure tool ✎.

To measure between two points:

1 Select the Measure tool ✎.

2 Drag from the starting point to the ending point. Hold down the Shift key to constrain the tool to multiples of 45°.

3 To create a protractor from an existing measuring line, Alt-drag (Windows) or Option-drag (Mac OS) at an angle from one end of the measuring line, or double-click the line and drag. Hold down the Shift key to constrain the tool to multiples of 45°.

To edit a measuring line or protractor:

1 Select the Measure tool ✎.

2 Do one of the following:

• To resize the line, drag one end of an existing measuring line.

• To move the line, place the pointer on the line away from either endpoint, and drag the line.

• To remove the line, place the pointer on the line away from either endpoint, and drag the line out of the image.

Note: *You can drag out a measure line on an image feature that should be horizontal or vertical, and then choose Image > Rotate Canvas > Arbitrary. The correct angle of rotation required to straighten the image will already be entered into the Rotate Canvas dialog box.*

Using guides and the grid

Guides appear as lines that float over the entire image and do not print. You can move, remove, or lock a guide to avoid accidentally moving it.

The grid is useful for laying out elements symmetrically. The grid appears by default as nonprinting lines but can also be displayed as dots.

Guides and grids behave in similar ways:

- Selections, selection borders, and tools snap to a guide or the grid when dragged within 8 screen (not image) pixels. Guides also snap to the grid when moved. You can turn this feature on and off.

- Guide spacing, along with guide and grid visibility and snapping, is specific to an image.

- Grid spacing, along with guide and grid color and style, is the same for all images.

In ImageReady, you can use Smart Guides to help align shapes, slices, and selections. They appear automatically when you draw a shape, or create a selection or slide. You can hide Smart Guides if you need to.

To show or hide a grid or guides:

Do one of the following:

- (Photoshop) Choose View > Show > Grid.

- Choose View > Show > Guides.

- Choose View > Extras. This command also shows or hides (Photoshop) selection edges, target path, slices, and notes, or (ImageReady) selection edges, slices, image maps, text bounds, text baseline, and text selection. (See "Working with Extras" on page 45.)

To place a guide:

1 If the rulers are not visible, choose View > Rulers.

Note: *For the most accurate readings, view the image at 100% magnification or use the Info palette.*

2 Create a guide:

- (Photoshop) Choose View > New Guide. In the dialog box, select Horizontal or Vertical orientation, enter a position, and click OK.

- (ImageReady) Choose View > Create Guides. In the dialog box, specify guide options and click OK.

- Drag from the horizontal ruler to create a horizontal guide.
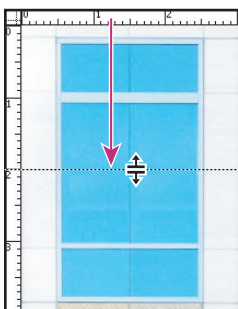
Dragging to create a horizontal guide

- Hold down Alt (Windows) or Option (Mac OS), and drag from the vertical ruler to create a horizontal guide.

- Drag from the vertical ruler to create a vertical guide.

- Hold down Alt (Windows) or Option (Mac OS), and drag from the horizontal ruler to create a vertical guide.

- (Photoshop) Hold down Shift and drag from the horizontal or vertical ruler to create a guide that snaps to the ruler ticks.

The pointer changes to a double-headed arrow ✛ when you drag a guide.

To move a guide:

1 Select the Move tool ▸✛ , or hold down Ctrl (Windows) or Command (Mac OS) to activate the Move tool. (This option does not work with the Hand tool 🖐 or the Slice tool ✐ .)

2 Position the pointer over the guide (the pointer turns into a double-headed arrow).

3 Move the guide in any of the following ways:

- Drag the guide to move it.

- Change the guide from horizontal to vertical, or vice versa, by holding down Alt (Windows) or Option (Mac OS) as you click or drag the guide.

- (Photoshop) Align the guide with the ruler ticks by holding down Shift as you drag the guide. The guide will snap to the grid if the grid is visible and View > Snap To > Grid is selected.

To lock all guides:

Choose View > Lock Guides.

To remove guides from the image:

Do one of the following:

- To remove a single guide, drag the guide outside the image window.

- To remove all guides, choose View > Clear Guides.

To hide Smart Guides (ImageReady):

View > Show > Smart Guides.

To turn snapping to guides on or off:

Choose View > Snap To > Guides. (See "Using the Snap command" on page 246.)

To turn snapping to the grid on or off:

Choose View > Snap To > Grid. (See "Using the Snap command" on page 246.)

To set guide and grid preferences (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Guides, Grid, & Slices.

- In Mac OS, choose Photoshop > Preferences > Guides, Grid, & Slices.

2 For Color, choose a color for the guides, the grid, or both. If you choose Custom, click the color box, choose a color, and click OK. (See "Using the Color palette" on page 353.)

3 For Style, choose a display option for guides or the grid, or both.

4 For Gridline Every, enter a value for the grid spacing. For Subdivisions, enter a value to subdivide the grid.

If desired, change the units for this option. The Percent option creates a grid that divides the image into even sections. For example, choosing 25 for the Percent option creates an evenly divided 4-by-4 grid.

5 Click OK.

Working with Extras

Guides, grid, target paths, selection edges, slices, image maps, text bounds, text baselines, text selections, and annotations are nonprinting *Extras* that help you select, move, or edit images and objects. You can turn on or off an Extra or any combination of Extras without affecting the image. You can also show or hide Extras by choosing the Extras command in the View menu.

To show Extras:

Choose View > Extras. A check mark appears next to all shown Extras in the Show submenu.

Note: Choosing Extras also shows color samplers, even though color samplers are not an option in the Show submenu.

To hide Extras:

With Extras showing, choose View > Extras. A dot (Windows) or a dash (Mac OS) appears next to all hidden Extras in the Show submenu.

Note: Hiding only suppresses the display of Extras. It does not turn off these options.

To show one Extra from a list of hidden Extras:

Choose View > Show and choose an Extra from the submenu. Choosing one of the hidden Extras will cause it to show, and turn off all other Extras.

To turn on and off a group of Extras:

Choose View > Show > All to turn on and show all available Extras. Choose View > Show > None to turn off all Extras.

Displaying status information (Photoshop)

The status bar at the bottom of the window displays useful information—such as the current magnification and file size of the active image, and brief instructions for using the active tool.

To show or hide the status bar (Windows only):

Choose Window > Status Bar. A check mark indicates the item is showing.

Displaying file and image information

Information about the current file size and other features of the image is displayed at the bottom of the application window (Windows) or document window (Mac OS).

Note: *In ImageReady, if the document window is wide enough, two image information boxes appear, enabling you to view two different information options for the image at the same time. For more information about original and optimized images, see "Viewing optimized images (ImageReady)" on page 535.*

You can also view copyright and authorship information that has been added to the file. This information includes standard file information and Digimarc® watermarks. Photoshop automatically scans opened images for watermarks using the Digimarc Detect Watermark plug-in. If a watermark is detected, Photoshop displays a copyright symbol in the image window's title bar and updates the Copyright & URL area of the File Info dialog box.

To display file information in the document window (Photoshop):

1 Click the triangle in the bottom border of the application window (Windows) or document window (Mac OS).
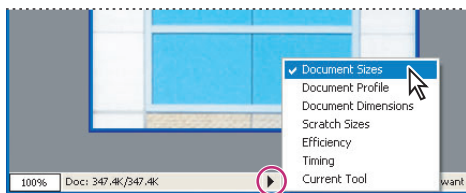

Illustration of file information view options in Photoshop

2 Select a view option:

• Document Size to display information on the amount of data in the image. The number on the left represents the printing size of the image—approximately the size of the saved, flattened file in Adobe Photoshop format. The number on the right indicates the file's approximate size including layers and channels.

• Document Profile to display the name of the color profile used by the image.

• Document Dimensions to display the dimensions of the image.

• Scratch Sizes to display information on the amount of RAM and scratch disk used to process the image. The number on the left represents the amount of memory that is currently being used by the program to display all open images. The number on the right represents the total amount of RAM available for processing images.

• Efficiency to display the percentage of time actually doing an operation instead of reading or writing the scratch disk. If the value is below 100%, Photoshop is using the scratch disk and, therefore, is operating more slowly.

• Timing to display the amount of time it took to complete the last operation.

• Current Tool to view the name of the active tool.

To display image information in the document window (ImageReady):

1 Click an image information box at the bottom of the document window.

2 Select a view option:

• Original/Optimized File Size to view the original and optimized file size images. The first value indicates the original image file size. The second value (present if the original image has been optimized) indicates the optimized image file size and file format based on the current settings in the Optimize palette.

• Optimized Information to view the file format, file size, number of colors, and dither percentage for the optimized image.

• Image Dimensions to view the image's pixel dimensions.

• Watermark Strength to view the strength of the Digimarc digital watermark in the optimized image, if present. (See "Adding digital copyright information" on page 590.)

• Undo/Redo Status to view the number of undos and redos that are available for the image.

• Original in Bytes to view the size of the original, flattened image expressed in bytes.

• Optimized in Bytes to view the size of the optimized image expressed in bytes.

• Optimized Savings to view the percentage of the optimized image file size reduction, followed by the difference in bytes between the original and optimized sizes.

• Size/Download Time to view the file size for the optimized image and estimated download time using the selected modem speed.

Note: Download times may vary based on Internet traffic and modem compression schemes. The value displayed is an approximation.

To view additional file information:

Choose File > File Info.

To read a Digimarc watermark:

1 Choose Filter > Digimarc > Read Watermark. If the filter finds a watermark, a dialog box displays the Creator ID, copyright year (if present), and image attributes.

2 Click OK, or for more information, choose from the following:

• If you have a Web browser installed, click Web Lookup to get more information about the owner of the image. This option launches the browser and displays the Digimarc Web site, where contact details appear for the given Creator ID.

• Call the phone number listed in the Watermark Information dialog box to get information faxed back to you.

Annotating images (Photoshop)

You can attach note annotations (notes) and audio annotations to an image in Photoshop. This is useful for associating review comments, production notes, or other information with the image. Because Photoshop annotations are compatible with Adobe Acrobat, you can use them to exchange information with Acrobat users as well as Photoshop users.

💡 To circulate a Photoshop document for review in Acrobat, save the document in Portable Document Format (PDF) and ask reviewers to use Acrobat to add notes or audio annotations. Then import the annotations into Photoshop.

Notes and audio annotations appear as small nonprintable icons on the image. They are associated with a location on the image rather than with a layer. You can hide and show annotations, open notes to view or edit their contents, and play audio annotations. You can also add audio annotations to actions, and set them to play during an action or during a pause in an action. (See "Setting playback options (Photoshop)" on page 637.)

Adding notes and audio annotations

You can add notes and audio annotations anywhere on a Photoshop image canvas. When you create a note, a resizable window appears for typing text. When you record an audio annotation, you must have a microphone plugged into the audio-in port of your computer.

You can import both kinds of annotations from Photoshop documents saved in PDF or from Acrobat documents saved in PDF or Form Data Format (FDF).

To create a note:

1 Select the Notes tool 📝.

2 Set options as needed:

• Enter an author name. The name appears in the title bar of the notes window.

• Choose a font and size for the note text.

• Select a color for the note icon and the title bar of note windows.

3 Click where you want to place the note, or drag to create a custom-sized window.

4 Click inside the window, and type the text. If you type more text than fits in the note window, the scroll bar becomes active.

Edit the text as needed:

• You can use the standard editing commands for your system (Undo, Cut, Copy, Paste, and Select All). In Windows, right-click in the text area and choose the commands from the context menu. In Mac OS, choose the commands from the Edit and Select menus. You can also use standard keyboard shortcuts for these editing commands.

• If you have the required software for different script systems (for example, Roman, Japanese, or Cyrillic) installed on your computer, you can switch between the script systems. Right-click (Windows) or Control-click (Mac OS) to display the context menu, and then choose a script system.

5 To close the note to an icon, click the close box.

To create an audio annotation:

1 Select the Audio Annotation tool 🔊.

2 Set options as needed:

• Enter an author name.

• Select a color for the audio annotation icon.

3 Click where you want to place the annotation icon.

4 Click Start and then speak into the microphone. When you're finished, click Stop.

To import annotations:

1 Choose File > Import > Annotations.

2 Select a PDF or FDF file that contains annotations, and then click Load. The annotations appear in the locations where they were saved in the source document.

Opening and editing annotations

A note or audio annotation icon marks the location of an annotation on an image. When you move the pointer over an annotation icon and pause, a message displays the author name. You use the icons to open notes or play audio annotations. You can show, hide, or move the icons, and edit the contents of notes.

Note: Resizing an image does not resize the annotation icons and note windows. The icons and note windows keep their locations relative to the image. Cropping an image removes any annotations in the cropped area; you can recover the annotations by undoing the Crop command.

To open a note or play an audio annotation:

Double-click the icon:

• If you are opening a note, a window appears, displaying the note text.

• If you are playing an audio annotation and have a sound card installed, the audio file begins to play.

To show or hide annotation icons:

Do one of the following:

• Choose View > Show > Annotations.

• Choose View > Extras. This command also shows or hides grids, guides, selection edges, target paths, and slices.

To edit annotations:

Do any of the following:

• To move an annotation icon, move the pointer over the icon until it turns into an arrow, and then drag the icon. You can do this with any tool selected. Moving a note icon does not move its note window.

• To move a note window, drag it by the title bar.

• To delete a selected annotation, press Delete.

• To edit the contents of a note, open the note, change any options, and add, delete, or change the text. You can use the same editing commands that you use when creating a note. (See "Adding notes and audio annotations" on page 48.)

- To delete all annotations, right-click (Windows) or Control-click (Mac OS) an annotation icon to display the context menu, and choose Delete All Annotations. You can also delete all annotations by clicking Clear All in the options bar for notes or audio annotations.

Jumping between applications

You can jump between Photoshop and ImageReady to transfer an image between the two applications for editing without closing or exiting the originating application. In addition, you can jump from ImageReady to other graphics editing applications and HTML editing applications installed on your system.

Jumping to an application saves you from having to close the file in one application and reopen it in another application.

Jumping between Photoshop and ImageReady

You can easily jump between Photoshop and ImageReady to use features in both applications when preparing graphics for the Web or other purposes. Jumping between the applications allows you to use the full feature sets of both applications while maintaining a streamlined workflow. Files and documents updated in one application can be automatically updated in the other application.

To jump between Photoshop and ImageReady:

Do one of the following:

- Click the Edit In Photoshop button ⬛ or Edit In ImageReady button ⬛ in the toolbox.

- Choose File > Edit in Photoshop or File > Edit in ImageReady.

When jumping between Photoshop and ImageReady, the applications use a temp file for transferring changes.

Jumping to other applications

In addition to jumping to current versions of Photoshop, you can jump to other graphics-editing applications and HTML-editing applications from within Photoshop and ImageReady.

When you install Photoshop or ImageReady, Adobe graphics-editing and HTML-editing applications currently on your system are added to the Jump To submenu. You can add more applications, including non-Adobe applications, to the Jump To submenu.

When you jump to a graphics-editing application, the original file is opened in the destination application. When you jump to an HTML editor, the optimized file and the HTML file are saved and opened in the destination application. If the image contains slices, all files for the full image are included. A preference enables files updated in another application to be automatically updated in Photoshop or ImageReady, when jumping back.

To jump to another application from ImageReady:

1 Do one of the following:

- Choose File > Jump To, and choose the desired application from the submenu.

- If the desired application doesn't appear in the Jump To submenu, choose Other Graphics Editor or Other HTML Editor to specify the application.

2 If the file has been modified since the last save, choose an option in ImageReady for saving the file:

- Click Save, and save the file with its current name and location.
- Click Save As, and save the file with a new name, a new location, or both.

To add an application to the Jump To submenu:

1 Create a shortcut (Windows) or an alias (Mac OS) for the application you want to add to the menu.

2 Drag the icon for the shortcut or alias into the Jump To Graphics Editor or the Jump To HTML Editor folder in the Helpers folder in the Photoshop program folder.

3 Restart ImageReady to view the application in the Jump To submenu.

To automatically update a file when jumping back to ImageReady from another application:

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.
- In Mac OS, choose ImageReady > Preferences > General.

2 Select Auto-Update Files.

Previewing an image in a browser

To get an idea of how an optimized image will look in a Web page, you can preview the image in any browser installed on your system. The browser displays the image with a caption listing the image's file type, pixel dimensions, file size, and compression specifications in the first paragraph, and filename and other HTML information in the second paragraph. You can add additional browsers to the menu, and specify which browser will be launched when using a keyboard shortcut.

To add a browser:

1 Do one of the following:

- (Photoshop) Choose File > Save for Web, and then choose Edit List from the Select Browser menu ⌄ ▾. Click the Add button in the Browsers dialog box.
- (ImageReady) Choose File > Preview In > Edit Browser List. Click the Add button in the Edit Browsers List dialog box.

2 In the Preview in Other Browser dialog box, navigate to the browser application on your computer, and then click the Open button. The browser name appears in the Browsers dialog box.

To add all browsers on your computer:

1 Do one of the following:

- (Photoshop) Choose File > Save for Web, and then choose Edit List from the Select Browser menu ⌄ ▾. Click the Find All button. All the browsers installed on your computer appear. Click the OK button.
- (ImageReady) Choose File > Preview In > Edit Browser List. Click the Find All button. All the browsers installed on your computer appear. Click the OK button.

To preview an optimized image in a browser:

Do one of the following:

• (Photoshop) Choose File > Save for Web, and then choose the browser you want to use from the Select Browser menu. (Choose Other to select a browser not listed in the submenu.) You can also click the Preview In button 🌐 to display the image in the default browser.

• (ImageReady) Choose File > Preview In, and then choose an option from the submenu (choose Other to select a browser not listed in the submenu), or select a browser from the Preview in Browser tool in the toolbox.

Managing libraries with the Preset Manager (Photoshop)

The Preset Manager centralizes management of brushes, swatches, gradients, styles, patterns, contours, custom shapes, and preset tools. You can use the Preset Manager to change the current set of preset items and create new libraries. Once you load a library in the Preset Manager, you can access the library's items in all locations that the type of preset is available, such as the options bar, Styles palette, Gradient Editor dialog box, and so on.

When you make a change to most presets, Photoshop prompts you to save the changed item as a new preset when you close the image file. This way you won't lose any existing or new presets.
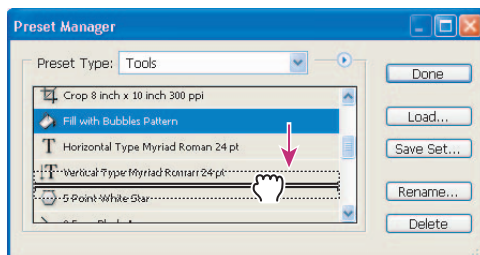

Illustration of rearranging tool presets in the Preset Manager

To display the Preset Manager:

Choose Edit > Preset Manager.

To switch between preset types:

Choose an option from the Preset Type pop-up menu.

To change how items are displayed:

Click the arrow ▶ and choose one of the following:

• Text Only to display the name of each preset item.

• Small Thumbnail or Large Thumbnail to display a thumbnail of each preset item. (These options are not available for tool presets.)

• Small List or Large List to display the name and thumbnail of each preset item. (These options are not available for swatch presets.)

- Stroke Thumbnail to display a sample brush stroke and brush thumbnail of each brush preset. (This option is available for brush presets only.)

To load a library of preset items:

Do one of the following:

- Choose a library file from the bottom of the palette menu. Click OK to replace the current list, or click Append to append the current list.
- To add a library to the current list, click Load, select the library file you want to add, and click Load.
- To replace the current list with a different library, choose Replace *Preset Type* from the palette menu. Select the library file you want to use, and click Load.

Note: *Each type of library has its own file extension and default folder in the Presets folder in the Photoshop program folder.*

To rename presets items:

1 Select a preset item. Shift-click to select multiple items:

2 Do one of the following:

- Click Rename, and then enter a new name for the brush, swatch, and so on.
- If the Preset Manager is set to display presets as thumbnails, double-click a preset, enter a new name, and click OK.
- If the Preset Manager is set to display presets as a list or text only, double-click a preset, enter a new name inline, and press Enter (Windows) or Return (Mac OS).

To rearrange preset items:

Drag an item up or down in the list.

To delete preset items:

Do one of the following:

- Select a preset item, and click Delete.
- Alt-click (Windows) or Options-click (Mac OS) the items you want to delete.

To create a new library of presets:

1 Do one of the following:

- To save all the presets in the list as a library, make sure that no items are selected.
- To save a subset of the current list as a library, hold down Shift, and select the items you want to save.

2 Click Save Set, choose a location for the library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the appropriate Presets folder inside the Photoshop program folder, the library name will appear at the bottom of the palette menu after you restart Photoshop.

To return to the default library of preset items:

Choose Reset *Preset Type* from the palette menu. You can either replace the current list or append the default library to the current list.

Customizing keyboard shortcuts

Photoshop provides a set of default keyboard shortcuts for commands and tools. However, you can customize keyboard shortcuts to your liking. You can change individual shortcuts within a set, and define your own sets of shortcuts.
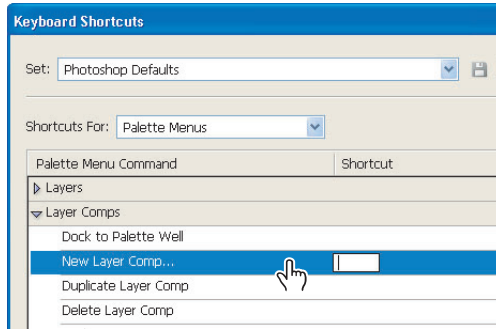
Click a command row and enter a shortcut key in the empty text box to add a new shortcut.

To define new shortcuts:

1 Choose Edit > Keyboard Shortcuts.

2 Choose a set of shortcuts from the Set menu at the top of the Keyboard Shortcuts dialog box (Photoshop Defaults is the only option until you create a new set).

3 Choose a shortcut type (Application Menus, Palette Menus, or Tools) from the Shortcuts For menu.

4 In the Shortcut column of the scroll list, select the shortcut you want to modify.

5 Type a new shortcut. After you make changes, the name in the Set menu is suffixed with *(modified)*.

If the keyboard shortcut is already assigned to another command or tool in the set, an alert informs you that another command or tool has the shortcut. Click Accept to assign the shortcut to the new command or tool, and to erase the previously assigned shortcut. Once you have reassigned a shortcut, you can click Undo Changes to undo the change, or click Accept and Go to Conflict to go to the other command or tool and assign it a new shortcut.

6 When you have finished changing shortcuts, do one of the following:

• To discard all changes and exit the dialog box, click Cancel.

• To discard the last saved change without closing the dialog box, click Undo.

• To return a new shortcut to the default, click Use Default.

• To export the displayed set of shortcuts, click Summarize. You can use this HTML file to display in a Web browser.

To define a new set of shortcuts:

1 Do one of the following:

• To create a new set before you change default shortcuts, click the New Set button ▣ before you begin changing shortcuts.

- To create a new set that includes any modifications you've made, click the New Set button 🖫 after you're done changing shortcuts.

2 Save the shortcuts as a file. Enter a name for the new set in the Name text box, and click Save. The new key set will appear in the pop-up menu under the new name.

To clear shortcuts from a command or tool:

1 Choose Edit > Keyboard Shortcuts.

2 In the Keyboard Shortcuts dialog box, select the command or tool name whose shortcut you want to delete.

3 Click Delete Shortcut.

To delete an entire set of shortcuts:

1 Choose Edit > Keyboard Shortcuts.

2 In the Set pop-up menu, choose the shortcut set that you want to delete.

3 Click the Delete Set button 🗑 and then OK to exit the dialog box.

Setting preferences

Numerous program settings are stored in Adobe Photoshop CS Prefs file. Among the settings stored in this file are general display options, file-saving options, cursor options, transparency options, and options for plug-ins and scratch disks. Most of these options are set in the Preferences dialog box. Preference settings are saved each time you exit the application.

Unexpected behavior may indicate damaged preferences. By removing damaged preferences, you can restore preferences to their default settings.

To open a preferences dialog box:

1 Do one of the following:

- In Windows, choose Edit > Preferences and choose the desired preference set from the submenu.

- (Photoshop) In Mac OS, choose Photoshop > Preferences and choose the desired preference set from the submenu.

- (ImageReady) In Mac OS, choose ImageReady > Preferences and choose the desired preference set from the submenu.

2 To switch to a different preference set, do one of the following:

- Choose the preference set from the menu at the top of the dialog box.

- Click Next to display the next preference set in the menu list; click Prev to display the previous preference set.

For information on a specific preference option, see the Index.

To restore all preferences to their default settings:

Do one of the following:

- Press and hold Alt+Control+Shift (Windows) or Option+Command+Shift (Mac OS) immediately after launching Photoshop or ImageReady. You will be prompted to delete the current settings.

- In Mac OS, open the Preferences folder in the Library folder, and drag the Adobe Photoshop CS Settings folder to the Trash.

New Preferences files will be created the next time you start Photoshop or ImageReady.

Resetting all warning dialogs

Sometimes messages containing warnings or prompts regarding certain situations are displayed. You can disable the display of these messages by selecting the Don't Show Again option in the message. You can also globally reset the display of all messages that have been disabled.

To reset the display of all warning messages (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.
- In Mac OS, choose Photoshop > Preferences > General.

2 Click Reset All Warning Dialogs, and click OK.

To turn on or off warning messages (ImageReady):

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.
- In Mac OS, choose Photoshop > Preferences > General.

2 Deselect or select Disable Warnings, and click OK.

Monitoring operations

A progress bar indicates that an operation is in process. You can interrupt the process or have the program notify you when it has finished.

To cancel operations:

Hold down Esc until the operation in progress has stopped. In Mac OS, you can also press Command+period.

To set notification for completion of operations:

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.
- (Photoshop) In Mac OS, choose Photoshop > Preferences > General.
- (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 Do one of the following:

- (Photoshop) Select Beep When Done.
- (ImageReady) Select Notify When Done and choose (Mac OS only): System Alert to use your system alert for notification or Text to Speech to use a spoken notification.

3 Click OK.

Closing files and quitting

Closing and quitting is simple. Always make sure that you've saved any changes to your images before you close images and quit Photoshop or ImageReady.

To close a file:

1 Choose File > Close or File > Close All.

2 Choose whether or not to save the file:

• Click Yes (Windows) or Save (Mac OS) to save the file.

• Click No (Windows) or Don't Save (Mac OS) to close the file without saving it.

To exit Photoshop or ImageReady:

1 Choose File > Exit (Windows) or File > Quit (Mac OS).

2 Choose whether or not to save any open files:

• Click Yes (Windows) or Save (Mac OS) for each open file to save the file.

• Click No (Windows) or Don't Save (Mac OS) for each open file to close the file without saving it.

Using plug-in modules

Plug-in modules are software programs developed by Adobe Systems and by other software developers in conjunction with Adobe Systems to add features to Photoshop and ImageReady. A number of importing, exporting, and special-effects plug-ins come with your program; they are automatically installed in folders inside the Photoshop Plug-ins folder.

You can select an additional plug-ins folder to use compatible plug-ins stored with another application. You can also create a shortcut (Windows) or an alias (Mac OS) for a plug-in stored in another folder on your system. You can then add the shortcut or alias to the Plug-ins folder to use that plug-in with Photoshop and ImageReady.

Once installed, plug-in modules appear as options added to the Import or Export menu; as file formats in the Open, Save As, and Export Original (ImageReady) dialog boxes; or as filters in the Filter submenus. Photoshop and ImageReady can accommodate a large number of plug-ins. However, if the number of installed plug-in modules becomes great enough, Photoshop or ImageReady may not be able to list all the plug-ins in their appro-priate menus. Newly installed plug-ins will then appear in the Filter > Other submenu.

To install an Adobe Systems plug-in module:

Do one of the following:

• Use the plug-in installer, if provided.

• (Windows) Copy the module into the appropriate Plug-ins folder in the Photoshop program folder. Make sure that the files are uncompressed.

• (Mac OS) Drag a copy of the module to the appropriate Plug-ins folder in the Photoshop program folder. Make sure that the files are uncompressed.

Important: *In Mac OS, you cannot launch Photoshop in the Classic environment. Plug-ins originally intended to work on Mac OS 9 won't appear.*

To install a third-party plug-in module:

Follow the installation instructions that came with the plug-in module.

If you cannot run a third-party plug-in, the plug-in may require a legacy Photoshop serial number.

To specify a legacy serial number (Photoshop):

1 Do one of the following:

• In Windows, choose Edit > Preferences > Plug-Ins & Scratch Disk.

• In Mac OS, choose Photoshop > Preferences > Plug-Ins & Scratch Disk.

2 Enter the serial number from Photoshop 6.0 or earlier in the Legacy Photoshop Serial Number text box.

To select an additional plug-ins folder:

1 Do one of the following:

• (Photoshop) In Mac OS, choose Photoshop > Preferences > Plug-Ins & Scratch Disk.

• (ImageReady) In Mac OS, choose ImageReady > Preferences > Plug-Ins & Scratch Disk.

2 Select Additional Plug-ins Folder.

3 Click Choose, and select a folder or directory from the list. Make sure that you do not select a location inside the Plug-ins folder. To display the contents of a folder, double-click the directory (Windows) or click Open (Mac OS).

4 When you have highlighted the additional plug-ins folder, click OK (Windows) or Choose (Mac OS).

5 Restart Photoshop or ImageReady for the plug-ins to take effect.

To suppress the loading of a plug-in or folder of plug-ins:

Add a tilde ~ character at the beginning of the plug-in name, folder, or directory. That file (or all files in the folder) will be ignored by the application.

To view information about installed plug-ins:

Do one of the following:

• In Windows, choose Help > About Plug-In and select a plug-in from the submenu.

• (Photoshop) In Mac OS, choose Photoshop > About Plug-In and select a plug-in from the submenu.

• (ImageReady) In Mac OS, choose ImageReady > About Plug-In and select a plug-in from the submenu.

To load a plug-in in only Photoshop or ImageReady:

Install the plug-in either the Adobe Photoshop Only folder or the Adobe ImageReady Only folder inside the Plug-ins folder.

Note: *Use this procedure when you want to use a plug-in within only Photoshop or ImageReady, or when a plug-in may only be compatible with one of the two applications.*

Working with Adobe Version Cue managed projects

Adobe Version Cue™ is an innovative set of features designed to increase your productivity when you work alone or collaborate with others. Adobe Version Cue integrates design management into your existing workflows within and across the Adobe Creative Suite applications, including Adobe GoLive CS, Adobe Illustrator CS, Adobe InDesign CS, and Adobe Photoshop CS.

Note: The Adobe Version Cue features are compatible only with the Adobe Version Cue Workspace, which is available only as part of the Adobe Creative Suite.

Adobe Version Cue streamlines the following tasks while you work in the Creative Suite:

- Creating file versions
- Maintaining file security
- Organizing files into private or shared projects
- Browsing with file thumbnails, and searching file information and version comments
- Reviewing file information, comments, and file statuses in private and shared projects while you browse

In addition, you can use the Version Cue Workspace Administration for more advanced tasks:

- Duplicate, export, backup and restore projects.
- View information about projects in the workspace.
- Import files to the workspace using FTP or WebDAV.
- Delete file versions and remove file locks.
- Create project users and define their project privileges.
- Restrict access to a specific project.

To view the complete Adobe Version Cue documentation, see Adobe Version Cue Help. You can also view the Adobe Version Cue documentation as a PDF or print it by opening the VersionCueHelp.pdf file located on the Adobe Creative Suite CD and the Adobe Photoshop CS CD.

Assigning scratch disks

When your system does not have enough RAM to perform an operation, Photoshop and ImageReady use a proprietary virtual memory technology, also called scratch disks. A scratch disk is any drive or a partition of a drive with free memory. By default, Photoshop and ImageReady use the hard drive that the operating system is installed on as its primary scratch disk.

You can change the primary scratch disk and, in Photoshop, designate a second, third, or fourth scratch disk to be used when the primary disk is full. Your primary scratch disk should be your fastest hard disk, and should have plenty of defragmented space available.

The following guidelines can help you assign scratch disks:

- For best performance, scratch disks should be on a different drive than any large files you are editing.
- Scratch disks should be on a different drive than the one used for virtual memory.

- Scratch disks should be on a local drive. That is, they should not be accessed over a network.

- Scratch disks should be conventional (non-removable) media.

- Raid disks/disk arrays are good choices for dedicated scratch disk volumes.

- Drives with scratch disks should be defragmented regularly.

To change the scratch disk assignment:

1 Choose Edit > Preferences > Plug-Ins & Scratch Disks.

2 Do one of the following:

- (Photoshop) Choose the desired disks from the menus. You can assign up to four scratch disks of any size your file system supports. Photoshop lets you create up to 200 GB of scratch disk space using those scratch disks.

- (ImageReady) Choose a primary scratch disk.

3 Click OK.

4 Restart Photoshop or ImageReady for the change to take effect.

Getting Images into Photoshop and ImageReady

Working with bitmap images and vector graphics

Computer graphics fall into two main categories—*bitmap* and *vector*. You can work with both types of graphics in Photoshop and ImageReady; moreover, a Photoshop file can contain both bitmap and vector data. Understanding the difference between the two categories helps as you create, edit, and import artwork.

About bitmap images

Bitmap images—technically called *raster images*—are made up of a grid of dots known as pixels. When working with bitmap images, you edit pixels rather than objects or shapes. Bitmap images are the most common electronic medium for continuous-tone images, such as photographs or digital paintings, because they can represent subtle gradations of shades and color.

Bitmap images can lose detail when scaled on-screen because they are resolution-dependent, they contain a fixed number of pixels, and each pixel is assigned a specific location and color value. Bitmapped images can look jagged if they're printed at too low a resolution because the size of each pixel is increased (see "Understanding image size and resolution" on page 62).
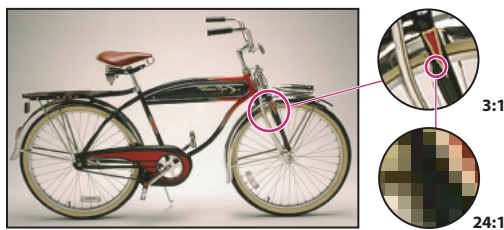
Example of a bitmap image at different levels of magnification

About vector graphics

Vector graphics are made up of mathematically defined lines and curves called *vectors*. This means that you can move, resize, or change the color of a line without losing the quality of the graphic.

Vector graphics are resolution-independent—that is, they can be scaled to any size and printed at any resolution without losing detail or clarity. As a result, vector graphics are the best choice for representing bold graphics that must retain crisp lines when scaled to various sizes (logos, for example).
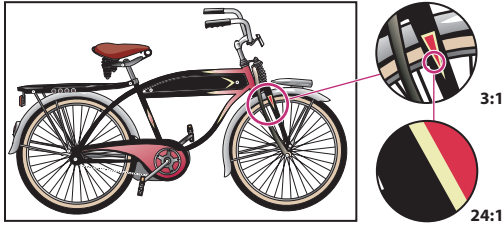
Example of a vector graphic at different levels of magnification

Note: Because computer monitors can display images only on a grid, both vector graphics and bitmap images are displayed as pixels on-screen (see "Monitor resolution" on page 64*).*

Understanding image size and resolution

Understanding the relationship between the pixel dimension of an image and its print resolution is key to producing high-quality images.

The amount of detail in an image depends on its pixel dimensions, while the image resolution controls how much space the pixels are printed over. For example, you can modify an image's resolution without changing the actual pixel data in the image—all you change is the printed size of the image. However, if you want to maintain the same output dimensions, changing the image's resolution requires a change in the total number of pixels.

Pixel dimensions equal document (output) size times resolution
A. Decreasing the resolution without changing pixel dimensions (no resampling) **B.** Original dimensions and resolution **C.** Decreasing the resolution at same document size decreases pixel dimensions (resampling)

Pixel dimensions and image resolution

The number of pixels along the height and width of a bitmap image is called the pixel dimensions of an image.

The resolution of an image is determined by the number of pixels per inch (ppi) printed on a page. In Photoshop, you can change the resolution of an image. In ImageReady, the resolution of images is always 72 ppi, to optimize the images for online media.
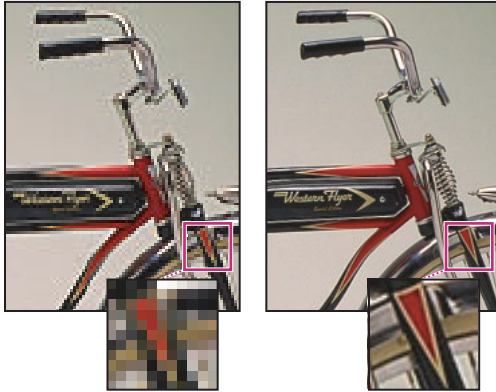

Example of an image at 72-ppi and 300-ppi

When printed, an image with a high resolution contains more, and therefore smaller, pixels than an image with a low resolution. Higher-resolution images can reproduce more detail and subtler color transitions than lower-resolution images because of the density of the pixels in the images. High-quality images often look good at any print size.

You can't improve a lower-quality image by printing it at a high resolution. Changing the print resolution of an image simply makes each pixel larger, which results in *pixelation*— output with large, coarse-looking pixels. Increasing the print resolution of an image doesn't add any pixel information to the image. You can make a low-resolution image look its best by picking a print size that makes the most of the pixels it has. For more infor- mation on print resolution, see "Printer resolution" on page 64.

💡 It's important to note that video files are displayed only at 72 ppi. Even if an image has a higher resolution than 72 ppi, when it's displayed in a video editing application, the quality may not look very good.
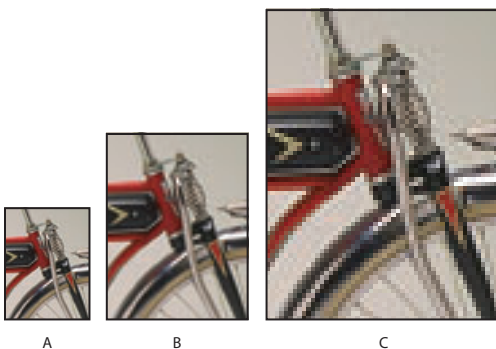
Printing the same low-resolution image at different sizes
A. Small print size **B.** Medium print size **C.** Large print size

File size

The file size of an image is the digital size of the image file, measured in kilobytes (K), megabytes (MB), or gigabytes (GB). File size is proportional to the pixel dimensions of the image. Images with more pixels may produce more detail at a given printed size, but they require more disk space to store and may be slower to edit and print. Image resolution thus becomes a compromise between image quality (capturing all the data you need) and file size.

Another factor that affects file size is file format. Due to varying compression methods used by GIF, JPEG, and PNG file formats, file sizes can vary considerably for the same pixel dimensions. Similarly, color bit-depth and the number of layers and channels in an image affect file size.

Photoshop supports a maximum pixel dimensions of 300,000 by 300,000 pixels per image. This restriction places limits on the print size and resolution available to an image.

Monitor resolution

Image data are translated directly into monitor pixels. This means that when the image resolution is higher than the monitor resolution, the image appears larger on-screen than its specified print dimensions.

Monitor resolution depends on the size of the monitor plus its pixel setting. For example, a large image (800-by-600-pixel dimension) shown on a 15-inch monitor would almost fill the screen, but on a larger monitor, the same image would take up less room on the screen, and each pixel would appear larger.

832 x 624 / 640 x 480   1024 x 768 / 640 x 480
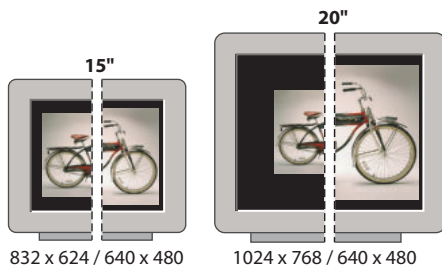
Example of an image displayed on monitors of various sizes and resolutions

Important: When you are preparing an image for online display, pixel dimensions become especially important. You should make sure that the size of an image allows room for the Web browser window controls on smaller monitors.

Printer resolution

Printer resolution is measured by the number of ink dots per inch (dpi) produced by all laser printers, including imagesetters. (See "Preparing images for press" on page 615).

Inkjet printers produce a microscopic spray of ink, not actual dots; however, most inkjet printers have an approximate resolution of 300 to 720 dpi (see "Printing images to a desktop printer" on page 608). Many inkjet printer drivers offer simplified print settings for choosing higher quality printing. To determine your printer's optimal resolution, check your printer documentation.

Screen frequency

Screen frequency is the number of printer dots or halftone cells per inch used to print grayscale images or color separations. Also known as screen ruling or line screen, screen frequency is measured in lines per inch (lpi)—or lines of cells per inch in a halftone screen. The higher an output device's resolution, the finer (higher) a screen ruling you can use.

The relationship between image resolution and screen frequency determines the quality of detail in the printed image. To produce a halftone image of the highest quality, you generally use an image resolution that is from 1.5 to at most 2 times the screen frequency. But with some images and output devices, a lower resolution can produce good results. To determine your printer's screen frequency, check your printer documentation or consult your service provider.

Note: Some imagesetters and 600-dpi laser printers use screening technologies other than halftoning. If you are printing an image on a nonhalftone printer, consult your service provider or your printer documentation for the recommended image resolutions.

Screen frequency examples
A. 65 lpi: Coarse screen typically used to print newsletters and grocery coupons   **B.** 85 lpi: Average screen typically used to print newspapers   **C.** 133 lpi: High-quality screen typically used to print four-color magazines   **D.** 177 lpi: Very fine screen typically used for annual reports and images in art books

Changing image size and resolution

Once you have scanned or imported an image, you may want to adjust its size. In Photoshop, the Image Size dialog box lets you adjust the pixel dimensions, print dimensions, and resolution of an image; in ImageReady, you can adjust only the pixel dimensions of an image.

💡 For assistance with resizing and resampling images in Photoshop, choose Help > Resize Image. This interactive wizard helps you scale your images for print or online media.

Keep in mind that bitmap and vector data can produce different results when you resize an image. Bitmap data is resolution-dependent; therefore, changing the pixel dimensions of a bitmap image can cause a loss in image quality and sharpness. In contrast, vector data is resolution-independent; you can resize it without losing its crisp edges.

Displaying image size information

You can display information about the current image size using the information box at the bottom of the application window (Windows) or the document window (Mac OS). (See "Displaying file and image information" on page 46.)

To display the current image size:

Do one of the following:

• (Photoshop) Press Alt (Windows) or Option (Mac OS), position the pointer over the file information box, and hold down the mouse button. The box displays the width and height of the image (both in pixels and in the unit of measurement currently selected for the rulers), the number of channels, and the image resolution.

• (ImageReady) Click an image information box, and select Image Dimensions from the pop-up menu. The box displays the width and height of the image in pixels.

About resampling

Resampling refers to changing the pixel dimensions (and therefore display size) of an image. When you *downsample* (decrease the number of pixels), information is deleted from the image. When you *resample up* (increase the number of pixels), new pixels are added. You specify an *interpolation* method to determine how pixels are added or deleted. (See "Choosing an interpolation method" on page 67.)
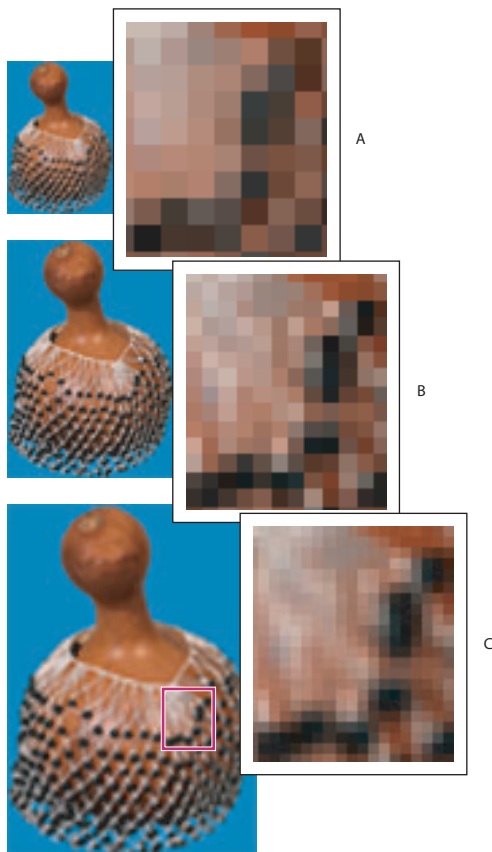
Resampling pixels
A. Downsampled　**B.** Original　**C.** Resampled up (selected pixels displayed for each set of images)

Keep in mind that resampling can result in poorer image quality. For example, when you resample an image to larger pixel dimensions, the image will lose some detail and sharpness. Applying the Unsharp Mask filter to a resampled image can help refocus the image's details. (See "Sharpening images" on page 224.)

You can avoid the need for resampling by scanning or creating the image at a high enough resolution. If you want to preview the effects of changing pixel dimensions on-screen or print proofs at different resolutions, resample a duplicate of your file.

Choosing an interpolation method

When an image is resampled, an *interpolation method* is used to assign color values to any new pixels Photoshop creates, based on the color values of existing pixels in the image. Photoshop and ImageReady use sophisticated methods to preserve the quality and detail from the original image when you resample.

The General Preferences dialog box lets you specify a default interpolation method to use whenever images are resampled with the Image Size or transformation commands. The Image Size command also lets you specify an interpolation method other than the default.

To specify the default interpolation method:

1 Do one of the following:

• In Windows, choose Edit > Preferences > General.

• (Photoshop) In Mac OS choose Photoshop > Preferences > General.

• (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 For Interpolation, choose one of the following options:

• Nearest Neighbor for the fast but less precise method. This method is recommended for use with illustrations containing non-anti-aliased edges, to preserve hard edges and produce a smaller file. However, this method can result in jagged effects, which become apparent when distorting or scaling an image or performing multiple manipulations on a selection.

• Bilinear for a medium-quality method.

• Bicubic for the slow but more precise method, resulting in the smoothest tonal gradations.

• Bicubic Smoother when you're enlarging images.

• Bicubic Sharper for reducing the size of an image. This method maintains the detail in a resampled image. It may, however, over-sharpen some areas of an image. In this case, try using Bicubic.

Changing the pixel dimensions of an image

When preparing images for online distribution, it's useful to specify image size in terms of the pixel dimensions. Keep in mind that changing pixel dimensions affects not only the size of an image on-screen but also its image quality and its printed characteristics— either its printed dimensions or its image resolution. (See "Understanding image size and resolution" on page 62.)

To change the pixel dimensions of an image (Photoshop):

1 Choose Image > Image Size.

2 To maintain the current proportions of pixel width to pixel height, select Constrain Proportions. This option automatically updates the width as you change the height, and vice versa.

3 Under Pixel Dimensions, enter values for Width and Height. To enter values as percentages of the current dimensions, choose Percent as the unit of measurement. The new file size for the image appears at the top of the Image Size dialog box, with the old file size in parentheses.

4 Make sure that Resample Image is selected, and choose an interpolation method. (See "Choosing an interpolation method" on page 67.)

5 If your image has layers with styles applied to them, select Scale Styles to scale the effects in the resized image. This option is available only if you selected Constrain Proportions.

6 When you're done setting options, click the OK button.

For best results in producing a smaller image, downsample and apply the Unsharp Mask filter. To produce a larger image, rescan the image at a higher resolution.

To change the pixel dimensions of an image (ImageReady):

1 Choose Image > Image Size.

2 To maintain the current proportions of pixel width to pixel height, select Constrain Proportions.

3 Under New Size, enter values for Width, Height, or Percent. The New Size text field displays the new file size for the image.

4 Select a interpolation method from the Quality pop-up menu (see "Choosing an inter-polation method" on page 67).

Changing the print dimensions and resolution of an image (Photoshop)

When creating an image for print media, it's useful to specify image size in terms of the printed dimensions and the image resolution. These two measurements, referred to as the *document size*, determine the total pixel count and therefore the file size of the image; document size also determines the base size at which an image is placed into another application. You can further manipulate the scale of the printed image using the Print with Preview command; however, changes you make using the Print with Preview command affect only the printed image, not the document size of the image file. (See "Positioning and scaling images" on page 611.)

If you turn on resampling for the image, you can change print dimensions and resolution independently (and change the total number of pixels in the image). If you turn off resam-pling, you can change either the dimensions or the resolution—Photoshop adjusts the other value automatically to preserve the total pixel count. For the highest print quality, it's generally best to change the dimensions and resolution first without resampling. Then resample only as necessary.

To change the print dimensions and resolution of an image:

1 Choose Image > Image Size.

2 Change the print dimensions, image resolution, or both:

• To change only the print dimensions or only the resolution and adjust the total number of pixels in the image proportionately, make sure that Resample Image is selected. Then choose an interpolation method. (See "Choosing an interpolation method" on page 67.)

• To change the print dimensions and resolution without changing the total number of pixels in the image, deselect Resample Image.

3 To maintain the current proportions of image width to image height, select Constrain Proportions. This option automatically updates the width as you change the height, and vice versa.

4 Under Document Size, enter new values for the height and width. If desired, choose a new unit of measurement. Note that for Width, the Columns option uses the width and gutter sizes specified in the Units & Rulers preferences. For more information, see "Using columns (Photoshop)" on page 41.

5 For Resolution, enter a new value. If desired, choose a new unit of measurement.

To return to the original values displayed in the Image Size dialog box, hold down Alt (Windows) or Option (Mac OS), and click Reset.

To view the print size on-screen:

Do one of the following:

• Choose View > Print Size.

• Select the Hand tool or Zoom tool, and click Print Size in the options bar.

The magnification of the image is adjusted to display its approximate printed size, as specified in the Document Size area of the Image Size dialog box. Keep in mind that the size and resolution of your monitor affect the on-screen print size.

Determining a recommended resolution for an image (Photoshop)

If you plan to print your image using a halftone screen, the range of suitable image resolutions depends on the screen frequency of your output device. You can have Photoshop determine a recommended resolution for your image based on your device's screen frequency. (See "Understanding image size and resolution" on page 62.)

Note: *If your image resolution is more than 2.5 times the screen ruling, an alert message appears when you try to print the image. This means that the image resolution is higher than necessary for the printer. Save a copy of the file, and then reduce the resolution.*

To determine a suggested resolution for an image:

1 Choose Image > Image Size.

2 Click Auto.

3 For Screen, enter the screen frequency for the output device. If desired, choose a new unit of measurement. Note that the screen value is used only to calculate the image resolution, not to set the screen for printing.

Important: To specify the halftone screen ruling for printing, you must use the Halftone Screens dialog box, accessible through the Print with Preview command. (See "Selecting halftone screen attributes" on page 618.)

4 For Quality, select an option:

- Draft to produce a resolution the same as the screen frequency (no lower than 72 pixels per inch).

- Good to produce a resolution 1.5 times the screen frequency.

- Best to produce a resolution 2 times the screen frequency.

Getting images from digital cameras

You can import images from your digital camera using TWAIN drivers, or using Windows Image Acquisition (WIA) if you're using a PC. Once images are opened in Photoshop or ImageReady, you can edit them.

> You can also get images using a memory or flash card reader.

Importing an image using the TWAIN interface

TWAIN is a cross-platform interface for acquiring images captured by certain digital cameras.

You must install the TWAIN drivers that came with your camera before you can use it to import images into Photoshop and ImageReady. See the documentation provided by your device manufacturer for installation information.

To import images from a digital camera using the TWAIN interface (Photoshop):

Choose File > Import, and choose the device you want to use from the submenu.

To import images from a digital camera using the TWAIN interface (ImageReady):

1 If you're using the TWAIN device for the first time with ImageReady, choose File > Import > TWAIN Select. Then select the device you want to use. You do not need to repeat this step for subsequent use of the TWAIN module.

> If more than one TWAIN device is installed in your system and you want to switch devices, use the TWAIN Select command.

2 To import the image, choose File > Import > TWAIN Acquire.

Importing images from digital cameras using Windows Image Acquisition (WIA)

Certain digital cameras import images using WIA support. When you use WIA, Photoshop works with Windows and your digital camera or scanner software to import images directly into Photoshop.

Note: WIA is only available if you are using Windows XP.

To import images from a digital camera using WIA:

1 Choose File > Import > WIA Support.

2 Choose a destination on your computer for saving your image files.

3 Make sure Open Acquired Images in Photoshop is checked. If you have a large number of images to import, or if you want to edit the images at a later time, deselect it.

4 Select Unique Subfolder if you want to save the imported images directly into a folder named with the current date.

5 Click Start.

6 Select the digital camera that you want to import images from.

Note: If the name of your camera does not appear in the submenu, verify that the software and drivers were properly installed and that the camera is connected.

7 Choose the image or images you want to import:

• Click the image from the list of thumbnails to import the image.

• Hold down Shift and click on multiple images to import them at the same time.

• Click Select All to import all available images.

8 Click Get Picture to import the image.

Working with camera raw image files

The Photoshop Camera Raw plug-in lets you open a camera's *raw* digital image files so that you can edit them in Photoshop or ImageReady. As you open the camera raw image files, you can quickly apply adjustments such as exposure compensation or tonal adjustments without compressing the image or losing any of the original image data.
The camera raw image file can then be brought into Photoshop and saved in a final format such as PSD, JPEG, Large Document Format (PSB), or TIFF. By default, Camera Raw settings are stored on a per-image basis in a Camera Raw database file. You can choose a preference to have the settings saved in *sidecar XMP files* (files that accompany the original camera raw image file in the same folder) instead of a Camera Raw database. For more information about Camera Raw settings, see "About Photoshop Camera Raw plug-in settings" on page 81.

About camera raw files

Camera raw image file formats are like digital negatives. They are created by a variety of digital cameras and contain all the information the camera has about the image. The image information is directly captured from the camera's Charged Coupled Device (CCD) or Complementary Metal-Oxide Semiconductor (CMOS) without filters and adjustments applied by the camera. This lets photographers interpret the image data rather than letting the camera make the adjustments and conversions.

Similar to TIFF, a camera raw image file does not throw away any image information to generate a file—it's *lossless*—but camera raw image files have the advantage of being smaller than uncompressed TIFFs. Only camera raw images contain the actual data captured by the sensor without any in-camera processing.

About the Camera Raw plug-in

Although each camera uses a unique format to save the camera raw image data, the Photoshop Camera Raw plug-in can open many camera raw file formats. Your workflow is improved because the camera raw image files are opened directly in Photoshop so you can edit them immediately. The adjustments available with the Photoshop Camera Raw Plug-in provide flexibility to produce the best image possible from a camera raw image file.

You can save the settings in the Camera Raw dialog box for a specific camera or a specific lighting condition and reuse the settings to open another camera raw image file or a batch of camera raw image files.
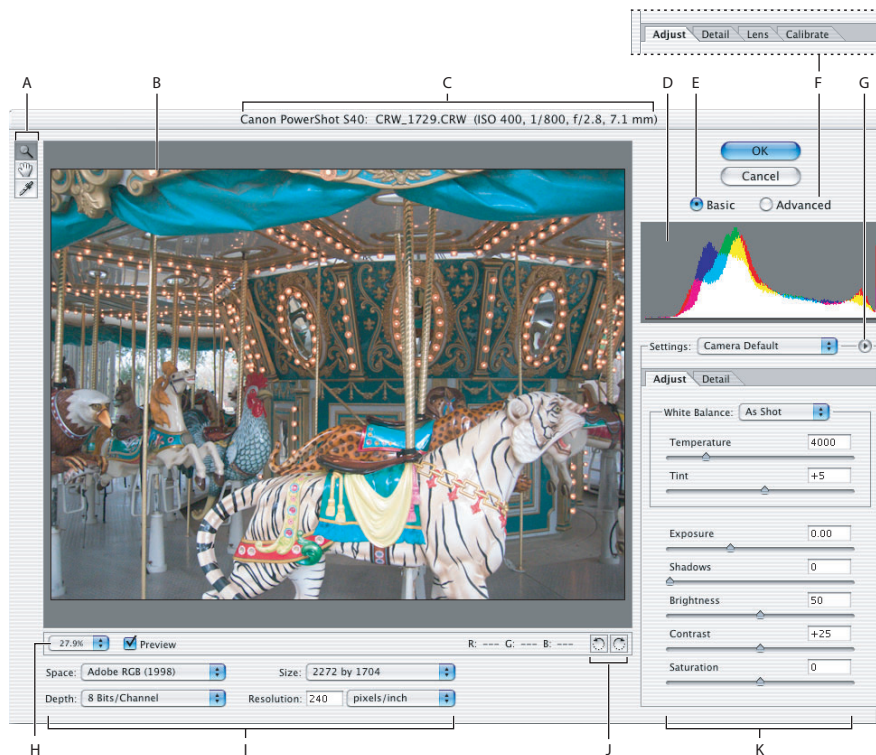
Camera Raw dialog box
A. Zoom, Hand, and White Balance tools **B.** Image preview **C.** Camera, file name, and some EXIF information **D.** Histogram **E.** Basic mode **F.** Advanced mode displays additional tabs
G. Photoshop Camera Raw plug-in menu **H.** Zoom level menu **I.** Image attributes
J. Rotate Preview buttons **K.** Adjustment sliders

Displaying the Camera Raw dialog box Opening a camera raw file in Photoshop or ImageReady generally opens the Camera Raw dialog box. It's possible to suppress the dialog box from displaying for each file when opening a batch of camera raw files. The Camera Raw dialog box is automatically suppressed when using a batch of camera raw files for a Web Photo Gallery, Picture Package, or Contact Sheet. For more information about opening a batch of camera raw files, see "Creating an action to open camera raw image files" on page 84.

Basic and Advanced modes By default, the Camera Raw dialog box opens in Basic mode. Selecting the Advanced mode makes the following additional controls available:

- The Camera Raw Preferences can be accessed from the Camera Raw plug-in menu. This is where you can specify the sharpening behavior of the Camera Raw plug-in and also choose where an image's Camera Raw settings are stored. For more information on storing Photoshop Camera Raw plug-in settings, see "About Photoshop Camera Raw plug-in settings" on page 81, and for more information on sharpening with the Camera Raw plug-in, see "Using the Sharpness slider to reduce blur" on page 78.

- The Lens tab has controls to compensate for chromatic aberration and vignetting introduced by a digital camera. For more information on using the controls in the Lens tab, see "Compensating for chromatic aberration" on page 79.

- The Calibrate tab has controls to correct a color cast in the shadows and adjust the Camera Raw built-in profile to alter the rendering of non-neutral colors. For more information on using the controls in the Calibrate tab, see "Making advanced color adjustments" on page 80.

Note: The Camera Raw Preferences, Lens tab, and Calibrate tab are not available when the Camera Raw dialog box is in Basic mode.

Using the histogram and RGB levels　The Photoshop Camera Raw histogram shows all three channels (Red, Green, and Blue) of the image simultaneously. The histogram updates automatically as you adjust the settings in the Camera Raw dialog box. For more information on using histograms, see "Reading a histogram" on page 176.

💡 Moving the Zoom, Hand, or White Balance tool over the preview image displays the RGB values for the area being sampled.

RGB values appear whenever a tool pointer hovers over an area of the preview image.

Rotating the preview image　Click the Rotate Preview buttons ↺ ↻. Rotation is applied to the preview in the Camera Raw dialog box. Photoshop automatically applies the rotation when the file is opened in a document window. Because Photoshop saves an image's Camera Raw settings, the rotation will still be applied to the dialog box preview when you reopen the camera raw file.

Zooming in and out of the preview image　Do one of the following:

- Choose a percentage from the zoom level menu.

- Select the Zoom tool 🔍 , and either drag a selection or click in the preview image. To zoom out, hold down the Alt (Windows) or Option (Mac OS) key while using the Zoom tool.

If the preview image is larger than the viewing window, use the Hand tool ✋ to move the image and view different areas. You can hold down the spacebar to access the hand tool while using another tool.

Disabling the Preview option Deselect the Preview option to see the image unchanged, without the applied image setting adjustments.

Opening camera raw image files

The Photoshop Camera Raw plug-in lets you open a camera's raw image file directly in Photoshop or ImageReady without using another program to convert the camera raw image into a readable format. As a result, all your work with camera raw image files can be completely done in Photoshop.

To open a camera raw image file for editing in Photoshop and ImageReady:

1 Open a camera raw image file by choosing File > Open or using the File Browser (see "Using the File Browser (Photoshop)" on page 90) in Photoshop. The Camera Raw dialog box automatically opens, displaying a preview of the image.

2 Adjust the settings such as the image attributes (target color space profile, bit depth, pixel size, and resolution), the white balance, exposure and tonal settings, sharpness, smoothness, and color noise reduction.

    To restore all your adjustments to the original settings, hold down the Alt (Windows®) or Option (Mac OS) key. The Cancel button will change to a Reset button. While holding the key down, click the Reset button.

3 When you've finished your adjustments, click OK. A copy of the camera raw image file with the Photoshop Camera Raw plug-in settings applied opens in Photoshop. You can then edit the image and save it in a Photoshop-supported format.

The original camera raw image file remains unaltered. The settings applied to the camera raw image are stored either in the Camera Raw database file or as a sidecar XMP file. For more information on storing Photoshop Camera Raw plug-in settings, see "About Photoshop Camera Raw plug-in settings" on page 81.

Note: Although Photoshop and ImageReady can open a camera raw image file, they cannot save an image as a camera raw image file. A Photoshop Raw format is available in Photoshop, but it is not the same format as a camera raw image file. A camera's raw image file contains the unprocessed bits from the camera's CCD or CMOS. This data needs significant processing, such as the processing done by the Photoshop Camera Raw plug-in. The Photoshop Raw format (.raw) is a flexible file format for transferring images between applications and computer platforms.

Adjusting the image attributes

The Camera Raw dialog box lets you change the image settings for the target color space profile, bit depth, pixel size for opening the image, and resolution using the following controls:

Space Specifies the *target* color space profile. Generally, this should be set to the same value as your Photoshop RGB working space. Keep in mind that the *source* profile for camera raw image files is usually the camera-native color space. (Higher-end cameras let you select a color space like Adobe RGB for the color profile when photographing.) The profiles listed in the Space menu are built into the Photoshop Camera Raw plug-in. If you want to use a color space that's not listed in the Space menu, choose ProPhoto RGB, and then convert to the working space of your choice when the file opens in Photoshop.

Depth Specifies whether the image opens as 8 or 16 bits per channel in Photoshop. In ImageReady, 8 bits per channel is the only option.

Size Specifies the pixel size at which to open the image. The default for this setting is the pixel size you used to photograph the image. Use the Size menu if you want to resample the image to a larger or smaller size.

- For square-pixel cameras, the Size menu is mostly a convenience for the user. However, choosing a smaller-than-native size is useful to speed processing when you are planning a smaller final image anyway. Picking a larger size is similar to upsampling in Photoshop.

- For non-square pixel cameras, the native size is the one that most closely preserves the total pixel count. This means the pixels in one dimension will be upsampled, while in the other dimension they will be downsampled. Choosing the next size larger than the native size keeps the pixel count along the high-resolution dimension constant, while upsampling the lower-resolution dimension to create square pixels. This larger size preserves maximum detail for non-square pixel cameras, since neither dimension is downsampled.

Note: You can always change the pixel size of the image after it opens in Photoshop.

Resolution Specifies the printing resolution the image will be printed at or the amount of data in the image. This setting does not affect the actual pixels (pixel size of the image). For example, a 2048 x 1536 pixel image prints at approximately 28 1/2 x 21 1/4 inches at 72 dpi. When the resolution is changed to 300 dpi, the same image prints at approximately 6 3/4 x 5 1/8 inches. Resolution can also be adjusted in Photoshop using the Image Size command.

Setting the white balance

A digital camera records the white balance at the time of exposure as a metadata entry. This is read by the Photoshop Camera Raw plug-in and set as the initial setting when opening an image in the Camera Raw dialog box. It usually comes close to being the correct color temperature. You can make adjustments if the white balance is not quite right.

The Adjust tab in the Photoshop Camera Raw dialog box has three controls for making adjustments to remove a color cast in your image. The Photoshop Camera Raw plug-in also has a control in the Advanced mode for correcting a shadow color cast (a color cast that's in the shadows even after the white balance has been adjusted). For more information on correcting a shadow color cast, see "Correcting a shadow color cast" on page 80.

White Balance Sets the color balance of the image to reflect the lighting conditions under which the photo was taken. In many cases, choosing a white balance from the White Balance menu provides satisfactory results. In some cases, you may want to customize the white balance using the Temperature and Tint adjustments.

Note: The Photoshop Camera Raw plug-in can read the white balance settings of some cameras. Leaving the White Balance menu set to As Shot uses the camera's white balance settings. For cameras whose white balance settings are not recognized by the Photoshop Camera Raw plug-in, leaving the White Balance menu set to As Shot is the same as choosing Auto: the Photoshop Camera Raw plug-in reads the image data and automatically adjusts the white balance.

Temperature Lets you fine-tune the white balance to a custom color temperature. Set the color temperature using the Kelvin color temperature scale. Moving the slider to the left corrects for a photo taken with a lower color temperature of light; the plug-in makes the image colors bluer to compensate for the lower color temperature (yellowish) of the ambient light. Conversely, moving the slider to the right corrects for a photo taken with a higher color temperature of light; the plug-in makes the image colors warmer (yellowish) to compensate for the higher color temperature (bluish) of the ambient light.
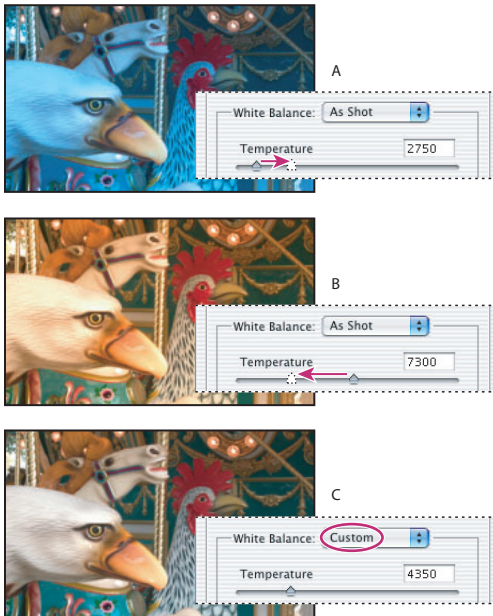
Correcting the white balance
A. Moving the Temperature slider to the right corrects a photo taken with a higher color temperature of light **B.** Moving the Temperature slider to the left corrects a photo taken with a lower color temperature of light **C.** Resulting photo with color temperature adjustment

Tint Lets you fine-tune the white balance to compensate for green or magenta tint in photos. Moving the slider to the left (negative values) adds green to the photo, while moving the slider to the right (positive values) adds magenta.

💡 To adjust the white balance quickly, select the White Balance tool 🖊, and then click an area in the preview image that should be a neutral gray or white. The Temperature and Tint sliders automatically adjust to make the selected color exactly neutral (if possible). If you're clicking whites, choose a highlight area that contains significant white detail rather than a specular highlight.
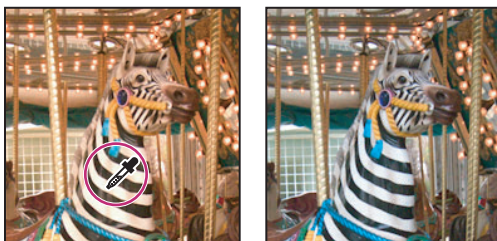
Using White Balance tool to click a neutral white area and result

Making tonal adjustments

The Adjust tab in the Camera Raw dialog box has five sliders for making tonal adjustments to your image.

Exposure Adjusts the brightness or darkness of the image. Moving the slider to the left darkens the image, while moving the slider to the right brightens the image. The values are in increments equivalent to f-stops. A +1.50 adjustment is similar to increasing the aperture 1 1/2 stops wider. Likewise, a –1.50 adjustment is like reducing the aperture 1 1/2 stops.

💡 Holding down the Alt (Windows) or Option (Mac OS) key while moving the Exposure slider lets you preview where the highlights become completely white with no detail (clipped). One way to use this feature is to adjust the slider until the highlights (not specular highlights) are completely clipped, and then back off slightly on the adjustment. Black indicates areas that are not clipped, and color indicates areas that are being clipped in only one or two channels.

Holding the Alt (Windows) or Option (Mac OS) key down while moving the Exposure slider shows the highlights being clipped.

Note: Clipping is the shifting of pixel values to either the highest highlight value (255) or the lowest shadow value (0). Areas of a photo that are clipped are either completely white or completely black and have no image detail.

Shadows Controls what input levels will be mapped to black in the final image. Moving the slider to the right increases the areas that are mapped to black. This sometimes creates the impression of increased contrast in the image. Using the Shadows slider is similar to using the black point slider for the input levels in the Photoshop Levels command. For more information on levels, see "Using the Levels dialog box" on page 185.

Note: Holding down the Alt (Windows) or Option (Mac OS) key while moving the Shadow slider lets you preview where the shadows become completely black with no detail (clipped). One way to use this feature is to move the slider until the shadows begin to get clipped, and then back off slightly on the adjustment. Color indicates areas that are being clipped in one or two channels, and white indicates areas that aren't clipped.

Brightness Adjusts the brightness or darkness of the image, similar to the Exposure slider. However, instead of clipping the image in the highlights (areas that are completely white, no detail) or shadows (areas that are completely black, no detail), Brightness compresses the shadows and expands the highlights when the slider is moved to the left. Generally, you use the Brightness slider to adjust the overall brightness or darkness after you set the white and black clipping points with the Exposure and Shadow sliders.

Contrast Adjusts the midtones in an image. Higher values increase the midtone contrast, while lower values produce an image with less contrast. Generally, you use the Contrast slider to adjust the contrast of the midtones after setting the Exposure, Shadow, and Brightness values.

Saturation Adjusts the color saturation of the image from –100 (pure monochrome) to +100 (double the saturation).

Using the Sharpness slider to reduce blur

In the Detail tab of the Camera Raw dialog box, the Sharpness slider adjusts the image sharpening to provide the edge definition you wish. The Sharpness adjustment is a variation of the Photoshop Unsharp Mask filter, which locates pixels that differ from surrounding pixels based on the threshold you specify and increases the pixels' contrast by the amount you specify. When opening a camera raw image file, the Photoshop Camera Raw plug-in calculates the threshold to use based on camera model, ISO, and exposure compensation. Users can choose whether sharpening is applied to all images or just previews.

To adjust the amount of sharpening:

1 Zoom the preview image to at least 100%.

2 Move the slider to the right to increase the amount of sharpening and to the left to decrease the amount of sharpening. A zero value turns off the Camera Raw sharpening. In general, the Sharpness slider should be set to a lower value for cleaner images.

  If you're not planning to edit the image extensively in Photoshop, use the Photoshop Camera Raw plug-in's Sharpness filter. However, if you plan to edit the image extensively in Photoshop, turn off the Camera Raw sharpening, and later use the sharpening filters in Photoshop as the last step after all other editing and resizing is complete.

To specify whether an image or preview is sharpened:

1 Do one of the following:

• (Windows and Mac OS) In the Advanced mode, choose Preferences from the Photoshop Camera Raw plug-in menu.

• (Mac OS) With the Camera Raw dialog box open, choose Photoshop > Preferences.

2 In the Camera Raw Preferences dialog box, choose one of the following:

All Images Applies sharpening to the camera raw image.

Preview Images only Applies sharpening only to the preview image and not the actual camera raw image. This option is for users who do not want to apply sharpening with the Photoshop Camera Raw plug-in.

Reducing noise

The Detail tab of the Camera Raw dialog box has controls to reduce image noise, the extraneous visible artifacts that degrade image quality. Image noise is made up of luminance (grayscale) noise, which makes an image look grainy, and chroma (color) noise, which is usually visible as colored artifacts in the image. Photographing with a higher ISO or less-sophisticated digital camera can result in images with objectionable noise.

Luminance Smoothing reduces grayscale noise, while Color Noise Reduction reduces chroma noise. Moving a slider to zero turns off its noise reduction.

💡 When making Luminance Smoothing or Color Noise Reduction adjustments, first zoom in on the preview image for a better view.
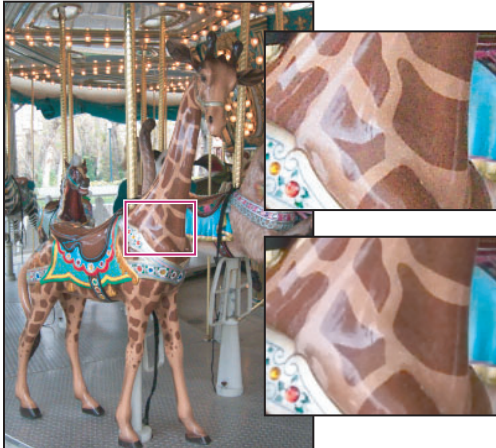
Moving the Luminance Smoothing slider to the right reduces grayscale noise, and moving the Color Noise Reduction slider to the right reduces chroma noise.

Compensating for chromatic aberration

Chromatic Aberration is a common lens defect in which the lens focuses different frequencies (colors) of light differently. One type of chromatic aberration results in the different colors being in focus, but each color's image is a slightly different size. This type of aberration results in complementary color fringing in areas away from the center of the image. For example, the fringing can appear as a red fringe on the side of an object toward the center of the image, and cyan fringe on the side of the object away from the center of the image. The controls in the Lens tab address this problem.

To compensate for chromatic aberration:

1 Make sure the Camera Raw dialog box is in Advanced mode.

2 Zoom into an area near the corner of the preview image. For the best results, the area should contain very dark or black detail against a very light or white background. The color fringing should be visible.

3 In the Lens tab, move one or more of the following sliders:

Chromatic Aberration R/C Adjusts the size of the red channel relative to the green channel. This compensates for red/cyan color fringing.

Chromatic Aberration B/Y Adjusts the size of the blue channel relative to the green channel. This compensates for blue/yellow color fringing.

Watch the preview image as you move the slider to the left or right. If you're adjusting red/cyan color fringing, you can hold down the Alt (Windows) or Option (Mac OS) key to hide the blue/yellow color fringing. Similarly, holding down the Alt (Windows) or Option (Mac OS) key while adjusting the blue/yellow color fringing will hide the red/cyan color fringing. Your goal is to reduce the color fringing as much as possible.

Compensating for lens vignetting

Vignetting is common lens defect where the edges, especially the corners, of an image are darker than the center.

To compensate for lens vignetting:

1 Make sure the Camera Raw dialog box is in Advanced mode.

2 In the Lens tab, move the Vignetting Amount slider to the right (positive values) to lighten the corners of the image or move the slider to the left (negative values) to darken the corners of the image. You can also enter values in the Vignetting Amount text box.

3 Move the Vignetting Midpoint slider to the left (lower value) to apply the Vignetting Amount adjustment to a larger area away from the corners, or move the slider to the right (higher value) to restrict the Vignetting Amount adjustment closer to the corners. You can also enter a value in the Vignetting Midpoint text box.

Correcting a shadow color cast

Sometimes there is a remaining color cast in the shadow areas, even after the highlight white balance is adjusted using the Temperature and Tint sliders. The Calibrate tab has a Shadow Tint slider to correct this remaining shadow color cast.

To remove a color cast in the shadows:

1 Make sure the Camera Raw dialog box is in Advanced Mode.

2 In the Calibrate tab, move the Shadow Tint slider to remove the color cast in the shadows. The colors that the Shadow Tint slider adjusts depends on your camera's sensor and the white balance. Usually, moving the slider to the left (negative values) adds green to the shadow areas, and moving the slider to the right (positive values) adds magenta.

Making advanced color adjustments

Sometimes colors rendered by the Photoshop Camera Raw plug-in do not look as expected. This could be due to the difference between a camera's profile and the Photoshop Camera Raw plug-in's built in profile for the camera model. Other reasons might include photographs taken in nonstandard lighting conditions that extend outside the compensating range of the Photoshop Camera Raw plug-in. The Calibrate tab has Hue and Saturation sliders to adjust Photoshop Camera Raw plug-in's built-in camera profile to render nonneutral colors differently.

To adjust the rendering of nonneutral colors:

1 Make sure the Camera Raw dialog box is in Advanced Mode.

2 In the Calibrate tab, use the Hue and Saturation sliders to adjust the red, green, and blue in the image. Watch the preview image as you make the adjustments until the image looks correct to you. In general, first adjust the hue first and then adjust its saturation. Moving the Hue slider to the left (negative value) is like a move counterclockwise on the color wheel and moving the slider to the right (positive value) is like a move clockwise on the color wheel. Moving the Saturation slider to the left (negative value) desaturates the color and moving the slider to the right (positive value) increases the saturation.

About Photoshop Camera Raw plug-in settings

When a camera raw image file is opened with the Photoshop Camera Raw plug-in, the settings are stored in one of two places: the Camera Raw database file or a sidecar XMP file. The stored settings let Photoshop remember the setting for each individual camera raw image file. When you open a given camera raw image the next time, all the settings sliders default to the same values used the last time to open that specific camera raw image. Image attributes (target color space profile, bit depth, pixel size, and resolution) are not part of the stored settings.

You can determine where the settings are stored using the Camera Raw Preferences.

To specify where a camera raw image file's settings are stored:

1 Open the Camera Raw Preferences by doing one of the following:

• (Windows and Mac OS) In the Advanced mode, choose Preferences from the Photoshop Camera Raw plug-in menu.

• (Mac OS) With the Camera Raw dialog box open, choose Photoshop > Camera Raw Preferences.

2 In the Camera Raw Preference dialog box, choose one of the following from the Save Image Settings In menu:

Camera Raw database Stores the settings in a Camera Raw database file, generally located in the user's Application Data folder as Document and Settings/*user name*/Application Data/Adobe/CameraRaw (Windows) or the user's Preferences folder as Users/*user name*/Library/Preferences (Mac OS). This database is indexed by file content, so settings stick to the image even if the camera raw image file is renamed or moved.

Sidecar ".xmp" files Stores the settings in an XMP file in the same folder as the raw file with the same base name and an XMP extension. This option is useful for long-term archiving of raw files with their associated settings, and for the exchange of raw files with associated settings in multi-user workflows. These same sidecar XMP files can be used to store IPTC (International Press Telecommunications Council) data or other metadata associated with a camera raw image file. If you are opening camera raw files from a read-only volume like a CD or DVD, be sure to copy the files to your hard drive before opening them. The Photoshop Camera Raw plug-in cannot write an XMP file to a read-only volume and will default to writing the settings to the Camera Raw database file.

These XMP files can be viewed in the File Browser by choosing View > Unreadable Files.

Saving, applying, and updating Photoshop Camera Raw settings

You can save Photoshop Camera Raw plug-in settings for a specific camera or a specific lighting condition and reapply them on other camera raw images. You can also save a settings file that contains only a subset of the Photoshop Camera Raw plug-in settings. When this subset file is then loaded, only those sliders are updated. This lets you create settings presets for custom white balances, specific lens settings, and so forth. Using the File Browser, you can also update all or a subset of the settings applied to camera raw images.

To save Photoshop Camera Raw settings:

1 After making your adjustments in the Camera Raw dialog box, do one of the following:

• Choose Save Settings from the Photoshop Camera Raw plug-in menu ⊙ to save the current settings and add them to the Settings menu. The settings will then be available to apply to another image.

• Choose Set Camera Default from the Photoshop Camera Raw plug-in menu to set a default setting for other images that come from the same camera. You can have multiple defaults for different cameras.

Make sure that you save the setting to the Camera Raw preset folder so the setting is always present in the Settings menu. Settings saved elsewhere will disappear from the Settings menu once you've chosen another setting. If this happens, you must use the Load mechanism to get the setting.

Note: Choose Reset Camera Default from the Photoshop Camera Raw plug-in menu to return the default settings to the original Photoshop Camera Raw plug-in settings.

To save a settings subset:

1 In the Advanced mode, choose Save Settings Subset from the Photoshop Camera Raw plug-in menu.

2 Specify the settings to be saved by doing one of the following:

• Choose an option from the Subset menu.

• Select/deselect the settings from the Settings list.

3 Click Save.

4 In the Save Raw Conversion Settings dialog box, name and save the setting subset.

To apply saved Photoshop Camera Raw settings:

In the Camera Raw dialog box, do one of the following:

• From the Settings menu, choose:

Selected Image Uses the settings from the selected camera raw image. This setting becomes First Selected Image when a batch of camera raw images is selected. The settings for the first image in the selected batch will be applied to all the images in the batch.

Camera Default Uses the saved default settings for a specific camera.

Previous Conversion Uses the settings from the previous image of the same camera.

A camera raw image file Uses the setting from a previously opened camera raw file. Up to 100 files can appear in the Settings menu.

- From the Photoshop Camera Raw plug-in menu, choose Load Settings and then select a saved setting.
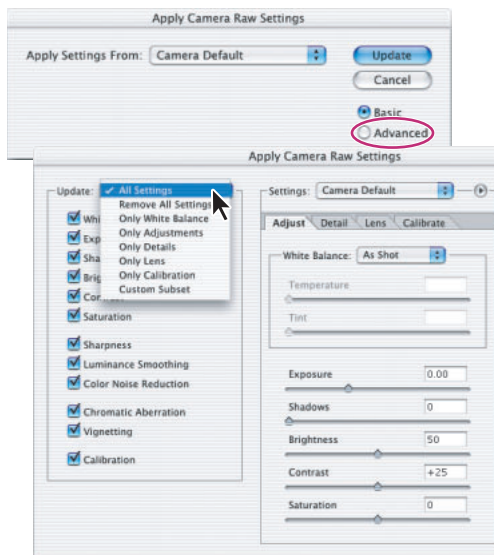
Apply Camera Raw Settings dialog box in Advanced mode

To update settings applied to camera raw image files:

1 In the File Browser, select one or more camera raw image files to update.

2 Do one of the following to open the Apply Camera Raw Settings dialog box:

- From the File Browser menu, choose Automate > Apply Camera Raw Settings.

- Right-click (Windows) or Control-click (Mac OS) a selected image and choose Apply Camera Raw Settings from the context menu.

3 In the Apply Camera Raw Settings dialog box, select Advanced mode if you only want to update a subset of the settings in the selected camera raw files.

4 Choose a setting to apply:

- In Basic mode, choose from the Apply Settings From menu; in Advanced mode, choose from the Settings menu:

Selected Image Uses the settings from the selected camera raw image. This setting becomes First Selected Image when a batch of camera raw images is selected. The settings for the first image in the selected batch will be applied to all the images in the batch.

Camera Default Uses the saved default setting for a specific camera.

Previous Conversion Uses the settings from the previous image of the same camera.

Load Settings Uses a saved setting. In the Advanced mode, this option is available from the Apply Camera Raw Settings menu.

A camera raw image file Uses the setting from a previously opened camera raw file. Up to 100 files can appear in the Settings menu.

• In Advanced mode, you have the following additional option in the Apply Camera Raw Settings menu:

Reset Camera Default returns the settings to the original Photoshop Camera Raw plug-in default settings.

5 To apply a settings subset, specify the settings to update by doing one of the following in the Update area:

• Choose an option from the Update menu.

• Select/deselect the settings from the Update list.

6 Click Update. The next time you open the camera raw image file, the updated settings are applied.

If you copy and paste one or more copies of a camera raw file to your desktop, all instances of the camera raw file will be updated if either the original or a copy have their settings updated.

To delete Photoshop Camera Raw settings:

Choose Delete Current Settings from the Photoshop Camera Raw plug-in menu.

Creating an action to open camera raw image files

You can automate opening camera raw image files, editing them, and saving the files in formats like TIFF, PSD, JPEG, Large Document Format (PSB), and PDF. In Photoshop, you can also use the Batch command or Create Droplet command to open one or more camera raw image files.

To create an action to open camera raw image files:

1 In the Actions palette, click the New Action button ▣, or choose New Action from the palette menu. Enter a name for the action.

2 Click Record. Then open a camera raw image file, and perform the operations you want to record. It's recommended to record the action with Selected Image chosen in the Settings menu of the Camera Raw dialog box so that each image's individual settings (from the Camera Raw database or XMP sidecar files) will be used when playing back the action.

💡   If you plan to use the action with the Batch command, you may want to include a Save As operation and choose the file format to which you would like the images converted.

3 To stop recording, click the Stop button.

The action you've created can be used every time you want to open one or more camera raw image files. For more information on creating actions, see "About actions" on page 627.

Important: *When you use an action to open a camera raw image file, the Photoshop Camera Raw plug-in settings are based on the settings in the dialog box when the action was recorded. You may want to create different actions for opening camera raw image files with specific settings.*

To open camera raw image files using the Batch command (Photoshop):

1 From within Photoshop, choose File > Automate > Batch.

2 In the Play area of the Batch dialog box, choose the action you created to open your camera raw image files from the Actions menu.

3 In the Source area, choose from the Source menu:

Folder Processes the images in a chosen folder. After choosing Folder from the Source menu, click Choose. In the Choose a Batch Folder dialog box, choose a folder of camera raw files.

Import Imports camera raw image files from a digital camera connected to your computer and opens them. Choose a source in the From menu and then skip to step 8.

File Browser Opens the camera raw image files that are displayed in the File Browser.

4 Select Override Action "Open" Commands so the Open commands in the action to refer to the batched files rather than the filenames specified in the action.

Deselect Override Action "Open" Commands only if the action is to operate on open files or if the action contains Open commands for specific files that are required by the action.

5 Select Include All Subfolders to process files in subfolders.

6 Select Suppress File Open Options Dialogs. This prevents the Photoshop Camera Raw dialog box from opening for each camera raw image file being processed.

7 Select Suppress Color Profile Warnings to turn off the display of color policy messages.

8 Choose a destination for the opened files from the Destination menu. It's best to choose either None to leave the files open, or Folder to save the opened files to a specific folder. This prevents accidently overwriting files.

Note: *Select Override Action "Save As" Commands if you want to use the Save As instructions from the Batch command instead of the Save As instructions in the action. If you select this option, the action must contain a a Save As command because the Batch command will not automatically save the source files. Deselect Override Action "Save As" Commands will save the files processed by the Batch command in the location specified as the destination in the Batch dialog box.*

Setting the other options in the Batch dialog box is up to your discretion. For more information about using the Batch command including all the options in the Batch dialog box, see "Using the Batch command (Photoshop)" on page 641.

9 Click OK after you've specified all your settings.

To create a droplet to open camera raw image files (Photoshop):

1 From within Photoshop, choose File > Automate > Create Droplet.

2 Click the Choose button in the Create Droplet dialog box and specify a location for the droplet.

3 In the Play area, select Suppress File Open Options Dialogs. This is useful for opening a batch of camera raw image files because it prevents the Camera Raw dialog box from opening for each camera raw image file being processed.

4 Choose a destination for the opened files from the Destination menu. It's best to choose either None to leave the files open or Folder to save the opened files to a specific folder. This prevents accidently overwriting files.

Setting the other options in the Create Droplet dialog box is up to your discretion. For more information about using droplets and all the options in the Create Droplet dialog box, See "Using droplets" on page 644.)

5 Click OK after you've selected all your settings. Later, you can open single or multiple camera raw files by dragging them onto the droplet.

Scanning images

Before you scan an image, make sure that the software necessary for your scanner has been installed. To ensure a high-quality scan, predetermine the scanning resolution and dynamic range your image requires. These preparatory steps can also prevent unwanted color casts from being introduced by your scanner.

Scanner drivers are provided and supported by the manufacturers of the scanners, not Adobe Systems Incorporated. If you have problems with scanning, make sure that you are using the latest version of the appropriate scanner driver.

When scanning images, try to scan similar images together. For example, it's better to scan dark images with other dark images instead of images that are too light. You'll have better scanned output, and correcting your images will be easier.

Importing scanned images

You can import scanned images directly from any scanner that has an Photoshop-compatible plug-in module or that supports the TWAIN interface. To import the scan using a plug-in module, choose the scanner name from the File > Import submenu. See your scanner documentation for instructions on installing the scanner plug-in. For general plug-in information, see "Using plug-in modules" on page 57.

If your scanner does not have Photoshop-compatible scanner driver, import the scan using the TWAIN interface. (See "Importing scanned images using the TWAIN interface" on page 86.)

If you can't import the scan using the TWAIN interface, use the scanner manufacturer's software to scan your images, and save the images as TIFF, PICT, or BMP files. Then open the files in Photoshop or ImageReady.

Importing scanned images using the TWAIN interface

TWAIN is a cross-platform interface for acquiring images captured by certain scanners, digital cameras, and frame grabbers. The manufacturer of the TWAIN device must provide a Source Manager and TWAIN Data source for your device to work with Photoshop and ImageReady.

You must install the TWAIN device and its software, and restart your computer, before you can use it to import images into Photoshop and ImageReady. See the documentation provided by your device manufacturer for installation information.

To import an image using the TWAIN interface (Photoshop):

Choose File > Import, and choose the device you want to use from the submenu.

To import an image using the TWAIN interface (ImageReady):

1 If you're using the TWAIN device for the first time with ImageReady, choose File > Import > TWAIN Select. Then select the device you want to use. You do not need to repeat this step for subsequent use of the TWAIN module.

If more than one TWAIN device is installed in your system and you want to switch devices, use the TWAIN Select command.

2 To import the image, choose File > Import > TWAIN Acquire.

Importing scanned images using WIA (Windows Image Acquisition) Support

To import images from a scanner using WIA Support:

1 Choose File > Import > WIA Support.

2 Choose a destination on your computer for saving your image files.

3 Click Start.

4 Make sure Open Acquired Images in Photoshop is checked. If you have a large number of images to import, or if you want to edit the images at a later time, deselect it.

5 Make sure Unique Subfolder is selected if you want to save the imported images directly into a folder named with the current date.

6 Select the scanner that you want to use.

Note: If the name of your scanner does not appear in the submenu, verify that the software and drivers were properly installed and that the scanner is connected.

7 Choose the kind of image you want to scan:

• Color picture to use the default settings for scanning color images

• Grayscale picture to use the default settings for scanning grayscale images

• Black and White picture or Text to use the default settings

• Click Adjust the Quality of the Scanned Picture to use custom settings

8 Click preview to view the scan. Crop the scan if needed by pulling the rectangle so it surrounds the image.

9 Click Scan.

10 The scanned image will be saved in the BMP file format.

Scanning using the resolution setting (Photoshop)

You can determine the resolution for your scan using the original and final image dimensions and the resolution of your output device. Scan resolution translates into image resolution when you open the scanned image in Photoshop.

To estimate scan resolution:

1 Do one of the following:

• For laser printers and imagesetters, multiply the printer's screen frequency by 2. To determine your printer's screen frequency, check your printer documentation or consult your service provider.

- For inkjet printers, check your printer documentation for the optimal resolution. Many dye sublimation printers and devices that print directly onto photographic paper have an optimal resolution of 300 to 400 dpi.

2 Determine the ratio of the final image dimensions to the original image dimensions. For example, the ratio of a 6-by-9-inch final image to a 2-by-3-inch original image is 3.

3 Multiply the result of step 1 by the result of step 2.

For example, suppose you are printing to an imagesetter with a screen frequency of 85 lpi and the ratio of the final image to the original is 3. First multiply 85 (the screen frequency) by 2 to get 170. Then multiply 170 by 3 to get a scan resolution of 510 ppi. If you are printing to an inkjet printer with an optimal resolution of 300 dpi, multiply 300 by 3 to get a scan resolution of 900.

Note: *Different color separation procedures might require different ratios of image resolution to screen frequency. It's a good idea to check with your service provider or print shop before you scan the image.*

Scanning using the file size setting (Photoshop)

You can create a dummy file to predict the file size needed for the final output of your scan.

To calculate the file size before scanning an image:

1 In Photoshop, choose File > New.

2 Enter the width, height, and resolution for your final printed image. The resolution should be 1.5 to 2 times the screen frequency you will use to print. Make sure that the mode you plan to scan in is selected. For more information, see "About the different color modes (Photoshop)" on page 150. The New dialog box displays the file size.

For example, suppose you want the final image to be 4 inches wide and 5 inches high. You plan to print it with a 150-line screen using a 2:1 ratio, so you set the resolution to 300. The resulting file size is 5.15 MB.

To produce the scan, enter the resulting file size in your scanner settings. Don't worry about resolution or image dimensions. After you have scanned the image and imported it into Photoshop, use the Image Size command (with the Resample Image option deselected) to enter the correct width and height for the image.

Optimizing the dynamic range of the scan (Photoshop)

Keep in mind that the human eye can detect a wider tonal range than can be printed. If your scanner allows, set the black and white points before scanning a file to produce the best tonal range and capture the widest dynamic range. Then use Photoshop's color adjustment tools to set the white and black points for the scanned image. (See "Using the color adjustment tools" on page 180.)

Eliminating unwanted color casts (Photoshop)

If your scanned image contains an unwanted color cast, you can perform a simple test to determine whether the cast was introduced by your scanner. If it was, you can use the same test file to create a color-cast correction for all images scanned with the scanner.

To identify and correct a color cast introduced by a scanner:

1 Make sure that your monitor has been calibrated. (See "Calibrating and creating profiles" on page 119.)

2 Open a new Photoshop file, and use the Linear Gradient tool ▭ to create a blend from pure black to pure white.

3 Choose Image > Adjustments > Posterize, and posterize the blend using 11 levels.

4 Print the 11-step gray wedge on a black-and-white printer, and then scan it into Photoshop.

Note: You can also perform this test using an 18-percent neutral gray card or an 11-step gray wedge from a photography store.

5 Open the Info palette, and read the RGB values on-screen for each of the gray levels. Uneven R, G, and B values indicate a color cast.

6 Use Levels or Curves to correct the color cast, and then save the dialog box settings. (See "Using Levels to adjust color (Photoshop)" on page 188.)

7 Open the scanned image you want to correct, reopen the dialog box you used to correct the cast in step 6, and load the saved settings.

Creating new images

The New command lets you create a blank image. If you've copied a selection to the Clipboard, the image dimensions and resolution are automatically based on that image data.

To create a new image:

1 Choose File > New.

2 If desired, type a name for the image, and set the width and height.

💡 (Photoshop) To match the width and height of the new image to that of any open image, choose a filename from the bottom section of the Windows menu.

3 (Photoshop) Set the resolution and mode. For more information, see "Understanding image size and resolution" on page 62 and "About the different color modes (Photoshop)" on page 150.

4 Select an option for the contents of the background layer (Photoshop) or first layer (ImageReady) of the image:

• White to fill the background or first layer with white, the default background color.

• Background Color to fill the background or first layer with the current background color. (See "Choosing foreground and background colors" on page 351.)

• Transparent to make the first layer transparent, with no color values. The resulting document will have a single, transparent layer as its contents.

5 Under Advanced, choose a color profile, or choose Don't Color Manage this Document. For Pixel Aspect Ratio, choose Square unless you're using the image for video. In that case, choose another option to use non-square pixels. (See "Saving images for use in video" on page 604.)

6 When you're finished, you can save the settings as a preset by clicking the Save Preset button, or you can click the OK button to open the new file.

Using the File Browser (Photoshop)

File Browser lets you view, sort, and process image files. You can use the File Browser to perform tasks such as creating new folders; renaming, moving, and deleting files; and rotating images. You can also view individual file information and data imported from your digital camera.
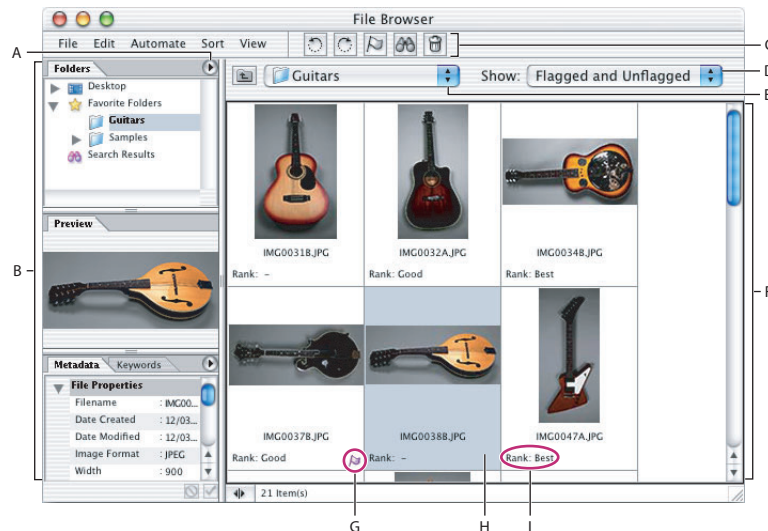
The Photoshop File Browser
A. Palette pop-up menu **B.** Palettes **C.** Toolbar **D.** Caption **E.** Location bar **F.** Main window
G. Flag icon **H.** Selected file **I.** Rank

About the File Browser window

The File Browser helps you to manage and organize your images. To open the File Browser, choose File > Browse or Window > File Browser, or click the File Browser button 📇 in the options bar. The File Browser window is made up of several areas.

Palettes area The palettes area contains four palettes: Folders, Preview, Metadata, and Keywords. You can use the Folders palette to navigate through the folders on your computer (see "Working with files and folders" on page 92). Thumbnails of images appear in the Preview palette (see "Viewing images" on page 91.) The Keywords palette helps you organize your images by attaching keywords to them (see "Working with keywords" on page 93). The Metadata palette contains metadata information for images (see "Working with the metadata palette" on page 97).

Toolbar At the top of the File Browser, the File Browser toolbar contains menu options and shortcut buttons to help you efficiently work with your files. The location bar is directly below the shortcut buttons.

Customizing the File Browser window

The File Browser window can be customized by moving and resizing the palettes. For example, you can resize the Preview palette to make it bigger so you can view larger thumbnails. You cannot, however, move palettes to a new area in the File Browser window, or outside of the window.

Customizing the palette display　Do any combination of the following:

- Drag one palette into another to dock the palettes together.

- Drag a palette's horizontal divider bar up or down to make the palette larger or smaller.

- Drag a palette's vertical divider bar right or left to make the palette larger or smaller.

- Double-click a palette's tab to minimize it.

- Double-click a minimized palette's tab to open it.

Though Photoshop remembers the arrangement of the File Browser when you close it, once you've set up the File Browser the way you want to use it, you may want to create a new workspace. You can save other workspaces with the File Browser set up differently any number of times so that you have several customized configurations (see "Saving workspaces" on page 22).

Viewing images

When you click a folder in the Folders palette, the contents of the folder are displayed. When you select an image file, a preview of the file is shown in the Preview palette.

Viewing unreadable files　To view files that Photoshop can't open (spreadsheets, for example), Choose View > Unreadable Files.

Showing and hiding folders　Choose View > Folders. When this option is selected, both images and folder display.

Displaying the location of files　Choose View > Reveal Location in Explorer (Windows) or View > Reveal Location in Finder (Mac OS). When you choose this command, Explorer (Windows) or Finder (Mac OS) opens the folder containing the image file on your computer.

Refreshing the view　Choose View > Refresh. When you choose this command, the contents of the selected folder in the Folder palette are updated. Closing and reopening the File Browser also refreshes the view.

Choosing a view option　Choose an option from the View menu.

Selecting and opening images

Before you can work with a file, you need to select it. You can select more than one file at a time. You can open files in Photoshop or in ImageReady.

Selecting files　Do any of the following:

- Click the thumbnail of a file.

- Shift-click to select contiguous images.

- Ctrl-click (Windows) or Command-click (Mac OS) to select noncontinuous images

- Choose Edit > Select All from the File Browser menu bar to select all the files in the current folder.

Opening files in Photoshop Select the file or files you want to open, and do one of the following:

- Select a file and press Enter (Windows) or Return (Mac OS).
- Double-click a selected file.
- Choose Open from the palette menu.

Opening files in ImageReady   Select the file or files you want to open in ImageReady, and then choose File > Edit in ImageReady.

Working with files and folders

In the File Browser, you can manage your image files by adding, deleting, and moving them. You can also add folders to the Favorite Folders list for quick access to your most frequently used folders.

The Folder palette is where you can see the folder hierarchy of the files displayed in the File Browser.

Creating new folders Choose File > New Folder. Type a name, and press Enter (Windows) or Return (Mac OS).

Adding a folder to Favorites Select a folder, and then choose File > Add Folder to Favorites. To remove a folder from Favorites, choose File > Remove Folder from Favorites.

Dragging files into the File Browser Select a file on your desktop, or in another application. Drag and drop the file into the File Browser window.

Dragging and dropping a file onto the Preview palette or the main window moves or copies the file. To view the contents of a folder, drag and drop a file or a folder on to the Preview, Metadata, or Keywords palette.

Deleting files Select the file or files you want to delete, and do one of the following

- Click the Trash button.
- Drag the files to the Trash button 🗑.
- Press the Delete key.
- Choose File > Delete.

You can also delete empty folders using the above procedure.

Moving files Select the file, and then drag it to a different folder.
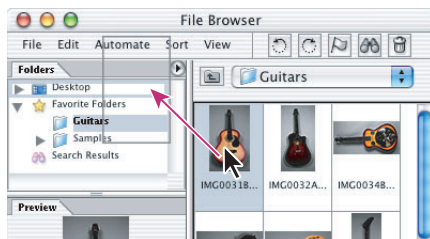
Moving a file from the File Browser to the Desktop

To quickly attach an image to an e-mail message, drag the image from the File Browser and drop it into the e-mail message.

Copying files Select the file, and then Alt-drag (Windows) or Option-drag (Mac OS) it to a different folder.

Rotating files Select one or more files. To rotate the images clockwise by 90°, click the Rotate Clock Wise button ↻ or choose Edit > Rotate 90 degrees CW. To rotate the images counter-clockwise, click the Rotate Counter-Clock Wise button ↺ or choose Edit > Rotate 90 degrees CCW. To rotate the image 180°, choose Edit > Rotate 180. To complete the rotation, choose Edit > Apply Rotation.

> If you don't apply the rotation, the image is rotated only in the File Browser. Be sure to choose Edit > Apply Rotation so you can open the properly rotated image in other applications.

Working with keywords

The Keyword palette lets you create and apply keywords to files. Using keywords, you can group files together by their content. You can then view groups of files using the keywords. Keywords are organized in sets called categories.

File Browser Keywords palette
A. Keyword group **B.** Keyword **C.** Selected keyword **D.** Click to show/hide content of keyword group **E.** Group with one or more keywords applied **F.** Keyword applied

Adding keyword to files Select one or more files. In the Keywords palette, click the box next to the name of the keyword you want to add, or double-click the keyword. A check mark appears in the box next to the keyword when it's added to a file.

Adding a set of keywords to files Select one or more files. In the Keywords palette, click the box next to the name of the keyword group, or double-click the keyword group. A check mark appears in the box next to the keyword group when it's added to a file.

> You may want to create a group of keywords you frequently use so you can apply them as a group.

Removing keywords from a file Select the file, and then click the box next to the name of the keyword you want to remove, or double-click the keyword.

Creating a new keyword   Click the New Keyword button ▣. Name your keyword, and then click OK.

Creating a new keyword set Click the New Keyword Set button ▣. Name the keyword group, and then click OK.

Renaming a keyword or category Select the keyword or category and then click the inverted triangle ⊚ to display the palette menu. Choose Rename from the menu, and then enter a new name for the keyword or category.

💡 When you rename a keyword, the keyword's name isn't changed in files that currently contain it. The original name stays in the file.

Recategorizing a keyword Click and drag the keyword into another category.

Deleting a keyword Select the keyword by clicking its name, and then click the Delete Keyword button 🗑.

💡 Keywords that you get from other users appear in the Other Keywords category until you recategorize them.

Sorting and ranking files

The File Browser allows you to sort files using several sort options. You can also sort by ascending or descending order.

Ranking lets you manually control the sort order of files. You can edit the ranking of an image.

Sorting files Choose an option from the Sort menu.

Sorting by ascending or descending order Choose Sort > Ascending Order. A check mark indicates that files are sorted in ascending order. No check mark indicates descending order.

Ranking files: Select one or more files. Choose View > Show Rank from the File Browser menu bar, and then do one of the following:

- If you're ranking one file, click the Rank text box below the image thumbnail, type a rank (containing letters or numbers), and press Enter (Windows) or Return (Mac OS).

- If you have one or more files selected, choose Edit > Rank, type a letter, and press Enter (Windows) or Return (Mac OS).

Flagging files

Flagging files is a flexible way for you to quickly reduce a large number of files into a smaller, more manageable group. You can choose to view only flagged files, or unflagged files.

For example, if you've just imported a large number of images, you can then view the files in the File Browser. You can review each new image you have, and then flag the images you want to keep. After this initial pass, you can view only files you've flagged, then drag images around to group or rank them, or apply metadata.

💡 When you view different folders, the File Browser always shows you both Flagged and Unflagged files until you choose another option.

Flagging files Select one or more files you want to flag. Click the Flag File button 🚩. The flag icon appears at the bottom right of the thumbnail.

Unflagging files Select the flagged file, and then click the Flag File button.

Viewing only flagged files Select Flagged Files from the Show menu next to the Location bar. You can also choose View > Flagged Files.

Viewing only unflagged files Select Unflagged Files from the Show menu, or choose View > Unflagged Files.

Viewing all files Select Flagged and Unflagged Files from the Show menu, or choose View > Flagged and Unflagged Files.

Searching for files

You can perform searches in the File Browser. You can run very specific searches, by adding up to 12 search criteria to narrow your search. Criteria limiters let you precisely target your search.
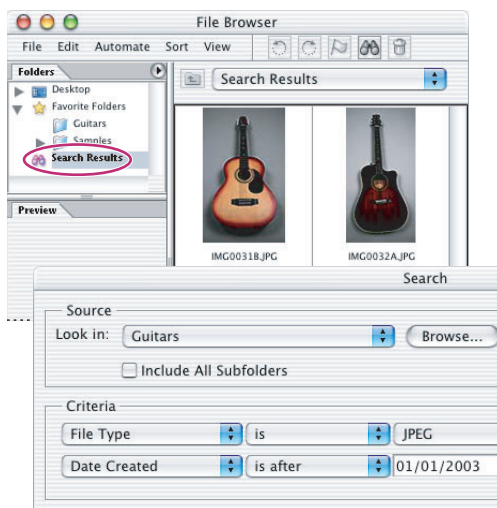
Search criteria, and results from the search

To search files:

1 Choose File > Search.

2 In the Search dialog box, choose a source folder from the Look In menu. By default, the menu displays the currently active folder. Click the Browse button to navigate to another folder.

Choose Include all Subfolders to expand the search into any subfolders located in the source folder.

3 Choose a criteria for your search by selecting an option from the leftmost menu.

4 Select a limiter from the center menu.

5 Enter text in the text box at the right, if needed.

6 To add another search criteria, click the plus sign button ⊕ ⊞. To remove an empty search criteria, click the minus sign button ⊖ ⊟.

7 Click the Search button.

8 The results of your search displays in the Folders palette so you can navigate through the files.

Running automated tasks from the File Browser

Commands in the Automate menu in the File Browser help you quickly produce things like picture packages and Photomerge compositions using photos you select in the File Browser. Running these tasks from the File Browser saves you a lot of time, because you don't have to open each individual file.

To run an automated task:

1 Select the files you want to use. (See "Selecting and opening images" on page 91.)

2 Choose a command from the Automate menu:

Batch Loads the Photoshop Batch dialog box so you can play an action on the folders you're viewing in the File Browser. (See "Using the Batch command (Photoshop)" on page 641.)

PDF Presentation Loads the PDF Presentation dialog box so you can use the images selected in the File Browser to create a slide show, presentation, or document in one multi-paged PDF document (see "Creating a PDF presentation" on page 598).

Contact Sheet II Starts the Contact Sheet dialog box so you can print a series of thumbnail previews on a single page (see "Creating contact sheets" on page 594).

Online Services Order prints of your images from online service providers (see "Using online services" on page 626).

Photomerge Combines the files selected in the File Browser into one continuous image. (See "Creating panoramic images using Photomerge (Photoshop)" on page 284.)

Picture Package Prints out multiple copies of the source image selected in the File Browser on a single page, similar to the photo packages traditionally sold by portrait studios (see "Creating picture packages" on page 595).

Web Photo Gallery Automatically generate a Web photo gallery from the images you've selected in the File Browser. A Web photo gallery is a Web site that features a home page with thumbnail images and gallery pages with full-size images (see "Creating Web photo galleries (Photoshop)" on page 500).

Renaming files and folders

You can rename files and folders in the File Browser individually or in a group, or batch. When you batch rename files, you can choose the same settings for all the selected files. Batch renaming files in the File Browser can save you a lot of time.
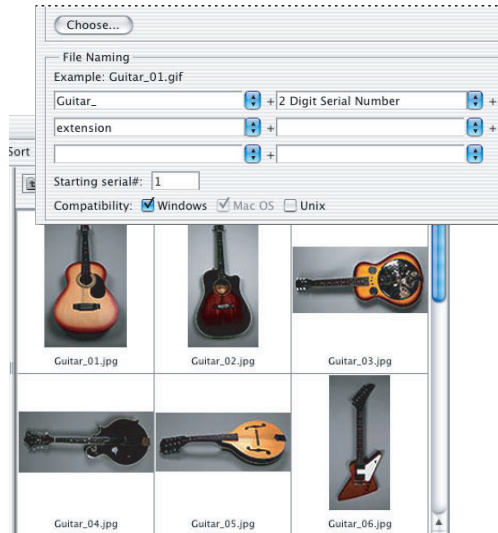
Batch renaming files using a combination of file naming elements and text

Renaming a file or folder Select a file or folder, and then click the filename, or right-click (Windows) or Control-click (Mac OS) the file or folder to display the context menu, then choose Rename from the context menu. Type a new name, and press Enter (Windows) or Return (Mac OS).

Note: To move to the next filename, press Tab. To move to the previous filename, press Shift+Tab.

Batch renaming files Select the files you want to rename, or select a folder in the Folders palette. Then choose Automate > Batch Rename, and set the following options:

• For Destination Folder, select where you want to place the renamed files: in the same folder or in a different folder. If you select Move to New Folder, click Browse (Windows) or Choose (Mac OS) to select a different folder.

• For File Naming, choose elements from the menus or enter text into the fields. The specified elements and text will be combined to create the new filename.

• For Compatibility, select the operating systems with which you want renamed files to be compatible. The current operating system is selected by default, and you cannot deselect it.

Working with the metadata palette

The Metadata palette is where you can view and edit the metadata for selected files. Metadata preserves information about the contents, copyright status, origin, and history of documents, and can be used to search for files.

Metadata is increasingly important in all types of publishing. You can create metadata templates to apply to files in order to add a copyright statement, for example (see "Adding metadata to files" on page 99).

You can choose the types of metadata displayed in the Metadata in the Metadata display options dialog box.

💡 If you have applied metadata to an Adobe Acrobat PDF file, some keywords may not appear, however, these keywords are still attached to the PDF file.

The following types of metadata appear in the File Browser's Metadata palette:

File Properties Describes the characteristics of the file, including the size, creation, and modification dates.

IPTC The only category of editable metadata, IPTC Info lets you add a caption for your files, as well as copyright information.

Camera Data (EXIF) Assigned by digital cameras, EXIF information includes the camera settings that were used when the image was taken.

GPS Displays navigational information from a Global Positioning System (GPS). Some digital cameras have GPS technology. Photos without GPS information won't have any GPS metadata.

Camera Raw Displays metadata for files in the Camera Raw format. For more information on Camera Raw, see "Working with camera raw image files" on page 71.

Edit History Keeps a log of changes made to images (see "Working with the Edit History Log" on page 38).

To view metadata:

Select a file. The metadata for the file appears in the Metadata palette. Use the scroll bars to view hidden categories.

💡 If you have more than one file selected, metadata that is common to the files displays in the Metadata palette.

To edit IPTC metadata:

1 Click the pencil icon 🖉 to the left of the metadata field you want to edit (fields without the pencil icon can't be edited).

2 Type in the text box to edit or add metadata.

3 Press Tab to move through metadata fields.

4 When you're done editing the metadata, click the Apply button ✔. To cancel any changes you've made, click the Cancel button ⊘.
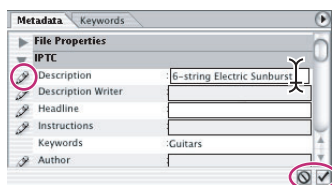
Editing metadata

To customize the view of metadata:

1 Do one of the following:

• Choose Metadata Display Options from the Metadata palette menu.

- Choose Edit > Metadata Display Options.

2　In the Metadata Display Options dialog box, select or deselect metadata fields you'd like to view or hide.

3　Select the Hide Empty Fields option if you don't want to view fields with no information in them.

4　When you're done, click the OK button.

Adding metadata to files

You can add metadata to files saved in Photoshop (PSD), PDF, EPS, PNG, GIF, JPEG, and TIFF formats. The information you add is embedded in the file using XMP (eXtensible Metadata Platform). XMP facilitates the exchange of metadata between Adobe applications and across publishing workflows. For example, you can save metadata from one file as a template, and then import the metadata into other files.

The XMP Software Development Kit can be used to customize the creation, processing, and interchange of metadata. For example, the XMP SDK can be used to add fields to the File Info dialog box. More information on XMP and the XMP SDK is available from the Adobe Solutions Network.

To add metadata to a document:

1　Choose File > File Info.

2　Select a category from the list on the left side of the dialog box, enter the desired information, and click OK.

- Description to specify information about the document, such as document title, author, description, and keywords that can be used to search for the document. To specify copyright information, select Copyrighted from the Copyright Status pop-up menu. Then enter the copyright notice string and the URL of the person or company who owns the copyright.

- Origin to provide information on the history of the artwork. To enter the current date in a short text format, click Today. For Credit, enter the information needed in the credit line for a copyrighted image. Transmission Reference provides the Associated Press with information on the original transmission location of the artwork. For Urgency, specify the editorial urgency of the artwork—not its handling priority.

- Advanced to view the XMP data for the file in a structured format.

The information displayed for the following metadata categories are not editable: Camera Data 1, Camera Data 2, AP Categories, History, and Raw Data.

To save metadata as a template:

1　Click the triangle icon at the top of the File Info dialog box, and choose Save Metadata Template.

2　Enter a template name, and click Save.

To save metadata to an XMP file:

1　In the Advanced area of the File Info dialog box, click Save.

2　Type a filename, choose a location for the file, and click Save.

To import metadata into a document:

Choose File > File Info, and then do any of the following:

- Click the triangle icon at the top of the File Info dialog box, and choose a template name from the top section of the pop-up menu. The metadata from the template will replace the current metadata. To append the current metadata instead, hold down Ctrl (Windows) or Command (Mac OS) when you choose the template name.

Note: You must save a metadata template before you can import metadata from a template.

- In the Advanced area of the File Info dialog box, click Replace to replace the current information with information stored in an XMP file. Locate the XMP file containing the metadata you want to import, and click Open.

- In the Advanced area of the File Info dialog box, click Append to add information stored in an XMP file to the current file information. For each File Info field, if the field does not contain information, it will be updated with contents from the file. Keywords will always be appended with the information from the file.

To delete a metadata template:

1 Click the triangle icon at the top of the File Info dialog box, and choose Delete Metadata Template.

2 Select the name of the template you want to delete, and click Delete.

To show the location of metadata templates:

Click the triangle icon at the top of the File Info dialog box, and choose Show Templates.

Working with the cache

The cache stores thumbnail and file information to make loading times quicker when you return to a previously viewed folder. However, storing cache takes up disk space. You can purge the cache to free up room on your hard disk drive.

You can also export the cache. Exporting the cache allows you to burn a CD with the cache already generated.

Note: Purging the cache deletes ranking, flag, and thumbnail information.

Purging the cache for a folder Choose File > Purge Cache.

Purging the entire cache Choose File > Purge Entire Cache.

Exporting the cache Choose File > Export Cache. The entire cache is exported to the current folder in the File Browser.

Building the cache in subfolders Choose File > Build Cache for Subfolders. The cache for just the active folder is exported to the current folder in the File Browser.

Setting File Browser preferences

You can set the following File Browser preferences:

Do Not Process Files Larger Than Specify the maximum file seize that the File Browser processes. Large files can slow down the File Browser.

Display Most Recently Used Folders Enter a number of most recently viewed folders that appear in the location bar.

Custom Thumbnail Size Specify the pixel width of the thumbnails that appear in the Preview palette.

Allow Background Processing Select to use extra processing power to pre-generate cache information like previews and metadata.

High-Quality Previews Select to view better quality previews of images. Generating these larger previews requires more disk space for the cache.

Render Vector Files Select this option if you want the File Browser to display thumbnails of vector files, such as Illustrator files.

Parse XMP Metadata from Non-image Files Allows you to view and edit the metadata of nonimage files, such as text files.

Keep Sidecar Files with Master Files Allows you to move, copy, delete, or rename XMP and THM sidecar files along with the master file. Sidecar files help other applications process the metadata associated with a file.

Opening and importing images

You can open and import images in various file formats. The available formats appear in the File Browser, the Open dialog box, the Open As dialog box (Windows), or the Import submenu. (See "About file formats" on page 582.)

Note: Photoshop and ImageReady use plug-in modules to open and import many file formats. If a file format does not appear in the Open dialog box or in the File > Import submenu, you may need to install the format's plug-in module. (See "Using plug-in modules" on page 57.)

Opening files

You can open files using the Open command and Open Recent command. In Photoshop, you can also open files using the File Browser. For more information, see "Using the File Browser (Photoshop)" on page 90.

There may be instances when Photoshop cannot determine the correct format for a file. For example, transferring a file between Mac OS and Windows can cause the format to be mislabeled. In such cases, you must specify the correct format in which to open the file.

To open a file using the Open command:

1 Choose File > Open.

2 Select the name of the file you want to open. If the file does not appear, select the option for showing all files from the Files of Type (Windows) or Show (Mac OS) pop-up menu.

3 (Mac OS) Click Show Preview to preview the selected file. This option requires the Apple QuickTime extension.

Note: Previews display faster if they are saved with the file. In Photoshop, select Always Save for Image Previews in the File Handling preferences to always save a preview; select Ask When Saving to save previews on a file-per-file basis.

4 Click Open. In some cases, a dialog box appears, letting you set format-specific options. (See "Opening and importing PDF files" on page 102 and "Opening PostScript artwork" on page 104.)

Note: *If a color profile warning message appears, specify whether to convert the pixels based on the file's color profile. (See "Calibrating and creating a profile of your monitor" on page 119.)*

To open a recently used file:

Choose File > Open Recent, and select a file from the submenu.

To specify the number of files that are available in the Open Recent submenu:

1 Do one of the following:

• (Photoshop) In Windows, choose Edit > Preferences > File Handling.

• (Photoshop) In Mac OS, choose Photoshop > Preferences > File Handling.

• (ImageReady) In Windows, choose Edit > Preferences > General.

• (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 Do one of the following:

• (Photoshop) Enter a number in the Recent File List Contains text box.

• (ImageReady) Enter a number in the Recent Files text box.

To specify the file format in which to open a file (Photoshop):

Do one of the following:

• (Windows) Choose File > Open As, and select the file you want to open. Then choose the desired format from the Open As pop-up menu, and click Open.

• (Mac OS) Choose File > Open, and choose All Documents from the Show pop-up menu. Then select the file you want to open, choose the desired file format from the Format pop-up menu, and click Open.

Important: *If the file does not open, then the chosen format may not match the file's true format, or the file may be damaged.*

Opening and importing PDF files

Portable Document Format (PDF) is a versatile file format that can represent both vector and bitmap data and can contain electronic document search and navigation features. PDF is the primary format for Adobe Illustrator and Adobe Acrobat. For more information on the PDF format, see "PDF" on page 586.

Some PDF files contain a single image. Other PDF files (called Generic PDF files) may contain multiple pages and images. When you open a Generic PDF file, you can choose which page to open and specify rasterization options. If you want to open an image (versus a page) from a PDF file, you can use the File > Import > PDF Image command.

You can also bring PDF data into Photoshop or ImageReady using the Place command, the Paste command, and the drag-and-drop feature. (See "Placing files" on page 105, "Using drag and drop to copy between applications" on page 245, and "Using the Clipboard to copy between applications" on page 245.)

To open a PDF file:

1 Choose File > Open.

2 Select the name of the file, and click Open. You can change which types of files show by selecting an option from the Files of Type (Windows) or Show (Mac OS) pop-up menu.

3 If you are opening a Generic PDF file, do the following:

• If the file contains multiple pages, select the page you want to open.

• Indicate the desired dimensions, resolution, and mode. If the file has an embedded ICC profile and Preserve Embedded Profiles is selected for Color Management Policies in the Color Settings dialog box, you can choose the profile from the mode pop-up menu.

• Select Constrain Proportions to maintain the same height-to-width ratio.

• Select Anti-aliased to minimize the jagged appearance of the artwork's edges as it is rasterized.

To import images from a PDF file:

1 Choose File > Import > PDF Image, select the file you want to import images from, and click Open.

2 In the PDF Image Import dialog box, select the images you want to open:

• To open one image, select it and click OK. You can scroll through the images.

• To open multiple images, Shift-click to select contiguous images, or Ctrl-click (Windows) or Command-click (Mac OS) to select non-contiguous images.

• To select all images, hold down Ctrl (Windows) or Command+A (Mac OS).

Press Esc to cancel the import operation before all images are imported.

To create a new Photoshop file for each page of a multiple-page PDF file (Photoshop):

1 Choose File > Automate > Multi-Page PDF to PSD.

2 Under Source PDF, click the Choose button, and select the file you want to import images from.

3 Under Page Range, specify a range of pages to import.

4 Under Output Options, specify a resolution, choose a color mode, and set the Anti-alias option for rasterizing each page of the PDF file. (To blend edge pixels during rasterization, select the Anti-alias option. To produce a hard-edged transition between edge pixels during rasterization, deselect the Anti-alias option.)

5 Under Destination, enter a base name for the generated files. (When Photoshop creates the new files, the base name is appended with a number that corresponds to the page number of the PDF file.) Then click the Choose button, and select the location where you want to save the generated files.

Opening PostScript artwork

Encapsulated PostScript® (EPS) can represent both vector and bitmap data and is supported by virtually all graphic, illustration, and page-layout programs. Adobe applications that produce PostScript artwork include Adobe Illustrator, Adobe Dimensions™, and Adobe Streamline™. When you open an EPS file containing vector art, it is *rasterized*—the mathematically defined lines and curves of the vector artwork are converted into the pixels or bits of a bitmap image.

You can also bring PostScript artwork into Photoshop or ImageReady using the Place command, the Paste command, and the drag-and-drop feature. (See "Placing files" on page 105, "Using drag and drop to copy between applications" on page 245, and "Using the Clipboard to copy between applications" on page 245.)

To open an EPS file:

1 Choose File > Open.

2 Select the file you want to open, and click Open.

3 Indicate the desired dimensions, resolution, and mode. To maintain the same height-to-width ratio, select Constrain Proportions.

4 Select Anti-aliased to minimize the jagged appearance of the artwork's edges as it is rasterized.

Turning off anti-aliasing for PDF and EPS files (ImageReady)

The Anti-alias PostScript option removes jagged edges from a pasted or placed selection by making a subtle transition between the edges of the selection and its surrounding pixels. Turning off this option produces a hard-edged transition between pixels—and therefore the appearance of jagged edges—when vector artwork is rasterized.

Note: *In Photoshop, you can deselect the Anti-alias option when you open or place a PDF or EPS file.*

To turn off the Anti-alias PostScript option:

1 Do one of the following:

• In Windows, choose Edit > Preferences > General.

• In Mac OS, choose ImageReady > Preferences > General.

2 Deselect Anti-alias PostScript. Clearing this option can decrease the time it takes to import the file.

Opening Photo CD files

You can open Kodak® Photo CD™ (PCD) files, including high-resolution files from Pro Photo CD discs.

Note: *You cannot save files in PCD format from Photoshop or ImageReady.*

To open a Photo CD file:

1 Choose File > Open.

2 Select the PCD file you want to open, and click Open. If the file does not appear, select the option for showing all files from the Files of Type (Windows) or Show (Mac OS) menu.

3 Select options for the source image:

- Pixel Size to specify the pixel dimensions of the image. Keep in mind that the on-screen size of the opened image depends on both the pixel size and resolution you choose. (See "Understanding image size and resolution" on page 62.)

- Profile to specify a device profile for color management. (See "Calibrating and creating a profile of your monitor" on page 119.)

4 Select options for the destination image:

- Resolution to specify the resolution of the opened image.

- Color Space to specify a color profile for the opened image.

- Landscape or Portrait to specify the orientation of the opened image.

Importing anti-aliased PICT files (Mac OS)

Choose File > Import > Anti-aliased PICT to import object-oriented PICT files (such as those created with MacDraw and Canvas) as smooth-edged, or anti-aliased, images. Because the entire PICT file must be held in memory for this module to operate, you may not be able to use the module with large PICT files.

The Anti-aliased PICT dialog box indicates the current file size and dimensions. To change the image dimensions, enter new values for Width and Height. The file size is then updated. To maintain image proportions, select Constrain Proportions.

You can choose Grayscale or RGB color mode for an anti-aliased PICT file.

Importing PICT resources (Mac OS)

The PICT Resource module lets you read PICT resources from a file—for example, from another application. To open a PICT resource, choose File > Import > PICT Resource.

To preview a resource, click Preview. Click the arrow buttons to step forward and backward through the resources. Note that the number displayed for Resource refers to the resource's position in ascending order in the resource fork and not to the resource's identification number.

Note: *In Photoshop, you can also open a file in the PICT Resource file format by choosing File > Open, choosing All Documents from the Show pop-up menu, selecting the file you want to open, choosing PICT Resource from the Format pop-up menu, and clicking Open. However, the Open command automatically opens the first resource in the file and does not display any other PICT resources in the file.*

Placing files

You can use the File > Place command to place artwork into a new layer in an image. In Photoshop, you can place PDF, Adobe Illustrator, and EPS files; in ImageReady, you can place files in any supported format, with the exception of Photoshop (PSD) files containing CMYK images.

When you place a PDF, Adobe Illustrator, or EPS file, it is rasterized; you cannot edit text or vector data in placed artwork. Keep in mind that artwork is rasterized at the resolution of the file into which it is placed.

To place a PDF, Adobe Illustrator, or EPS file (Photoshop):

1 Open the Photoshop image into which you want to place the artwork.

2 Choose File > Place, select the file you want to place, and click Place.

3 If you are placing a PDF file that contains multiple pages, select the page you want to place in the provided dialog box, and click OK.

The placed artwork appears inside a bounding box at the center of the Photoshop image. The artwork maintains its original aspect ratio; however, if the artwork is larger than the Photoshop image, it is resized to fit.

4 If desired, reposition the placed artwork by doing one or more of the following:

• Position the pointer inside the bounding box of the placed artwork, and drag.

• In the options bar, enter a value for X to specify the distance between the center point of the placed artwork and the left edge of the image. Enter a value for Y to specify the distance between the center point of the placed artwork and the top edge of the image.

• To adjust the center point of the placed artwork, drag the center point to a new location, or click a handle on the center point icon ▦ in the options bar.

5 If desired, scale the placed artwork by doing one or more of the following:

• Drag one of the handles at the corners or sides of the bounding box. Hold down Shift as you drag a corner handle to constrain the proportions.

• In the options bar, enter values for W and H to specify the width and height of the artwork. By default, these options represent scale as a percentage; however, you can enter another unit of measurement. To constrain the proportions of the artwork, click the Constrain Proportions icon ▯; the option is on when the icon has a white background.

6 If desired, rotate the placed artwork by doing one or more of the following:

• Position the pointer outside the bounding box of the placed artwork (the pointer turns into a curved arrow), and drag.

• In the options bar, enter a value (in degrees) for the Rotation option ◿.

The artwork rotates around the center point of the placed artwork. To adjust the center point, drag it to a new location, or click a handle on the Center Point icon ▦ in the options bar.

7 If desired, skew the placed artwork by holding down Ctrl (Windows) or Command (Mac OS), and dragging a side handle of the bounding box.

8 Set the Anti-alias option in the options bar as desired. To blend edge pixels during rasterization, select the Anti-alias option. To produce a hard-edged transition between edge pixels during rasterization, deselect the Anti-alias option.

9 To commit the placed artwork to a new layer, do one of the following:

• Click the Commit button ✔ in the options bar.

• Press Enter (Windows) or Return (Mac OS).

To cancel the placement, click the Cancel button ⊘ in the options bar, or press Esc.

To place a file (ImageReady):

1 Open the ImageReady image into which you want to place the file.

2 Choose File > Place, select the file you want to place, and click Open.

3 Select offset options:

• From the Horizontal pop-up menu, choose an option for placing the file horizontally with respect to the image. In the Pixels text box, enter the number of pixels to offset the placed image horizontally.

• From the Vertical pop-up menu, choose an option for placing the file vertically with respect to the image. In the Pixels text box, enter the number of pixels to offset the placed image vertically.

Note: *To enter a negative number (and offset the placed file to the left or below the image), type a hyphen (-) before the number.*

4 Click OK.

5 If you are placing a PDF file that contains multiple pages, select the page you want to place, and click OK.

6 If you are placing a PDF or EPS file, select Rasterize options, and click OK:

• Enter Width and Height values for Image Size.

• Select Anti-aliased to minimize the jagged appearance of the artwork's edges as it is rasterized.

• Select Constrain Proportions to maintain the same height-to-width ratio.

Producing Consistent Color (Photoshop)

An introduction to color management

Colors in an image will sometime look different when viewed on different monitors. They may also look very different when printed on your desktop printer or printed in a publication. If you need to produce consistent color across different devices, managing color should be an essential part of your workflow.

Why colors change

We use *color models* to describe the colors we see and work with. Each color model, such as RGB, CMYK, or Lab, represents a different method for describing and classifying color. Color models use numeric values to represent the visible spectrum of color. A *color space* is a variant of a *color model* and has a specific *gamut* (range) of colors. For example, within the RGB color model are a number of color spaces: Adobe RGB, sRGB, and Apple RGB. While each of these color spaces defines color using the same three axes (R, G, and B), their gamuts are different.

All devices operate within their own color space, the range of color they're capable of reproducing. No device can reproduce the full range of colors viewable to the human eye, and no two devices have the same color space.

When you work with image colors in Adobe Photoshop, you are actually adjusting numerical values in the file. It's easy to think of a number as a color, but these numerical values are not absolute colors in themselves—they only have a color meaning within the color space of the device that is producing the color.

Because each device has its own color space, it can reproduce colors only in its gamut. When an image moves from one device to another, image colors may change because each device interprets the RGB or CMYK values according to its own color space.
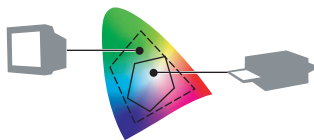
Every device has a different color space.

It is impossible for all the colors viewed on a monitor to be identically matched in a print from a desktop printer. A printer operates in a CMYK color space, and a monitor operates in an RGB color space. Their gamuts are different. Some colors produced by inks cannot be displayed on a monitor, and some colors that can be displayed on a monitor cannot be reproduced using inks on paper.
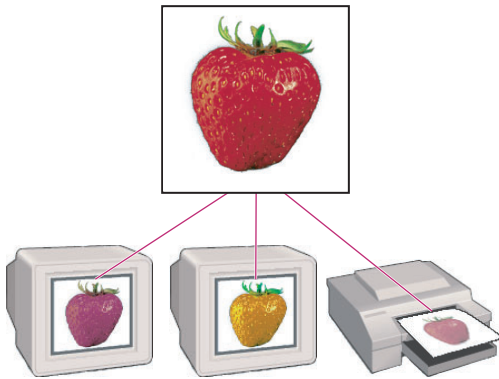
The same RGB values interpreted differently by each device's color space

Even though it is impossible to perfectly match all colors on different devices, you can use color management to ensure that most colors are the same or similar enough so they appear consistent.

Solving color inconsistency with color management

Color management lets you produce consistent colors with a system that reconciles differences between the color spaces of each device.

For the color management system to successfully convert color values between the different color spaces so colors remain the same or very similar, three things must happen:

*   The color management system must know the color space of the image so it can decipher the meaning of the color values in the image. When assigning a *profile* to an image, the image will be in the color space described by the particular profile. A document's profile can be assigned by a source device, like a digital camera or a scanner, or assigned in Photoshop.

*   Then, the color management system uses a color reference to identify the *absolute* colors represented by the color values in the image. Currently, color management systems use either CIE L*a*b* (Lab) or CIE XYZ for color reference. Both color spaces describe all the colors that a person can see; the color values referred to in this space are not limited to or tied to the colors produced by any device.

*   And finally, the color management system must know the color space of the destination device so it can send properly translated RGB or CMYK color values to the device. The color management system uses profiles to understand what RGB and CMYK values mean to each device. Device profiles can be supplied by the manufacturer or created using third-party software and hardware.
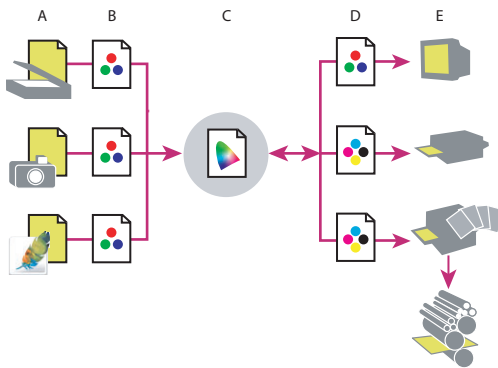
Color management
A. Source devices create documents containing raw color values. **B.** Source profiles describe
the devices' color spaces and document profiles describe the documents' color spaces.
C. Taking the raw color values with the profile data, the color management system identifies the
actual colors in the document using a color reference (Lab). **D.** Device profiles describe the color
spaces of each device. **E.** The color management system converts the raw color values to the color
space of each device.

Basic steps for producing consistent color

A color management system is built into Photoshop. To use Photoshop's color
management system successfully, you will need to follow some basic steps.

To start managing the color in your workflow:

1 Calibrate your monitor. Use a visual calibration method, like Adobe Gamma (Windows)
or Monitor Calibrator (Mac OS), or use third-party software and hardware for more
accurate calibration.

2 Specify the color settings when you first launch Photoshop. The color settings in the
Photoshop Color Settings dialog box control how the color management system works
with RGB, CMYK, and grayscale images.

When first launching Photoshop, an alert will tell you that the color settings will be
configured using default settings (Web Graphics Defaults) and ask if you wish to
customize the color settings. Do one of the following:

• Click *No* to accept the default settings. Keep in mind that the default settings might be
  appropriate for keeping colors consistent when images are viewed on a computer
  monitor, but may not be optimum for printing images.

Note: *Although you don't have to customize the color settings when first launching
Photoshop, it's recommended that you do. The choices you make in the Color Settings
dialog box influence how the colors in images are displayed.*

• For better control of the Photoshop color management system, click *Yes* to customize
  the color settings in Photoshop when first launching the program. This opens the Color
  Settings dialog box. In the Color Settings dialog box, choose a preset option from the
  Settings menu. If your image is to be printed on a desktop printer or a printing press,
  choose one of the prepress defaults that's relevant to your geographic location. For
  example, if you're in the United States, you would choose U.S. Prepress Defaults.

- For the maximum control of the Photoshop color management system, click *Yes* to customize the color settings in Photoshop when first launching the program. This opens the Color Settings dialog box. In the Color Settings dialog box, select the Advanced Mode option and specify the individual settings.

Note: *The Color Settings dialog box is not just accessible the first time you launch Photoshop. You can access the Color Settings dialog box at any time by choosing (Windows) Edit > Color Settings or (Mac OS) Photoshop > Color Settings.*

It is important to use the same color settings in other color-managed applications such as Adobe Illustrator, Adobe InDesign, and Adobe Acrobat® in order to make your color consistent between the applications. Keep in mind that colors will probably not match between color-managed applications and non-color-managed applications. For more information about synchronizing color settings between color-managed Adobe applications, see "Keeping color consistent between Photoshop and other Adobe applications" on page 144.

3 Create or acquire profiles of devices in your workflow, such as your desktop printer. The Photoshop color management system needs to know the behavior of the devices in your workflow in order to properly convert the color values in a document so the devices produce consistent color. Common ways to obtain a profile include:

- Installing the driver for your desktop printer. When you install the printer driver, a profile is usually installed in your computer system. The color management system can access this profile so it will appear as a color management option when you print from Photoshop.

- Creating a profile using a third-party measuring instrument and software. This method can create a more accurate descriptions of the behavior of specific devices.

Note: *You should also make separate profiles for every type of paper used with your desktop printer. A glossy paper is capable of displaying a different range of colors than a matte paper. Use a third-party measuring instrument and software to generate custom paper profiles.*

4 Incorporate color management into your various workflows. Having a calibrated monitor and profiles is useless unless you know how to utilize them:

- For keeping colors consistent when printing to an inkjet printer, dye sublimation printer, laser printer or any desktop printer, see "Producing consistent color with a desktop printer" on page 146.

- For keeping colors consistent when placed in a layout application like InDesign and sent out to be printed on a printing press, see "Producing consistent color when sending images to press" on page 147.

- For keeping colors consistent when creating images for viewing on the Web or multi-media presentations, see "Producing consistent color when creating images for the Web" on page 149.

Understanding color

Color is how you perceive light. The light may be reflected, transmitted, diffracted, or emitted.

Using color models to describe color

We see only a small part of the electromagnetic spectrum. This small part is often called the *visible spectrum*. We see all light because light is defined as being that part of the electromagnetic spectrum that we can see. *Color models* attempt to describe the colors we see and work with. Each color model represents a different method for describing and classifying color. All color models use numeric values to represent the visible spectrum of color.
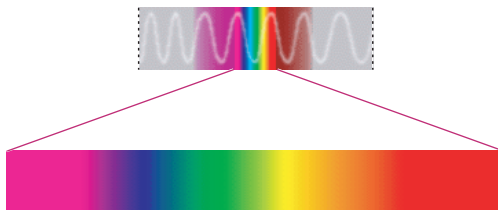
People see only a small part of the energy spectrum.

The range of colors that can be produced using a particular color model, such as *RGB* or *CMYK*, is a *color space*. Other color models are HSL, HSB, Lab, and XYZ.

A color model determines the relationship between values, and the color space defines the absolute meaning of those values as colors. Some color models have a fixed color space (such as Lab and XYZ) because they relate directly to the way humans perceive color. These models are described as being *device independent*. Other color models (RGB, HSL, HSB, CMYK, and so forth) can have many different color spaces. Because these models vary with each associated color space or device, they are described as being device dependent.

For example, the RGB color model has many RGB color spaces, such as ColorMatch, Adobe RGB, sRGB, and ProPhoto RGB. You can take the same RGB values (R=220, B=230, and G=5) and assign profiles that describe different RGB color spaces. The color will look different in each color space, but the numeric values and model will still be the same.

Photoshop uses *color modes* (similar to a color model) that let you work with an image in a specific color space. Photoshop keeps track of an image's color space and will indicate in the title bar if the *working space* and the document's color space don't match.

Photoshop accommodates the color models that are most suitable for photographic images or graphics. Color models used in Photoshop are CMYK, HSB, RGB, and Lab.

HSB model

HSB is a color model that is somewhat analogous to Munsell's system of hue, value, and chroma in that it uses three similar axes to define a color. HSB is derived from RGB color spaces and is a device dependent color space. In HSB, the three fundamental characteristics of color are:

- *Hue* is the color reflected from or transmitted through an object. It is measured as a location on the standard color wheel, expressed as a degree between 0° and 360°.

In common use, hue is identified by the name of the color such as red, orange, or green. To view the color wheel, see "Using the color wheel" on page 172.

- *Saturation*, sometimes called *chroma*, is the strength or purity of the color. Saturation represents the amount of gray in proportion to the hue, measured as a percentage from 0% (gray) to 100% (fully saturated). On the standard color wheel, saturation increases from the center to the edge.

- *Brightness* is the relative lightness or darkness of the color, usually measured as a percentage from 0% (black) to 100% (white).

You can use the HSB model in Photoshop to define a color in the Color palette or Color Picker dialog box, but there is no HSB mode available for creating and editing images.
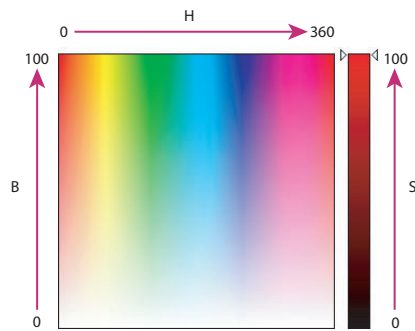
HSB model
H. Hue **S.** Saturation **B.** Brightness

RGB model

A large percentage of the visible spectrum can be represented by mixing red, green, and blue colored light in various proportions and intensities. Where the colors overlap, they create secondary colors—cyan, magenta, yellow—and white.

RGB colors are also called *additive* colors. Additive colors are created by mixing spectral light in varying combinations. Adding all colors together creates white—that is, all visible wavelengths are transmitted back to the eye. Additive colors are used for lighting, video, and monitors. Your monitor, for example, creates color by emitting light through red, green, and blue phosphors.
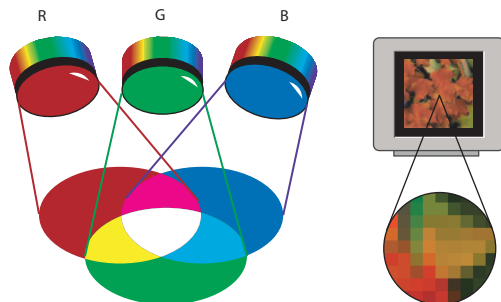
Additive colors (the RGB model)

CMYK model

The CMYK model is based on the light-absorbing quality of ink printed on paper. As white light strikes translucent inks, certain visible wavelengths are absorbed (subtracted), while others are reflected back to your eyes. For this reason, these colors are called *subtractive* colors.

In theory, pure cyan (C), magenta (M), and yellow (Y) pigments should combine to absorb all light and produce black. Because all printing inks contain some impurities, however, these three inks actually produce a muddy brown. For this reason, black ink (K) is used in addition to the cyan, magenta, and yellow inks in four-color printing. (K is used for black instead of B to avoid confusion with blue.)
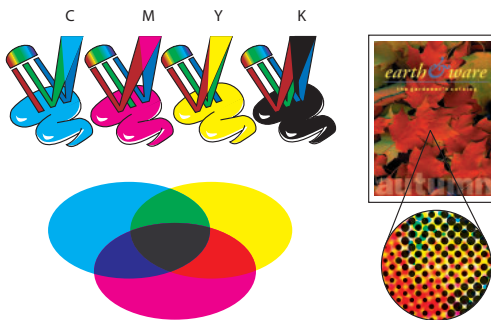
Subtractive colors (the CMYK model)

Lab model

The CIE L*a*b* color model (Lab) is based on the human perception of color. It is one of several color models produced by the Commission Internationale d'Eclairage (CIE), an organization dedicated to creating standards for all aspects of light.

The numeric values in Lab describe all the colors that a person with normal vision sees. Because Lab describes how a color looks rather than how much of a particular colorant is needed for a device (such as a monitor, desktop printer, or digital camera) to produce colors, Lab is considered to be a *device-independent* color model. Color management systems use Lab as a color reference to predictably transform a color from one color space to another color space.

Lab describes color in terms of *luminance* or its lightness component (L) and two chromatic components: the *a* component (green and red) and the *b* component (blue and yellow).
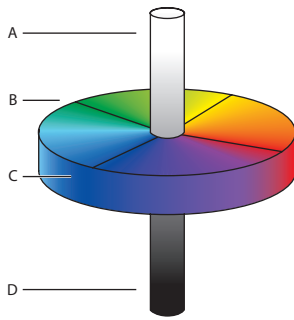
L*a*b* (Lab) model
A. Luminance=100 (white) **B.** Green to red component **C.** Blue to yellow component
D. Luminance=0 (black)

Photoshop uses Lab as a color reference in color management and lets you work in Lab Color mode.

💡 In the Adobe Color Picker, select a color in RGB, HSB, or CMYK mode to see the related numeric values in Lab. (See "Using the Adobe Color Picker" on page 164.)

Why colors sometimes don't match

The colors in an image change as you bring the image in from a scanner or digital camera and view it on your computer monitor. The colors change again when you send the image out to be printed on your desktop printer or printing press. This is because every device—a digital camera, scanner, computer monitor, desktop printer, printing press—operates within a different color space. Incorrect color transformation or lack of color transformation from one color space to another causes color inconsistency. Correctly transforming the color values creates color consistency. For more information on correctly transforming the color values, see "Using color management to produce consistent color" on page 117.

Understanding color space and gamut
A color space is a range of colors in the visible spectrum. A color space can also be a variant of a color model. Adobe RGB, Apple RGB, and sRGB are examples of different color spaces based on the same color model.
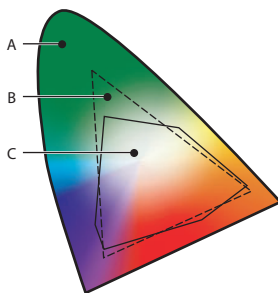
The gamuts of different color spaces
A. Lab color space encompasses all visible colors **B.** RGB color space **C.** CMYK color space

The range of color encompassed by a color space is called a gamut. The different devices (computer monitor, scanner, desktop printer, printing press, digital camera) throughout your workflow operate within different color spaces and each with different gamuts. Some colors within the gamut of your computer monitor are not within the gamut of your inkjet printer, and vice versa. When a color cannot be produced on a device, it's considered to be outside the color space of that particular device. In other words, the color is *out of gamut*. When you edit an image in a specific workspace, Photoshop alerts you when it encounters *out of gamut* colors. (See "Identifying out-of-gamut colors (Photoshop)" on page 184.)
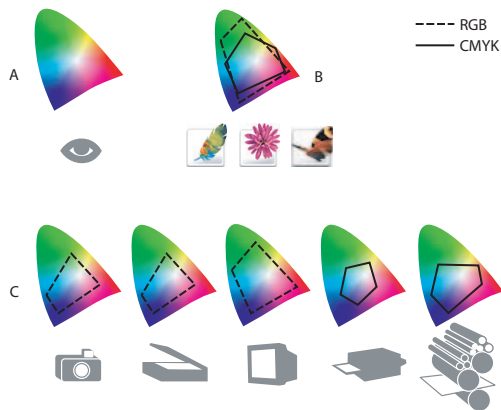
The color gamuts of various devices and documents
A. Lab color space (entire visible spectrum) **B.** Documents (working space) **C.** Devices

Why each device has a different color space

The devices throughout your workflow use different methods to produce color. These methods are often based on different color models and as a result, the devices operate in different color spaces. Your computer monitor produces color with light and operates in an RGB color space. Your desktop printer produces colors with inks or dyes that work in a CMYK color space. Some colors can be viewed on a computer monitor that cannot be printed on desktop printer or printing press. Likewise, some colors can be produced with inks that cannot be displayed on a monitor.

Even when two devices use the same color model to produce color, they will have different color spaces. For example, a CRT monitor and an LCD monitor both use RGB to produce colors. However, because both use different means to display color, the range of color (color space) of both monitors would be different. The CRT monitor would display a specific red value differently than the LCD monitor.

Even two monitors of the same brand and model frequently display the same color differently. It's nearly impossible for two devices to be completely identical, given the limitations of manufacturing and materials. Go to an electronics store and look at a wall of television monitors. Each monitor displays colors differently.

Device-dependent color models

RGB and CMYK are *device-dependent* color models. This is because the colors produced using these models depend on the device that is producing the color. For example, the RGB value of 255,0,0 is a formula for red. However, the red displayed using this formula on one computer monitor will be different than the red displayed on another monitor. Each monitor interprets the formula for red according to its own color space.

Device-independent color models

Device-independent color models describe absolute colors instead of formulas whose resulting colors depend on a device's interpretation of its numeric values. Lab is a device-independent color model and is used by many color management systems as a color reference. It enables the color management system to translate colors from the color space of one device to another with the best possible accuracy.

Using color management to produce consistent color

Photoshop's color management system helps you maintain the appearance of colors as you bring an image in from a source device, edit the image on your computer, and then output your image. Photoshop follows a color management workflow based on conventions developed by the International Color Consortium (ICC), a group responsible for standardized profile formats and procedures so consistent color can result from software and devices working together.

How color management works

A color management system reconciles the differences between the color spaces of different devices. It translates the RGB or CMYK values in a document so that the colors will be represented as consistently as possible on different devices.
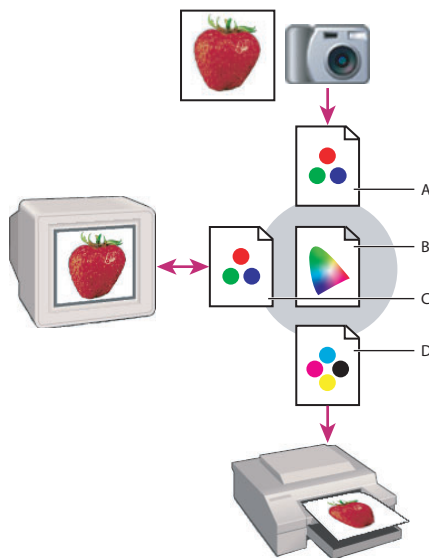
Managing color with profiles
A. Profiles describe the color spaces of the input device and the document. **B.** Using the profiles' descriptions, the color management system identifies the document's actual colors. **C.** The monitor's profile tells the color management system how to translate the numeric values to the monitor's color space. **D.** Using the output device's profile, the color management system translates the document's numeric values to the color space of the output device so the actual colors are printed.

For a color management system to perform this translation process, it needs three elements:

Profiles   Describe the color spaces of the different devices and also the color space of a document. A color management system needs separate profiles for each device and a profile embedded in a document. A device profile does not *change* the color values in a document, it tells the color management system how a device interprets the color values in a document. A document's embedded profile defines the documents' *working space* if you preserve the profile when opening it in Photoshop. Photoshop also lets you convert or discard the embedded profile, which uses the working space specified in the color settings. The working space tells the color management system what the RGB or CMYK values mean as you work on the document in Photoshop. For more information on working spaces, see "About working spaces" on page 125 and for more information on using profiles, see "Calibrating and creating profiles" on page 119.

Color reference   Enables the color management system to identify the colors in one color space. These absolute colors can then be mapped to the same or closest matching colors in another color space. Photoshop's color management system uses Lab for its color reference.

Color Management Module (CMM)   Does the actual conversion of color values in one color space to the same or similar color values in another color space. There are many different CMMs. The default CMM for Photoshop is Adobe (ACE), which is also used by Adobe Illustrator, Adobe InDesign, and Adobe Acrobat.

When Photoshop opens an image, the Photoshop color management system reads the profile if one is embedded in the image. The profile describes the color space of the document so the color management system can interpret the color values in the document. If the image came from a camera or scanner, the device may embed the profile in the image, which explains to the color management system how that device created the image's colors. Images from other sources might have profiles embedded in them that describe their colors according to a previous version of Photoshop or another person's working space. If no profile is embedded, you have the opportunity to assign a profile to that image. Most likely you'll want to assign your current working profile.

After reading the profile, the color management system then identifies all the colors in the document using a color reference. Using the monitor's profile, the color management system translates the document's actual colors into the color space of the monitor so the colors are properly displayed.

When it comes time to print the document, the color management system references the output device's profile so the color values in the document are successfully converted to the output device's color space. Inevitably, there will be colors that are not within the gamut of the output device. In Photoshop, you can determine how the color management system handles the color conversion and out-of-gamut colors by specifying a *rendering intent*. For more information on rendering intents, see "Handling colors with a rendering intent" on page 135.

Calibrating and creating profiles

The color management system uses profiles to know how a device produces color and what the actual colors in a document are. Device profiles are often installed when a device is added to your system. The accuracy of these profiles (often called *generic profiles* or *canned profiles*) varies from manufacturer to manufacturer. Third-party software and hardware can also create device profiles (often called *custom profiles*).
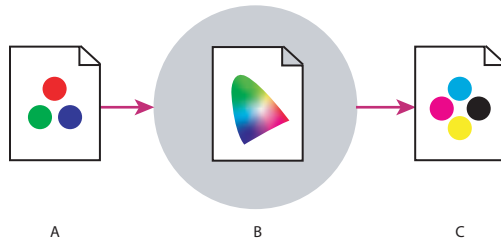
Color management system using profiles to correctly transform color from one color space to another
A. Profile describing the meaning of the RGB values in the document **B.** Color management system using a color reference (Lab) to identify the actual colors **C.** Output profile (destination profile) describing the device's color space so the RGB values are translated to maintain consistent colors when printed in CMYK

Calibrating and creating a profile of your monitor

A monitor profile is the first profile you should create. It is absolutely essential for managing color. If what you see on your monitor is not representative of the actual colors in your document, you will not be able to maintain color consistency.

When you calibrate your monitor, you are adjusting it so it conforms to a known specification. Once your monitor is calibrated, a profile is created. The profile describes the color behavior of the monitor—what colors can or cannot be displayed on the monitor and how the numeric color values in an image must be converted so that colors are displayed accurately.

Most profiles only *describe* the behavior of a device. In addition to describing the monitor's behavior, a monitor profile also contains calibration information, which *changes* the behavior of the monitor.

To calibrate and profile your monitor, you can use visual calibrators like Adobe Gamma (Windows), Monitor Calibrator (Mac OS), or use third-party software and measuring devices. In general, using a measuring device such as a spectrophotometer along with software can create more accurate profiles. An instrument can measure the colors displayed on a monitor far more accurately than the human eye.

Creating profiles of your input devices

A profile of an input device (sometimes called a *source profile*) describes what colors a device is capable of capturing or scanning. For example, the profile might tell the color management system that a specific camera tends to render the colors in a particular scene with a slightly warm cast. This information is not so the color management system will correct the warm cast, but so the color management system will faithfully represent the warm cast when sending color values to the computer monitor.

Digital camera profiles Generally describe the camera's behavior when used with a specific lighting source in a specific environment. For example, different profiles are needed for the different light sources you use. Different profiles are also needed for the different qualities of daylight, such as sunny, overcast, shade, early morning, and sunset.

Scanner profiles Describe how a scanner captures the colors in a print or transparency. For critical color work, some photographers create separate profiles for each type or brand of film scanned on a scanner.

Creating an input profile involves photographing or scanning a color target. For the camera profile, the target must be photographed under the lighting conditions that the profile needs to describe. Third-party software and hardware read the RGB colors in the captured or scanned image. These values are compared with the actual color values that should be in the targets (referencing a device-independent color space like Lab), and the input profile is created.

There are different opinions on whether an input device profile is absolutely essential for producing consistent color. Some users feel that consistent color is difficult to achieve without a source profile. Others feel that regardless of an input device's behavior, a well-calibrated and profiled monitor will accurately display an image's colors for successful color correction.

Creating profiles of your output devices

Profiles of your output devices (sometimes called *destination profiles* or *output profiles*) describe the color space of devices like desktop printers and a printing press. The Photoshop color management system uses these profiles in two ways:

- To properly map the colors in an image to the colors within the gamut of an output device's color space so the resulting colors are the same or similar enough to retain the overall appearance of the original image.

- To generate a preview of how the colors in an image will probably look when produced by the output device. For more information about using profiles for previewing (proofing) the colors in an image, see "Soft-proofing colors" on page 140.

As with any profile, the more accurately a destination profile describes the behavior of an output device, the more accurately the Photoshop color management system can translate the numeric values of the actual colors in a document or generate a preview of how an image will look in the color space of the output device.

Embedding a profile in a document

Documents can be tagged with profiles that describe specific RGB or CMYK color spaces. By associating, or *tagging,* a document with a color profile, you provide a definition of actual color appearances in the document. Changing the associated profile changes the color appearances. (For information on displaying the current profile name in the status bar, see "Displaying status information (Photoshop)" on page 45.) Documents without associated profiles are known as *untagged* and contain only raw color numbers. When working with untagged documents, Photoshop uses the current working space profile that is specified in the color settings to display and edit colors. For more information on working spaces and profiles, see "About working spaces" on page 125.

By default, a tagged document will have its profile information embedded upon saving in a file format that supports embedded ICC profiles. Untagged documents are saved by default without embedded profiles.

You can specify whether or not to embed a profile as you save a document; you can also specify to convert colors to the proof profile space and embed the proof profile instead. However, changing the profile-embedding behavior is recommended only for advanced users who are familiar with color management.

To change the embedding behavior of a profile in a document:

1 Choose File > Save As.

2 Do one of the following:

* To toggle the embedding of the document's current color profile, select or deselect ICC Profile (Windows) or Embed Color Profile (Mac OS). This option is available only for the native Photoshop format (.psd) and PDF, JPEG, TIFF, EPS, DCS, and PICT formats.

* To toggle the embedding of the document's current proof profile, select or deselect Use Proof Setup (available for PDF, EPS, DCS 1.0, and DCS 2.0 formats only). Selecting this option converts the document's colors to the proof profile space and is useful for creating an output file for print. For information on setting up a proof profile, see "Soft-proofing colors" on page 140.

3 Name the document, choose other save options, and click Save.

Changing the color profile of a document

In some cases you may want to convert a document's colors to a different color profile, tag a document with a different color profile without making color conversions, or remove the profile from a document altogether. For example, you may want to prepare the document for a different output destination, or you may want to correct a policy behavior that you no longer want implemented on the document. Photoshop has the Assign Profile and the Convert to Profile commands, which let you remove, reassign, or change profiles in a document. The Assign Profile and Convert to Profile commands are recommended for advanced users only.

When using the Assign Profile command, you may see a shift in color appearance as color numbers are mapped directly to the new profile space. Convert to Profile, however, shifts color numbers before mapping them to the new profile space, in an effort to preserve the original color appearances.

To reassign or discard the profile of a document:

1 Choose Image > Mode > Assign Profile.

2 Select one of the following:

* Don't Color Manage This Document to remove the profile from a tagged document. Select this option only if you are sure that you want the document to become untagged.

* Working *color mode: working space* to tag the document with the current working space profile. For more information about working spaces, see "About working spaces" on page 125.

* Profile to reassign a different profile to a tagged document. Choose the desired profile from the menu. Photoshop tags the document with the new profile without converting colors to the profile space. This may dramatically change the appearance of the colors as displayed on your monitor.

3 To preview the effects of the new profile assignment in the document, select Preview.

To convert colors in a document to another profile:

1 Choose Image > Mode > Convert to Profile.

2 Under Destination Space, choose the color profile to which you want to convert the document's colors. The document will be converted to and tagged with this new profile.

3 Under Conversion Options, specify a color management engine, a rendering intent, and black point and dither options. For more information on conversion options, see "Customizing advanced color management settings" on page 134.

4 To flatten all layers of the document onto a single layer upon conversion, select Flatten Image.

5 To preview the effects of the conversion in the document, select Preview. This preview becomes more accurate if you select Flatten Image.

Using the Photoshop Color Settings

A color management system does not guarantee predictable color unless it's properly set up. Your monitor can be calibrated, you can have profiles for all your devices, and still end up with colors that shift unpredictably. Photoshop simplifies the task of setting up a color-managed workflow by gathering most color management controls in one convenient location, the Color Settings dialog box.

Specifying color management settings

In the Color Settings dialog box, you can choose from a list of predefined color management settings or adjust the controls manually to create your own custom settings. You can even save customized settings to share them with other users and other Adobe applications that support color management.

To specify color management settings:

1 Do one of the following:

• In Windows, choose Edit > Color Settings.

• In Mac OS, choose Photoshop > Color Settings.

💡 To display helpful descriptions of the options that appear in the dialog box, position the pointer over a section heading or menu item. These descriptions appear in the lower area of the dialog box.

2 Do one of the following:

• To set up a predefined color management workflow, see "Using predefined color management settings" on page 122.

• To customize your own color management settings, see "Customizing color management settings" on page 124.

Using predefined color management settings

Photoshop offers a collection of predefined color management settings designed to produce consistent color for a common publishing workflow, such as preparation for offset or Web press output. In most cases, the predefined settings will provide sufficient color management for your needs. These settings can also serve as starting points for customizing your own workflow-specific settings.

To choose a predefined color management setting:

Choose one of the following options from the Settings menu in the Color Settings dialog box.

Color Management Off Does not turn the Photoshop color management system off (the color management system cannot be turned off entirely). Instead, this option tells the color management system to use passive color management techniques to emulate the behavior of applications that do not support color management. Although working space profiles are considered when converting colors between color spaces, Color Management Off does not tag documents with profiles. You can use this option for content that will be output on video or as on-screen presentations. Do not use this option if you work mostly with documents that are tagged with color profiles.

ColorSync Workflow (Mac OS only) Manages color using the ColorSync color management system with the profiles chosen in the ColorSync control panel. Use this option if you want to use color management with a mix of Adobe and non-Adobe applications. This color management configuration is not recognized by Windows systems or by versions of ColorSync earlier than 3.0.

Emulate Acrobat 4 Uses a configuration that emulates Adobe Acrobat 4.0 color handling behavior. This option is available only if Acrobat is installed on your computer.

Emulate Photoshop 4 Emulates the color workflow used by Adobe Photoshop 4.0 and earlier.

Europe General Purpose Defaults Uses general purpose color settings for consistent color handling across Adobe software products in Europe.

Europe Prepress Defaults Manages color for content that will be output under common press conditions in Europe.

Japan Color Prepress Uses settings that support the preparation of content for common press conditions in Japan.

Japan General Purpose Defaults Uses general purpose color settings for consistent color handling across Adobe software products in Japan.

Japan Prepress Defaults Manages color for content that will be output under common press conditions in Japan.

North American General Purpose Defaults Uses general purpose color settings for consistent color handling across Adobe software products in North America.

Photoshop 5 Default Spaces Prepares content using the default working spaces from Photoshop 5.

U.S. Prepress Defaults Manages color for content that will be output under common press conditions in the U.S.

Web Graphics Defaults Manages color for content that will be published on the World Wide Web.

When you choose a predefined configuration, settings are chosen for the working spaces and the color management policies. The Color Settings dialog box updates to display the specific color management settings associated with the configuration. For more information about work spaces and color management policies, see "About working spaces" on page 125 and "About color management policies" on page 132.

Customizing color management settings

Although the predefined settings should provide sufficient color management for many workflows, you may want to customize individual options in a configuration. For example, you might want to change the CMYK working space to a profile that matches the proofing system used by your desktop printer or your prepress service.

It's important to save your custom configurations so that you can reuse and share them with other users and Adobe applications that use the same color management workflows. The color management settings that you customize in the Color Settings dialog box are contained in an associated preferences file called Color Settings.

Note: *The default location of the Color Settings file varies by operating system. In Windows XP, it is Documents and Settings/username/Application Data/Adobe/ Photoshop/8.0/Adobe Photoshop CS Settings/Color Settings.csf. In Mac OS, it is Users/user profile/Library/Preferences/Adobe Photoshop CS Settings/Color Settings.csf.*

To customize color management settings:

1 Do one of the following:

• In Windows, choose Edit > Color Settings.

• In Mac OS, choose Photoshop > Color Settings.

2 To use a preset color management configuration as the starting point for your customization, choose that configuration from the Settings menu.

3 Specify the desired color settings (working spaces and policies). As you make adjustments, the Settings menu option changes to Custom by default.

For detailed customization instructions, see "About working spaces" on page 125 and "Specifying color management policies" on page 133.

4 (Optional) Select Advanced Mode for more options in the Color Settings dialog box.

5 If necessary, under Conversion Options, choose a CMM, a rendering intent, and whether color management converts the color values in an image using black point compensation and dither. For more information on these options, see "About the Color Management Module (CMM)" on page 135, "Handling colors with a rendering intent" on page 135, "Using black point compensation" on page 136, and "Using dither" on page 136.

6 If necessary, under Advanced Controls, specify how much to desaturate the colors on a monitor and what gamma to use for the RGB blend. For more information on these options, see "Desaturating monitor colors" on page 136 and "Blending RGB colors" on page 136.

7 Save your custom configuration so that it can be reused. (See "Saving and loading color management settings" on page 125.)

Note: *Saving your custom configuration is important to synchronize the color management settings in Photoshop with Adobe Illustrator, Adobe InDesign, and Adobe Acrobat. (See "Keeping color consistent between Photoshop and other Adobe applications" on page 144.)*

Saving and loading color management settings

When you create a custom color management configuration, you should name and save the configuration to ensure that it can be shared with other users and applications that support color management, such as Adobe Illustrator, Adobe InDesign, and Adobe Acrobat. You can also load previously saved color management configurations into the Color Settings dialog box.

To save a custom color management configuration:

1 In the Color Settings dialog box, click Save.

2 Name your color settings file, and click Save.

To ensure that the saved configuration appears in the Settings menu of the Color Settings dialog box, save the file in one of the following recommended locations:

• (Windows) Program Files/Common Files/Adobe/Color/Settings.

• (Mac OS) Users/*user profile*/Library/Application Support/Adobe/Color/Settings. To ensure that all color-managed Adobe applications can take advantage of saved color setting files, you may want to save them to the system application support folder. Library/Application Support/Adobe/Color/Settings.

3 Enter any comments that you want to associate with the configuration, and click OK.

The comments that you enter will appear in the Description area of the Color Settings dialog box when the pointer is positioned over the configuration in the Settings menu.

To load a color management configuration:

1 In the Color Settings dialog box, click Load.

2 Locate and select the desired color settings file, and click Load.

When you load a custom color settings file, it appears as the active choice in the Settings menu of the Color Settings dialog box. If you load a settings file that has been saved outside the recommended location, it temporarily replaces the Other option in the Settings menu until another settings file is loaded.

About working spaces

A working space is the default profile for an image while you're editing it in Photoshop. It defines the color space in which you are editing an image.

Lab Cannot be selected as a working space in the Color Settings dialog box. If you choose to edit a document in Lab mode, the document is converted to your monitor's color space prior to viewing and you will have limited editing capabilities. Because Lab encompasses the complete range of visible colors, for practical reasons it is better to work in color spaces (such as RGB and CMYK) that are smaller and more in line with the color spaces of devices that capture, display, or output images.

RGB working spaces Are based on the RGB color model. Some RGB working space options are device-dependent (such as a monitor-profile-based working space) and some are device-independent (such as Adobe RGB, Apple RGB, and sRGB). It's probably best to use a device-independent working space for most image editing.

CMYK working spaces Are device-dependent. While an RGB working space can be device-independent, CMYK working spaces are based on actual combinations of ink and paper. It's often best to use an RGB working space for editing your image in Photoshop and then use the appropriate CMYK profile to convert your RGB image to CMYK in preparation for printing. The data in the CMYK working space is the data that will be used to convert the image to CMYK. For more information on RGB and CMYK working spaces, see "Choosing an RGB working space" on page 126 and "Choosing a CMYK working space" on page 127.

Photoshop gives you the option of embedding the profile of your working space when you save an image. Embedding a profile is recommended because it tells Photoshop and other color-management-savvy applications the color meaning of the numeric values in the document.
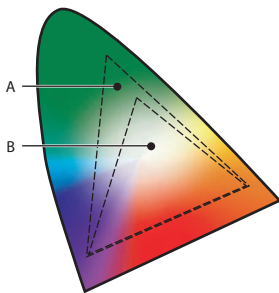
Adobe RGB and sRGB are smaller color spaces than Lab and provide a practical working space to edit and output images.
A. Adobe RGB (1998) **B.** sRGB

Choosing an RGB working space

Choosing an RGB working space is a balancing act. On one hand, you want a working space whose gamut is large enough to encompass the color spaces of all the devices in your workflow. But, on the other hand, it's possible to choose a working space that's too large. When you work in RGB, you have 255 levels of intensity for each color. The larger the RGB working space, the father apart each color value would be from its nearest neighbor. As a result, the jump from one level of color intensity to the next could be visually significant.

To choose an RGB working space:

1 Do one of the following:

• In Windows, choose Edit > Color Settings.

• In Mac OS, choose Photoshop > Color Settings.

2 Under Working Spaces, choose an option from the RGB menu:

Adobe RGB (1998) Is the largest recommended RGB working space and suited for print production with a broad range of colors.

Apple RGB Reflects the characteristics of the older 13-inch Mac OS monitor. This space is suitable for working with older desktop publishing files or for emulating Photoshop 4.0 and earlier.

ColorMatch RGB Matches the native color space of the old Radius Pressview monitors. This space is a smaller gamut alternative to Adobe RGB (1998) for print production work.

sRGB Is designed to reflect the characteristics of the average PC monitor. sRGB is suitable for RGB images destined for the Web, but not recommended for print production work.

Monitor RGB Sets the RGB working space to your current monitor color space. This setting is suitable when you're trying to match the RGB color in non-color-managed applications like Adobe GoLive.

ColorSync RGB (Mac OS) Matches the RGB color space specified in the Apple ColorSync control panel.

Note: When the Advanced Mode option is selected in the Color Settings dialog box, every RGB profile on your computer is displayed in the RGB working space menu. You can even choose Custom RGB to define your own RGB working space. This is recommended only for users who have a good understanding of color.

Choosing a CMYK working space

CMYK working spaces are generally based on actual ink and paper combinations. When the Advanced Mode option is not selected in the Color Settings dialog box, you can choose from seven ICC press profiles and Custom CMYK. Mac OS users can also choose the ColorSync profile that is specified in the Color Sync preferences. This setting matches the CMYK space specified in the Apple ColorSync control panel.

Specifying a CMYK working space

Choosing Custom CMYK lets you specify the ink colors, dot gain, separation type, and black generation of your output device. If you have saved Printing Inks and Separation Setup files from Photoshop 4.x or earlier, you can load them for use as a working space profile in the Color Settings dialog box. (See "Saving and loading custom working space profiles" on page 136.)

Custom CMYK working space profiles are mainly useful for providing color management compatibility with documents created in versions of Photoshop prior to 6.0. In general, the CMYK working space profiles included with the current version of Photoshop produce more accurate results.

To choose a CMYK working space:

1 Do one of the following:

- In Windows, choose Edit > Color Settings.
- In Mac OS, choose Photoshop > Color Settings.

2 Under Working Spaces, choose an option from the CMYK menu.

To create a custom CMYK profile:

1 Do one of the following:

- In Windows, choose Edit > Color Settings.
- In Mac OS, choose Photoshop > Color Settings.

2 Under Working Spaces, choose Custom CMYK from the CMYK menu.

3 For Name, enter a new name for the custom profile if desired. However, because the default name automatically reflects changes that you make to the Custom CMYK settings, it is recommended that you accept the default name.

4 For Ink Colors, choose an ink type. (See "Specifying ink colors" on page 128.)

5 For Dot Gain, specify a value. (See "Specifying dot gain" on page 129.)

6 Specify separation options. (See "Adjusting the separation type and black generation" on page 130.)

7 Click OK.

8 Save the custom profile. (See "Saving and loading custom working space profiles" on page 136.)

Specifying ink colors

The Ink Colors menu lets you choose from the following options:

- The preset ink options are designed to produce quality separations using standard inks and printing specifications. These ink standards differ slightly from one another. Similarly, the color and ink absorption qualities of the paper stock affect the final printed result. You can think of this information as telling Photoshop what printed cyan, magenta, yellow, and black look like given a certain set of inks and paper stock under your lighting conditions.

- The Custom option lets you customize the on-screen display of ink colors to match printed output by entering values obtained from a color proof. (See "Printing a hard proof" on page 143.) For example, you may want to use the Custom option to specify an ink set not listed as a preset option. When you change these settings, you change the profile that Photoshop uses to display the ink colors on-screen. See the following procedure for instructions on entering custom ink values.

- If you have loaded a CMYK profile or color settings file that has been saved outside the recommended location, the ink setting for that profile or settings file temporarily replaces the Other option in the Ink Colors menu.

Note: *In most cases, printing ink characteristics do not vary greatly from printer to printer within the same printer type. For example, one Tektronix Phaser II printer prints ink hues very similar to another one. But the amount of dot gain can vary significantly. Thus, for a different printer of the same type, you may have to change the dot gain setting in the CMYK Setup dialog box but not the printing ink colors.*

To enter custom ink color values:

1 In the Custom CMYK dialog box, for Ink Colors, choose Custom.

By default, the Ink Colors dialog box defines colors using the CIE coordinates of *Y* (lightness), *x*, and *y* values. The default ink sets are calibrated for viewing conditions of 5000 K (when viewed under D50 lighting), 2° field of view. CIE coordinates are an international color definition standard supported by PostScript Level 2 and higher.

Note: *Colors appear slightly different based on how much of the eye's field of view they cover. The CIE has defined two standard ways of measuring color coordinates, one based on colors filling 10° of the eye's field of view, and one based on colors filling 2° of the field of view. Photoshop uses the 2° field of view standard.*

2 If desired, select L*a*b Coordinates to enter the color box coordinates as Lab values rather than *Yxy* values. Use this option if your spectrophotometer has only Lab readouts.

3 Using your printed CMYK proof, take a reading of the color values using a spectrophotometer, and then enter those values in the appropriate text boxes.

Alternately, you can click the color box of the ink color you want to adjust and then adjust the color on-screen until it matches the patch on the color proof. Make sure that you are viewing the proof under the proper lighting conditions.

4 If desired, select Estimate Overprints to automatically estimate the overprint colors (MY, CY, CM, and CMY) using the CMYK and white values you entered. This is useful if you don't have a spectrophotometer.

Specifying dot gain

Dot gain or loss can occur when the specified printer's halftone dots change as the ink spreads and is absorbed by paper. As a general rule, you should not adjust the dot gain value until you have run a hard proof (which includes a calibration bar) and have measured the density values on the proof with a reflective densitometer. Adjust this value if your print shop has provided a different value for estimated dot gain.
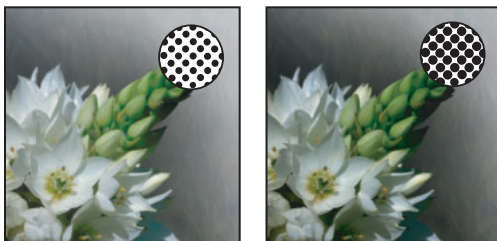
Proof (no dot gain), and printed image (with dot gain)

The Custom CMYK dialog box gives you the following ways to specify a printer's dot gain:

• You can define a single dot gain value at the 50% level. This means that all four inks gain the same amount at 50%.

• You can set up to 13 values along the grayscale range to create a customized dot gain curve for one or more CMYK plates. Use this method if your proof has a significant color cast in its neutral gray values.

To specify the dot gain at the standard 50% mark:

1 Print a hard proof with calibration bars included. (See "Setting output options" on page 616.)

2 Using a reflective densitometer, take a reading at the 50% mark of the printed calibration bar.

3 In the Custom CMYK dialog box, for Dot Gain, choose Standard. Then enter the total amount of dot gain measured by the densitometer. For example, if the densitometer reading is 54%, enter 4 in the text box to specify a dot gain of 4%.

Note: If you don't have a densitometer, adjust the Dot Gain value until the image on-screen looks like the proof, and then add that value to your printer's estimate of the expected dot gain between proof and final output.

To specify the dot gain using curves:

1 Print a hard proof with calibration bars included. (See "Setting output options" on page 616.)

2 Using a reflective densitometer, take a reading at one or more marks of the printed calibration bar.

3 In the Custom CMYK dialog box, for Dot Gain, choose Curves.

4 In the lower right of the Dot Gain Curves dialog box, select the ink plate for which you want to set dot gain curves. To set the same curves for all the plates, select All Same.

5 Do one of the following:

• Enter the values of your densitometer readings in the text boxes.

For example, if you have specified a 30% dot, and the densitometer reading is 36%, you have a 6% dot gain in your midtones. To compensate for this gain, enter 36% in the 30% text box.

• Click to add an adjustment point in the dot gain curve, and drag the point to change its value. The value then appears in the appropriate text box.

Adjusting the separation type and black generation

To make color separations, the three additive colors (red, green, and blue) are translated into their subtractive counterparts (cyan, magenta, and yellow). In theory, equal parts of cyan, magenta, and yellow combine to subtract all light reflected from the paper and create black. Due to impurities present in all printing inks, however, a mix of these colors instead yields a muddy brown. To compensate for this deficiency in the color separation process, printers remove some cyan, magenta, and yellow in areas where the three colors exist in equal amounts, and they add black ink.

A given color can be translated from RGB mode to CMYK mode in an endless number of ways. But prepress operators typically use one of the following ways to generate black in print:

• In undercolor removal (UCR), black ink is used to replace cyan, magenta, and yellow ink in neutral areas only (that is, areas with equal amounts of cyan, magenta, and yellow). This results in less ink and greater depth in shadows. Because it uses less ink, UCR is used for newsprint and uncoated stock, which generally have greater dot gain than coated stock.

• In gray component replacement (GCR), black ink is used to replace portions of cyan, magenta, and yellow ink in colored areas as well as in neutral areas. GCR separations tend to reproduce dark, saturated colors somewhat better than UCR separations do and maintain gray balance better on press.

Choose the type of separation based on your paper stock and the requirements of your print shop.

To adjust the separation type and black generation:

1 In the Custom CMYK dialog box, select a separation type.

The Separation Options area displays a graph based on current settings showing how neutral colors in the image will separate. In the graph, sometimes called a *gray ramp*, neutral colors have equal parts of cyan, magenta, and yellow. The horizontal axis represents the neutral color value, from 0% (white) to 100% (black). The vertical axis represents the amount of each ink that will be generated for the given value. In most cases, the cyan curve extends beyond the magenta and yellow curves, because a small extra amount of cyan is required to produce a true neutral.

2 If you selected GCR as the separation type, choose an option for Black Generation:

- None generates the color separation using no black plate.

- The Light and Heavy settings decrease and increase the effect of the Medium setting (the default). In most cases, Medium produces the best results.

- Maximum maps the gray value directly to the black plate. This option is useful for images with a large amount of solid black against a light background, such as screen shots from a computer.

- Custom lets you adjust the black generation curve manually. Before choosing Custom, first choose an option (Light, Medium, Heavy, or Maximum) that is closest to the type of black generation you want. This gives you a black generation curve to use as a starting point. Then choose Custom, position the pointer on the curve, and drag to adjust the black curve. The curves for cyan, magenta, and yellow are adjusted automatically relative to the new black curve and the total ink densities.
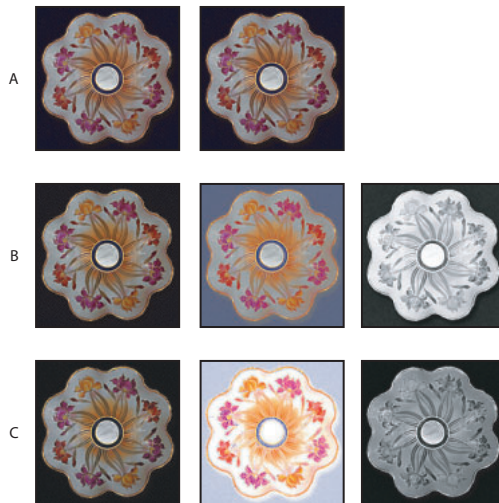
Black generation examples
A. No black generation (Composite image, CMY, K) **B.** Medium black generation (Composite image, CMY, K) **C.** Maximum black generation (Composite image, CMY, K)

3 If needed, specify values for Black Ink Limit and Total Ink Limit (the maximum ink density your press can support). Check with your print shop to see if you should adjust these values.

In the Gray Ramp graph, these limits determine the cutoff points for the CMYK curves.

4 If you selected GCR as the separation type, specify an amount for undercolor addition (UCA) to increase the amount of CMY added to shadow areas. Check with your print shop for the preferred value. If you are unsure of this value, leave it at 0%.

UCA compensates for the loss of ink density in neutral shadow areas. This additional ink produces rich, dark shadows in areas that might appear flat if printed with only black ink. UCA can also prevent posterization in subtle detail in the shadows.

To save a Custom CMYK setting:

1　Choose Save CMYK from the CMYK working space menu in the Color Settings dialog box.

2　In the Save dialog box, give your setting a name and click Save. The profile will not be accessible by other Adobe applications that use color management. For information on color settings in other Adobe applications, see "Keeping color consistent between Photoshop and other Adobe applications" on page 144.

About color management policies

Color management policies determine how to handle color data that does not match your current color working space. Policies provide guidelines on what to do when you open a document or import color data into an active document. For information about working spaces, see "About working spaces" on page 125.

Using color management policies

When you specify a predefined color management setting, Photoshop sets up a color management workflow that will be used as the standard for all documents and color data that you open or import. For a newly created document, the color workflow usually operates seamlessly: unless specified otherwise, the document uses the working space profile associated with its color mode for creating and editing colors.

However, it is common to encounter the following exceptions to your color-managed workflow:

- You might open a document or import color data (for example, by copying and pasting or dragging and dropping) from a document that is not tagged with a profile. This is often the case when you open a document created in an application that either does not support color management or has color management turned off.

- You might open a document or import color data from a document that is tagged with a profile different from the current working space. This may be the case when you open a document that has been created using different color management settings, or a document that has been scanned and tagged with a scanner profile.

In either case, Photoshop must decide how to handle the color data in the document. A *color management policy* looks for the color profile associated with an opened document or imported color data, and compares the profile (or lack of profile) with the current working space to make default color management decisions. If the profile is missing or does not match the working space, Photoshop displays a message that indicates the default action for the policy (if the alert option is selected in the color settings). In many cases you will also be provided with the opportunity to choose another action. For detailed information on the color management decisions associated with different policies, see "Specifying color management policies" on page 133.

Working with policy warnings and messages

The predefined color management workflows are set to display warning or option messages when a default color management policy is about to be used. Although you can disable the repeated display of some warnings and messages by selecting the Don't Show Again option, it is highly recommended that you continue to display all policy messages, to ensure the appropriate color management of documents on a case-by-case basis. (See "Resetting all warning dialogs" on page 56.) You should turn off message displays only if you are confident that you understand the default policy decision and are willing to accept it for all documents that you open. You cannot undo the results of a default policy decision once a document has been saved.

Specifying color management policies

Each predefined color management configuration sets up a color management policy for the RGB, CMYK, and Grayscale color modes and displays warning messages to let you override the default policy behavior on a case-by-case basis. If desired, you can change the default policy behavior to reflect a color management workflow that you use more often. For more information on policies, see "About color management policies" on page 132.

To customize color management policies:

1 In the Color Settings dialog box, under Color Management Policies, choose one of the following to set the default color management policy for each color mode:

- Off if you do not want to color-manage new, imported, or opened color data.

- Preserve Embedded Profiles if you anticipate working with a mix of color-managed and non-color-managed documents, or with documents that use different profiles within the same color mode.

- Convert to Working Space if you want to force all documents to use the current working space.

For detailed descriptions of the default behaviors associated with each policy option, see the table following this procedure.

2 For Profile Mismatches, select either, both, or neither of the following:

- Ask When Opening to display a message whenever you open a document tagged with a profile other than the current working space. You will be given the option to override the policy's default behavior.

- Ask When Pasting to display a message whenever color profile mismatches occur as colors are imported into a document (via pasting, drag-and-drop, placing, and so on). You will be given the option to override the policy's default behavior.

The availability of options for Profile Mismatches depends on which policies have been specified.

3 For Missing Profiles, select Ask When Opening to display a message whenever you open an untagged document. You will be given the option to override the policy's default behavior.

The availability of options for Missing Profiles depends on which policies have been specified.

It is strongly recommended that you keep the Ask When Opening and Ask When Pasting options selected.

Policy option	Default color management behavior
Off	• New documents and existing untagged documents remain untagged. • Existing documents tagged with a profile other than the current working space open a warning alert before becoming untagged. • Existing documents tagged with the current working space profile remain tagged. • For color data imported into a document using the same color mode, color numbers are preserved. • For all other import cases, colors are converted to the document's color space.
Preserve Embedded Profiles	• New documents are tagged with the current working space profile. • Existing documents tagged with a profile other than the current working space remain tagged with the original embedded profile. • Existing untagged documents use the current working space for editing but remain untagged. • For color data imported within the same color mode between either a non-color-managed source or destination, or from a CMYK document into a CMYK document, color numbers are preserved. • For all other import cases, colors are converted to the document's color space.
Convert to Working Space	• New documents are tagged with the current working space profile. • Existing documents tagged with a profile other than the current working space are converted to and tagged with the working space profile. • Existing untagged documents use the current working space for editing but remain untagged. • For color data imported within the same color mode between either a non-color-managed source or destination, color numbers are preserved. • For all other import cases, colors are converted to the document's color space.

Customizing advanced color management settings

When the Advanced mode is selected, the Photoshop Color Setting dialog box lets you specify conversion options to handle the colors in a document as it moves from one color space to another. It also has advanced controls for desaturating monitor colors to visualize color spaces with gamuts greater than that of the monitor and for controlling the blending behavior of RGB colors. These options are not available if the Advanced Mode is turned off.

About the Color Management Module (CMM)

The Color Management Module (CMM), sometimes called the color engine, is the part of the color management system that maps the gamut (range of colors) of one color space to the gamut of another.

When Advanced Mode is selected in the Color Settings dialog box, Photoshop lets you choose a CMM from the Engine menu in the Conversion Options area of the dialog box. For most users, the default Adobe (ACE) engine will fulfill all conversion needs.

Typical engine choices include:

Adobe (ACE) Uses the Adobe color management system and color engine. This is the default CMM in Photoshop.

Microsoft ICM (Windows) Uses the Microsoft ICM color management system and its default color matching method.

Apple ColorSync (Mac OS) Uses the Apple ColorSync color management system and its default color matching method.

Apple CMM (Mac OS) Uses the Apple ColorSync color management system and the rendering intent chosen in the Color Setting dialog box.

Other CMMs can be loaded on your computer and chosen in the Color Settings dialog box. These CMMS are generally specialized and are of use only to knowledgeable users.

Handling colors with a rendering intent

A rendering intent determines how a color management system handles color conversion from one color space to another. The rendering intent you choose depends on whether colors are critical in an image and on your preference of what the overall color appearance of an image should be.

When Advanced Mode is selected in the Color Settings dialog box, Photoshop lets you choose a rendering intent in the Conversion Options area of the dialog box.

Perceptual Aims to preserve the visual relationship between colors so it's perceived as natural to the human eye, even though the color values themselves may change. This intent is suitable for photographic images with lots of out-of-gamut colors.

Saturation Tries to produce vivid colors in an image at the expense of color accuracy. This rendering intent is suitable for business graphics like graphs or charts, where bright saturated colors are more important than the exact relationship between colors (such as in a photographic image).

Relative Colorimetric Compares the extreme highlight of the source color space to that of the destination color space and shifts all colors accordingly. Out-of-gamut colors are shifted to the closest reproducible color in the destination color space. Relative colorimetric preserves more of the original colors in an image than Perceptual.

Absolute Colorimetric Leaves colors that fall inside the destination gamut unchanged. Out of gamut colors are clipped. No scaling of colors to destination white point is performed. This intent aims to maintain color accuracy at the expense of preserving relationships between colors and is suitable for proofing to simulate the output of a particular device.

Using black point compensation

When Advanced Mode is selected in the Color Settings dialog box, the Use Black Point Compensation option is available to control whether to adjust for differences in black points when converting colors between color spaces. When this option is selected, the full dynamic range of the source space is mapped into the full dynamic range of the destination space. When deselected, the dynamic range of the source space is simulated in the destination space; although this mode can result in blocked or gray shadows, it can be useful when the black point of the source space is darker than that of the destination space.

The Use Black Point Compensation option is selected for all predefined configurations in the Settings menu of the Color Settings dialog box. It is highly recommended that you keep this option selected.

Using dither

The Use Dither (8-bit/channel images) option controls whether to dither colors when converting 8-bit-per-channel images between color spaces. This option is available only when the Color Settings dialog box is in Advanced Mode. When the Use Dither option is selected, Photoshop mixes colors in the destination color space to simulate a missing color that existed in the source space. Although dithering helps to reduce the blocky or banded appearance of an image, it may also result in larger file sizes when images are compressed for Web use.

Desaturating monitor colors

The Desaturate Monitor Colors By option determines whether to desaturate colors by the specified amount when displayed on the monitor. When selected, this option can aid in visualizing the full range of color spaces with gamuts larger than that of the monitor. However, this causes a mismatch between the monitor display and the output. When the option is deselected, distinct colors in the image may display as a single color. The Desaturate Monitor Colors By option is available only when Advanced Mode is selected in the Color Settings dialog box.

Blending RGB colors

The Blend RGB Colors Using Gamma option controls how RGB colors blend together to produce composite data (for example, when you blend or paint layers using Normal mode). When the option is selected, RGB colors are blended in the color space corresponding to the specified gamma. A gamma of 1.00 is considered "colorimetrically correct" and should result in the fewest edge artifacts. When the option is deselected, RGB colors are blended directly in the document's color space. The Blend RGB Colors Using Gamma option is available only when Advanced Mode is selected in the Color Settings dialog box.

Saving and loading custom working space profiles

If none of the working space options in the Color Settings dialog box accurately describe the color space of your particular output or display device, you can create a custom RGB, CMYK, Grayscale, or Spot working space profile. Saving your custom profile ensures that you can reuse it and share it with other users and other Adobe applications that use the Color Settings dialog box.

You can also load a profile that has not been saved in the recommended profile location, so that the profile appears in the Color Settings dialog box.

To save a custom working space profiles:

1 Do one of the following:

• In Windows, choose Edit > Color Settings, and select Advanced Mode.

• In Mac OS, choose Photoshop > Color Settings, and select Advanced Mode.

2 Create a custom working space profile by doing one of the following in the Color Settings dialog box:

• Choose Custom RGB from the RGB menu. In the Custom RGB dialog box, give the custom profile a name, and then specify the gamma, white point, and primaries options. Click OK.

• Choose Custom CMYK from the CMYK menu. In the Custom CMYK dialog box, give the custom profile a name, and then specify the ink options and separation options. Click OK.

• Choose Custom Dot Gain from either the Gray menu or the Spot menu. In the Custom Dot Gain dialog box, give the custom profile a name, and then specify the dot gain curve.

• Choose Custom Gamma from the Gray menu. In the Custom Gamma dialog box, give the custom profile a name and then enter a value for the gamma.

3 Depending on the custom profile you created, in the Working Spaces area of the Color Settings dialog box, choose one of the following:

• Save RGB from the RGB menu.

• Save CMYK from the CMYK menu.

• Save Gray from the Gray menu.

• Save Spot from the Spot menu.

4 Name and save the profile. Profiles can be saved to the system profile location (depending on the operating system) or to (Windows) Program Files/CommonFiles/Adobe/Color/Profiles or (Mac OS) Library/Application Support/Adobe/Color/Profiles. On Mac OS, the profiles can also be saved to the user-specific Application Support folder as well.

To access a saved profile, you may need to load it or restart Photoshop. If you do not save a custom profile, it will be stored only in the custom color settings file of which it is a part and will not be available as a profile option in the Color Settings dialog box.

To load a custom profile:

1 Do one of the following:

• In Windows, choose Edit > Color Settings, and select Advanced Mode.

• In Mac OS, choose Photoshop > Color Settings, and select Advanced Mode.

2 In the Working Spaces area of the Color Settings dialog box, choose:

• Load RGB from the RGB menu.

• Load CMYK from the CMYK menu.

- Load Gray from the Gray menu.

- Load Spot from the Spot menu.

3 Locate and select the desired profile, and click Open.

If you load a profile that has been saved outside the recommended location, it temporarily replaces the Other option in the Working Spaces menu until another profile is loaded.

Creating custom grayscale and spot-color profiles

You can create a custom grayscale or spot-color profile based on the specific dot-gain or gamma characteristics of your output device. You can also load a CMYK profile into the Gray working space menu to generate a custom grayscale profile based on the CMYK space.

To create a grayscale or spot-color profile based on a custom dot gain:

1 Print a hard proof with calibration bars included. (See "Setting output options" on page 616.)

2 Using a reflective densitometer, take a reading at one or more marks of the printed calibration bar.

3 Do one of the following:

- In Windows, choose Edit > Color Settings, and select Advanced Mode.

- In Mac OS, choose Photoshop > Color Settings, and select Advanced Mode.

4 Under Working Spaces, for Gray or Spot, choose Custom Dot Gain.

5 For Name, enter the name for the custom profile.

6 Do one of the following:

- Using your densitometer readings, calculate the required adjustments, and enter the percentage values in the text boxes.

For example, if you have specified a 30% dot, and the densitometer reading is 36%, you have a 6% dot gain in your midtones. To compensate for this gain, enter 36% in the 30% text box.

- Click to add an adjustment point in the dot gain curve, and drag the point to change its value. The value then appears in the appropriate text box.

- Click OK.

7 Save the custom profile. (See "Saving and loading custom working space profiles" on page 136.)

To create a grayscale profile based on a custom gamma:

1 Do one of the following:

- In Windows, choose Edit > Color Settings, and select Advanced Mode.

- In Mac OS, choose Photoshop > Color Settings, and select Advanced Mode.

2 Select Advanced.

3 Under Working Spaces, for Gray, choose Custom Gamma.

4 For Name, enter the name for the custom profile.

5 Specify the desired gamma value, and click OK.

6 Save the custom profile. (See "Saving and loading custom working space profiles" on page 136.)

Creating a viewing environment for color management

Your work environment influences how you see color on your monitor and on printed output. For best results, control the colors and light in your work environment by doing the following:

- View your documents in an environment that provides a consistent light level and color temperature. For example, the color characteristics of sunlight change throughout the day and alter the way colors appear on your screen, so keep shades closed or work in a windowless room. To eliminate the blue-green cast from fluorescent lighting, consider installing D50 (5000 degree Kelvin) lighting. Ideally, view printed documents using a D50 lightbox or using the ANSI PH2.30 viewing standard for graphic arts.

- View your document in a room with neutral-colored walls and ceiling. A room's color can affect the perception of both monitor color and printed color. The best color for a viewing room is polychromatic gray. Also, the color of your clothing reflecting off the glass of your monitor may affect the appearance of colors on-screen.

- Match the light intensity in the room or variable lightbox to the light intensity of your monitor. View continuous-tone art, printed output, and images on-screen under the same intensity of light.

- Remove colorful background and user-interface patterns on your monitor desktop. Busy or bright patterns surrounding a document interfere with accurate color perception. Set your desktop to display neutral grays only.

- View document proofs in the real-world conditions under which your audience will see the final piece. For example, you might want to see how a housewares catalog looks under the incandescent light bulbs used in homes, or view an office furniture catalog under the fluorescent lighting used in offices. However, always make final color judgments under the lighting conditions specified by the legal requirements for contract proofs in your country.

Compensating for dot gain in film using transfer functions

When using CMYK color profiles, you cannot customize dot gain settings. However, you may be able to compensate for dot gain from a miscalibrated imagesetter by using transfer functions.

Transfer functions enable you to compensate for dot gain between the image and film. For example, the Transfer function makes 50% dots in the image print as 50% dots on film. Similar to dot gain curves, the transfer functions let you specify up to 13 values along the grayscale to create a customized transfer function. Unlike dot gain curves, transfer functions apply only to printing—they don't affect the image color data.

Use the following guidelines to determine the best method of accounting for dot gain:

- If you are using a custom CMYK profile, use the dot gain settings in the custom CMYK dialog box to adjust dot gain so that it matches the printed results.

- If you are using an ICC profile and the dot gain values do not match the printed results, try to obtain a new profile with values that do match.

- Use transfer functions only if neither of the previous methods is an option.

To adjust transfer function values:

1 Use a transmissive densitometer to record the density values at the appropriate steps in your image on film.

2 Choose File > Print with Preview.

3 Select Show More Options, and choose Output from the pop-up menu.

4 Click the Transfer button.

5 Calculate the required adjustment, and enter the values (as percentages) in the Transfer Functions dialog box.

For example, if you specified a 50% dot, and your imagesetter prints it at 58%, an 8% dot gain occurs in the midtones. To compensate for this gain, enter 42% (50% – 8%) in the 50% text box of the Transfer Functions dialog box. The imagesetter then prints the 50% dot you want.

When entering transfer function values, keep in mind the density range of your image-setter. On a given imagesetter, a very small highlight dot may be too small to hold ink. Beyond a certain density level, the shadow dots may fill as solid black, removing all detail in shadow areas.

Note: *To preserve transfer functions in an exported EPS file, select Override Printer's Default Functions in the Transfer Functions dialog box and then export the file with Include Transfer Functions selected in the EPS Format dialog box. (See "Saving files in Photoshop EPS format (Photoshop)" on page 570.)*

To save the current transfer function settings as the default:

Hold down Alt (Windows) or Option (Mac OS) to change the Save button to —> Default, and click the button.

To load the default transfer function settings:

Hold down Alt (Windows) or Option (Mac OS) to change the Load button to <— Default, and click the button.

Soft-proofing colors

In a traditional publishing workflow, a hard proof of your document (sometimes called a *proof print* or *match print*) is produced so you can preview how the document's colors will look when reproduced on a specific output device. In a color-managed workflow, color profiles tell the color management system how to display a preview (*soft proof*) of your document directly on the monitor. This provides an on-screen preview of the document's colors as reproduced on a specified device. You can print the soft proof using your desktop printer to produce a hard proof. (See "Printing a hard proof" on page 143.)

Keep in mind that the reliability of the soft proof depends upon the quality of your monitor, the profiles of your monitor and output devices, and the ambient lighting conditions of your work environment.

Previewing colors using a soft proof

If your monitor is properly calibrated and you have accurate profiles of your output devices, you can use Photoshop's soft proof capabilities to preview how your image will look when printed on your desktop printer, sent to a printing press, viewed on a particular computer operating system, made into color separations, and produced on a specific output device.

Photoshop also lets you open a document in two windows so you can compare the colors in the original image and the colors in the soft proof. (See "Comparing the soft proof to the original image" on page 143.)
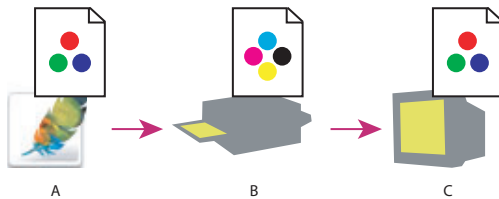
Using a soft proof to preview the final output of a document on your monitor
A. The document in the working space. **B.** The document's color values are translated to the color space of the chosen proof profile (usually the output device's profile). **C.** The monitor displays the proof profile's interpretation of the document's color values.

To display a soft proof:

1 Choose View > Proof Setup, and choose the profile of the color space that you want to simulate:

• Custom creates a soft proof of colors using the color profile of a specific output device or of specific papers used in a desktop printer. Follow the instructions after this procedure to set up the custom proof. This option is recommended for the most accurate preview of your final printed piece.

• Working CMYK creates a soft proof of colors using the current CMYK working space as defined in the Color Settings dialog box.

• Working Cyan Plate, Working Magenta Plate, Working Yellow Plate, Working Black Plate, or Working CMY Plates creates a soft proof of specific CMYK ink colors using the current CMYK working space.

• Macintosh RGB or Windows RGB creates a soft proof of colors in an image using either a standard Mac OS or Windows monitor as the proof profile space to simulate. Neither option is available for Lab or CMYK documents.

• Monitor RGB creates a soft proof of colors in an RGB document using your current monitor color space as the proof profile space. This option is unavailable for Lab and CMYK documents.

• Simulate Paper White previews the specific shade of white exhibited by the print medium defined by a document's profile. This option is not available for all profiles and is available only for soft-proofing, not printing.

• Simulate Ink Black previews the actual dynamic range defined by a document's profile. This option is not available for all profiles and is available only for soft-proofing, not printing.

2 Choose View > Proof Colors to turn the soft-proof display on and off. When soft proofing is on, a check mark appears next to the Proof Colors command.

When soft proofing is on, the name of the current proof profile appears next to the bit depth in the document's title bar.

Note: The bit depth always appears in the title bar next to the color mode.

To create a custom proof setup:

1 Choose View > Proof Setup > Custom.

💡 If you want the custom proof setup to be the default proof setup for documents, close all document windows before choosing the View > Proof Setup > Custom command.

2 Select Preview to display a live preview of the proof settings in the document while the Proof Setup dialog box is open.

3 To use a preset proof setup as a starting point, choose it from the Setup menu. If the desired setup does not appear in the menu, click Load to locate and load the setup.

4 For Profile, choose the color profile for the output device for which you want to create the proof. The usefulness of the chosen profile depends on how accurately it describes the device's behavior. Often, custom profiles for specific paper and printer combinations create the most accurate soft proof.

5 If the proof profile you chose uses the same color mode as the document, do one of the following:

• Select Preserve Color Numbers to preview how the image would look when sending numeric values in the file to an output device with no color conversion to the proof profile space. This option could be useful if you have a CMYK file that was prepared for a specific printing process and you want to see how it would look when printed directly to a different output device such as your inkjet printer or a different press. The results would help you decide whether the image needs to be converted to a different color space, edited, or left as is.

• Deselect Preserve Color Numbers to simulate how the document will appear if colors are converted from the document space to their nearest equivalents in the proof profile space in an effort to preserve the colors' visual appearances. Then specify a rendering intent for the conversion. (See "Handling colors with a rendering intent" on page 135.)

6 If needed, select any of the following:

• Simulate Paper White to preview the dingy white of real paper. Selecting this option automatically selects the Simulate Ink Black option.

• Simulate Ink Black to preview the dark gray you really get instead of a solid black on many printers.

The availability of these options depends on the proof profile chosen. Not all profiles support both options.

7 To save your custom proof setup as a preset proof setup, click Save. To ensure that the new preset appears in the View > Proof Setup menu, save the preset in the Program Files/Common Files/Adobe/Color/Proofing folder (Windows), or Users/*user profile*/Library/Application Support/Adobe/Color/Proofing folder (Mac OS).

Comparing the soft proof to the original image

Photoshop lets you open an document in two windows simultaneously. The document can be viewed using the profiles of two different working spaces or color modes. This is useful for comparing the colors in your original image with the colors in the soft-proof version of your image.
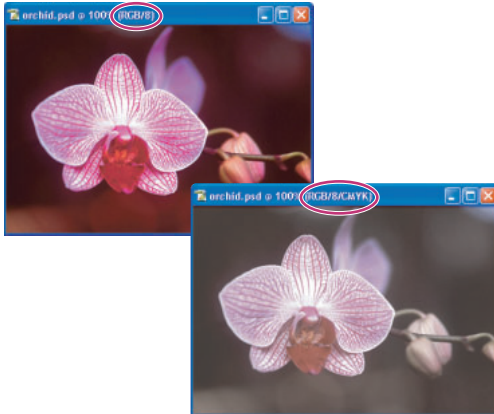
In Photoshop, you can compare the colors in a soft proof with the original image by opening the image in two windows, each showing the image in a different working space.

To view an image and a soft proof of the same image simultaneously:

1 Open a document in Photoshop.

2 Choose Window > Arrange > New Window for *name of document*.

3 With one of the document windows active, do one of the following:

• Choose View > Proof Setup and choose the profile you want to preview.

• Choose View > Proof Colors. The document window will display the image applying the profile previously chosen in the Proof Setup.

Printing a hard proof

A hard proof (sometimes called a *proof print* or *match print*) is a printed simulation of what your final output on a printing press will look like. A hard proof is produced on an output device that's less expensive than a printing press. In recent years some inkjet printers have the resolution necessary to produce inexpensive prints that can be used as hard proofs.

To print a hard proof:

1 Open the document in Photoshop.

2 Choose View > Proof Setup > Custom and choose the profile of your output device in the Profile menu. Choose a Rendering Intent from the Intent menu. Click Save to save the settings if you're going to be doing more proofs on the specific output device.

3 Click OK to close the Proof Setup dialog box.

4 Choose File > Print with Preview.

5 In the Print with Preview dialog box, make sure Show More Options is selected and Color Management is chosen.

6 In the Source Space area, select Proof. The Proof Setup should be the profile you specified.

7 In the Print Space area, do one of the following:

• Choose Printer Color Management from the Profile menu if you're printing with the printer driver's choices of factory profiles. This is useful when you don't have custom profiles for the printer, and you want the printer driver to pick the best profile according to the paper type, resolution, and so forth. After clicking the Print button, the Print dialog box (for setting printer options) opens. On Windows, click the Properties button to access the printer driver options and set the color management options. On Mac OS, use the pop-up menu to access the printer driver options and set the color management options.

• If you're printing with a custom profile, choose the custom profile from the Profile menu. Then click the Print button. The Print dialog box (for setting printer options) opens. On Windows, click the Properties button and set the printer driver options so color management is turned off (the options could be similar to No Color Management, Color Adjustments Off, or Color Management Off). On Mac OS, use the pop-up menu to access the printer driver options for color management and turn color management off.

Keeping color consistent between Photoshop and other Adobe applications

It's necessary to specify the same color management settings for the workspaces and conversion options to keep color consistent when moving documents between Photoshop and other Adobe applications that support color management. The Color Settings dialog box represents the common color management controls shared by Photoshop, Adobe Illustrator, and Adobe InDesign. In Adobe Acrobat, the color management controls are found in the Preferences. Synchronizing the color settings helps to ensure that color is reproduced consistently between Adobe applications that support color management. To share custom color settings between applications, be sure to save your settings (in a .csf file). You can load the settings file in the desired application instead of copying all the settings manually. (See "Saving and loading color management settings" on page 125.)

Note: If you modify and save over the current Color Settings.csf file in any application other than Photoshop, you may be prompted to synchronize the common color settings upon starting Photoshop or upon reopening the Color Settings dialog box in Photoshop.

You can go through the following procedure to re-synchronize the color settings between Photoshop and other Adobe applications.
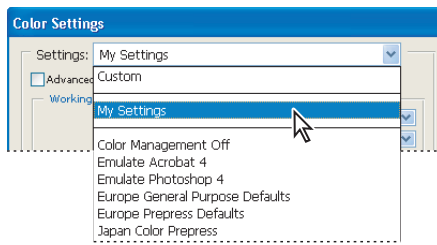
Saved settings in Photoshop will appear in the Color Settings menu in Illustrator, InDesign and Acrobat 6.

To synchronize the color settings between Photoshop and other Adobe applications:

1 Do one of the following:

• (Windows) Choose Edit > Color Settings.

• (Mac OS) Choose Photoshop > Color Settings.

2 In the Color Settings dialog box, choose a preset setting from the Settings menu or specify the settings for the Workspaces, Color Management Policies, and Conversion Options. If necessary, specify the Advanced Controls. For more information, see "Using the Photoshop Color Settings" on page 122.

3 (Optional) If you customized the color settings, click the Save button, give your settings a name, and click the Save button in the Save dialog box. Saving your settings in a .csf file lets you conveniently share the settings between color-managed Adobe applications.

4 Click OK in the Color Settings dialog box.

5 To specify the same color settings in the other Adobe applications, do one of the following:

• In Adobe Illustrator and Adobe InDesign, choose Edit > Color Settings.

• In Adobe Acrobat, choose Edit > Preferences (Windows) or Acrobat > Preferences (Mac OS).

6 (Acrobat and InDesign only) Do one of the following:

• In Acrobat, click Color Management in the left pane of the Preferences dialog box.

• In InDesign, select the Enable Color Management option in the Color Settings dialog box.

7 Use the Settings menu to choose the color settings from Photoshop.

8 Click OK.

Producing consistent color with a desktop printer

Using a color-managed workflow, you can control the appearance of colors in your document so they remain the same or similar when the document is printed on a desktop printer.
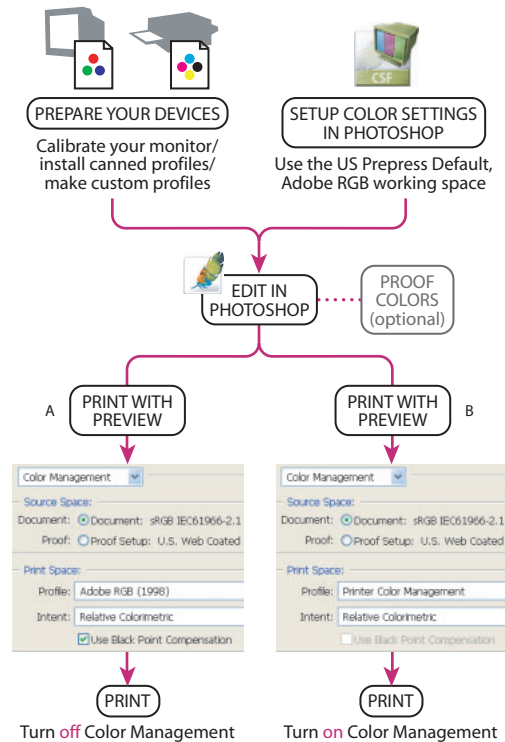
Desktop printer workflow
A. Photoshop handling the color management; usually a custom profile is chosen from the Profile menu **B.** Printer driver handling the color management

To color manage your document for output on a desktop printer:

Set up your devices for color management Calibrate your monitor and create a profile for it. Use Adobe Gamma (Windows), Monitor Calibrator (Mac OS) or, for more precise calibration, use third-party software and hardware. If profiles came with your printer, make sure they're installed on your computer. For important color work, it's highly recommended that you create custom profiles for each type of paper that you use with the printer.

Set up the Photoshop color management system Choose Edit > Color Settings (Windows) or Photoshop > Color Settings (Mac OS) to specify the color management settings. You can either choose a preset from the Settings menu in the Color Settings dialog box or customize the settings. At the very least, you should choose one of the Prepress Default settings, which specifies Adobe RGB (1998) as the RGB working space. Adobe RGB (1998) is a large enough color space to encompass the colors used in printing. In general, it's not advised to use sRGB as the working space, since it's smaller and may not contain important colors that can be printed.

Edit your image in Photoshop Depending on the color management policy you choose, you will be editing the image in either the current RGB working space or in the working space profile embedded in the document. The choice of whether to convert a document to the RGB working space or preserve its embedded profile is a personal decision. For instance, if you feel that Adobe RGB is a suitable working space for all images that you print, you might consider choosing Adobe RGB as your RGB working space, and then choose the Convert to Working Space policy and always working in Adobe RGB.

(Optional) Soft proof your image If you want to see a simulation of your final printed image, use the Proof Setup command and choose the printer's profile. Your monitor will display the image in the color space of your desktop printer. For the most accurate soft proof, choose a profile for the specific paper you're printing on.

Use Print with Preview Choose File > Print with Preview. In the Print dialog box:

- Select Show More Options and choose Color Management from the pop-up menu.
- In the Source Space area, Choose Document (unless you're printing a hard copy of the soft proof).
- In the Print Space area, choose the profile of your printer or your custom profile of a specific printer/paper combination. Photoshop will handle the color management during printing. Choose Printer Color Management if your printer driver is handling the color management during printing.
- Also in the Print Space area, choose a rendering intent. Generally, Relative Colorimetric or Perceptual are the most common intents used for photographic images because they preserve the overall appearance of a document's colors when printed.

Set printer options Click the Print button in the Print dialog box (for the Print with Preview command) to open a second Print dialog box (for setting printer options). The options available in the printer options dialog box depend on the printer drivers installed on your computer. On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. Set the print options for the quality you want. If Photoshop is handling the color adjustment or color management options during printing, turn off all printer driver color adjustment options. If not, specify the color management settings to let your printer driver handle the color management during printing. It's important not to color manage in both Photoshop and the printer driver simultaneously during printing. This results in unpredictable color.

Producing consistent color when sending images to press

Using a color-managed workflow, you can control the appearance of colors in your document so they remain the same or similar when the document is sent out to be printed on a printing press.

To color manage your document for output on a printing press:

Set up your devices for color management Calibrate your monitor and create a profile for it. Use Adobe Gamma (Windows), Monitor Calibrator (Mac OS) or, for more precise calibration, use third-party software and hardware. If profiles came with your printer, make sure they're installed on your computer. For important color work, it's highly recommended that you create custom profiles for each type of paper that you use with the printer.

Set up the Photoshop color management system   Choose Edit > Color Settings (Windows) or Photoshop > Color Settings (Mac OS) to specify the color management settings. You can either choose a preset from the Settings menu in the Color Settings dialog box or customize the settings. At the very least, you should choose one of the Prepress Default settings, which specifies Adobe RGB (1998) as the RGB working space. Adobe RGB (1998) is a large enough color space to encompass the colors used in printing. In general, it's not advised to use sRGB as the working space since it's smaller and may not contain important colors that can be printed.

Synchronize the color settings between Photoshop and Illustrator or InDesign   If you plan to place your Photoshop image in an Illustrator or InDesign document, make sure the color settings are synchronized using the Color Settings dialog box in each application. For more information on keeping colors consistent between Photoshop and other Adobe applications, see "Keeping color consistent between Photoshop and other Adobe applications" on page 144.

Edit your image in Photoshop   Depending on the color management policy you choose, you will be editing the image in either the current RGB working space or in the working space profile embedded in the document. The choice of whether to convert a document to the RGB working space or preserve its embedded profile is a personal decision. For instance, if you feel that Adobe RGB is a suitable working space for all images that you print, you might consider choosing Adobe RGB as your RGB working space, and then choose the Convert to Working Space policy and always working in Adobe RGB.

(Optional) Place your RGB or CMYK image in Adobe InDesign or Adobe Illustrator In general, most images printed on a commercial press are not printed directly from Photoshop but from a page-layout program like Adobe InDesign or a print-savvy program like Adobe Illustrator. For more information on importing Photoshop files into Adobe InDesign or Adobe Illustrator, see Adobe InDesign Help or Adobe Illustrator Help.

(Optional) Work entirely in RGB mode   Make sure the image file is tagged with the RGB working space profile. If your printer or prepress vendor uses a color management system, he or she should be able to use your file's profile to make an accurate conversion to CMYK for producing the film and printing plates.

(Optional) Convert to CMYK   Work in RGB mode until you finish with your image editing. After editing, convert the image to CMYK mode and make any additional color and tonal adjustments. Be sure to check the highlight and shadow areas of the image. If necessary, use the Levels, Curves, or Hue/Saturation command to make tonal corrections. These image adjustments should be very minor. After making final adjustments, send the CMYK file to your print house or prepress.

Producing consistent color when creating images for the Web

Keeping colors consistent in images for the Web is a challenge. You have control over how your images display on your monitor, but you have no control over how they will display on other monitors. Additionally, most browsers do not recognize a document's embedded profile. They simply send the raw RGB values to your monitor. Without a profile, a computer's color management system must guess what colors a document's RGB values actually represent. Although it may seem impossible to produce consistent colors in an image for the Web, there are a few things you can do to keep the colors as consistent as possible.

To keep colors as consistent as possible in Web images:

Set up your monitor for a color-managed workflow Calibrate and profile your monitor. Use a visual calibrator like Adobe Gamma (Windows), Monitor Calibrator (Mac OS) or, for more precision, use third-party software and hardware.

Set up color management in Photoshop Choose Edit > Color Settings (Windows) or Photoshop > Color Settings (Mac OS) and specify the color management settings. You can either choose Web Graphics Defaults from the Settings menu in the Color Settings dialog box or customize the settings. If you prefer not to use the preset option, it's recommended that you at least use sRGB for your working space. sRGB is a smaller color space than Adobe RGB (1998) and supposedly represents the profile of the *average* monitor. Tagging your image with an sRGB profile increases the possibility that more monitors will correctly display the colors in your image.

(Optional) Convert the document to sRGB profile If you have an image that's tagged with a profile other than sRGB, you can convert profile to sRGB so that the colors have a chance of maintaining a consistent appearance on a wide variety of monitors. Choose Image > Mode > Convert to Profile and choose sRGB for Profile under Destination Space.

Save for Web Choose File > Save for Web. The Save for Web command gives you more control over the optimization of your image. You can specify the colors that are preserved when saving an image in GIF or PNG-8 format. In JPEG format, you have the option of embedding an ICC profile in the file. Currently, only Internet Explorer (Mac OS) and OmniWeb (Mac OS) can read embedded profiles in images if the user enables the ColorSync option in the preferences. If an image has no embedded profile, Internet Explorer (Mac OS) and OmniWeb (Mac OS) assume an sRGB profile for the image.

Working with Color

About the different color modes (Photoshop)

Color models describe colors numerically. There are different methods of describing colors numerically, and a *color mode* determines which method or set of numbers to use to display and print an image. Photoshop bases its color modes on the color models that are useful for images used in publishing. You can choose from RGB (red, green, blue); CMYK (cyan, magenta, yellow, black); Lab Color (based on CIE L*a*b*), and Grayscale. Photoshop also includes modes for specialized color output such as Indexed Color and Duotone.

Note: *ImageReady only uses the RGB mode to work with images, since its documents are primarily intended for the Web. For more information about color models, see "Using color models to describe color" on page 112.*

In addition to determining the number of colors that can be displayed in an image, color modes affect the number of channels and the file size of an image.

RGB Color mode

Photoshop's RGB Color mode uses the RGB model, assigning an intensity value to each pixel ranging from 0 (black) to 255 (white) for each of the RGB (red, green, blue) components in a color image. For example, a bright red color might have an R value of 246, a G value of 20, and a B value of 50. When the values of all three components are equal, the result is a shade of neutral gray. When the value of all components are 255, the result is pure white; when the values are 0, pure black.

RGB images use three colors, or channels, to reproduce colors on-screen. The three channels translate to 24 (8 bits x 3 channels) bits of color information per pixel. With 24-bit images, up to 16.7 million colors can be reproduced. With 48-bit images (16 bits per channel), even more colors can be reproduced. In addition to being the default mode for new Photoshop images, the RGB model is used by computer monitors to display colors. This means that when working in color modes other than RGB, such as CMYK, Photoshop interpolates the CMYK image to RGB for display on-screen.

Although RGB is a standard color model, the exact range of colors represented can vary, depending on the application or display device. Photoshop's RGB Color mode varies according to the working space setting that you have specified in the Color Settings dialog box. (See "About working spaces" on page 125.)

CMYK Color mode

In Photoshop's CMYK mode, each pixel is assigned a percentage value for each of the process inks. The lightest (highlight) colors are assigned small percentages of process ink colors, the darker (shadow) colors higher percentages. For example, a bright red might contain 2% cyan, 93% magenta, 90% yellow, and 0% black. In CMYK images, pure white is generated when all four components have values of 0%.

Use the CMYK mode when preparing an image to be printed using process colors. Converting an RGB image into CMYK creates a *color separation*. If you start with an RGB image, it's best to edit first in RGB and then convert to CMYK at the end of your process. In RGB mode, you can use the Proof Setup commands to simulate the effects of a CMYK conversion without changing the actual image data. (See "Soft-proofing colors" on page 140.) You can also use CMYK mode to work directly with CMYK images scanned or imported from high-end systems.

Although CMYK is a standard color model, the exact range of colors represented can vary, depending on the press and printing conditions. Photoshop's CMYK Color mode varies according to the working space setting that you have specified in the Color Settings dialog box. (See "About working spaces" on page 125.)

Lab Color mode
In Photoshop, the Lab Color mode has a lightness component (L) that can range from 0 to 100. In the Adobe Color Picker, the *a* component (green-red axis) and the *b* component (blue-yellow axis) can range from +127 to –128. In the Color palette, the *a* component and the *b* component can range from +120 to –120.

You can use Lab mode to work with Photo CD images, edit the luminance and the color values in an image independently, move images between systems, and print to PostScript Level 2 and Level 3 printers. To print Lab images to other color PostScript devices, convert to CMYK first.

Lab images can be saved in Photoshop, Photoshop EPS, Large Document Format (PSB), PDF, Photoshop Raw, TIFF, Photoshop DCS 1.0, or Photoshop DCS 2.0 formats. 48-bit (16 bits per channel) Lab images can be saved in Photoshop, Large Document Format (PSB), Photoshop PDF, Photoshop Raw, or TIFF formats.

Note: *The DCS 1.0 and DCS 2.0 formats convert the file to CMYK when opened.*

Lab color is the intermediate color model Photoshop uses when converting from one color mode to another.

Bitmap mode
This mode uses one of two color values (black or white) to represent the pixels in an image. Images in Bitmap mode are called bitmapped 1-bit images because they have a bit depth of 1. (See "Specifying 8-bit color display (Photoshop)" on page 153.)

Grayscale mode
Grayscale mode uses up to 256 shades of gray. Every pixel of a grayscale image has a brightness value ranging from 0 (black) to 255 (white). Grayscale values can also be measured as percentages of black ink coverage (0% is equal to white, 100% to black). Images produced using black-and-white or grayscale scanners typically are displayed in Grayscale mode.

Although Grayscale is a standard color model, the exact range of grays represented can vary, depending on the printing conditions. In Photoshop, Grayscale mode uses the range defined by the working space setting that you have specified in the Color Settings dialog box. (See "About working spaces" on page 125.)

These guidelines apply to converting images to and from Grayscale mode:

- You can convert both Bitmap-mode and color images to grayscale.

- To convert a color image to a high-quality grayscale image, Photoshop discards all color information in the original image. The gray levels (shades) of the converted pixels represent the luminosity of the original pixels.

  💡 You can mix information from the color channels to create a custom grayscale channel by using the Channel Mixer command.

- When converting from grayscale to RGB, the color values for a pixel are based on its previous gray value. A grayscale image can also be converted to a CMYK image (for creating process-color quadtones without converting to Duotone mode) or to a Lab color image.

Duotone mode

Duotone mode creates monotone, duotone (two-color), tritone (three-color), and quadtone (four-color) grayscale images using two to four custom inks. (See "Printing duotones" on page 622.)

Indexed Color mode

Indexed Color mode produces 8-bit image files with at most 256 colors. When converting to indexed color, Photoshop builds a color lookup table (CLUT), which stores and indexes the colors in the image. If a color in the original image does not appear in the table, the program chooses the closest one or uses *dithering* to simulate the color using available colors.

By limiting the palette of colors, indexed color can reduce file size while maintaining enough visual quality for certain applications like a multimedia presentation or a Web page. Limited editing is available in this mode. For extensive editing, you should convert temporarily to RGB mode. Indexed Color files can be saved in Photoshop, BMP, GIF, Photoshop EPS, Large Document Format (PSB), PCX, Photoshop PDF, Photoshop Raw, Photoshop 2.0, PICT, PNG, Targa, or TIFF formats. (See "Converting to indexed color (Photoshop)" on page 160.)

Multichannel mode

Multichannel mode uses 256 levels of gray in each channel. Multichannel images are useful for specialized printing. Multichannel mode images can be saved in Photoshop, Photoshop 2.0, Photoshop Raw, or Photoshop DCS 2.0 format.

These guidelines apply to converting images to Multichannel mode:

- Color channels in the original image become spot color channels in the converted image.

- When you convert a color image to multichannel, the new grayscale information is based on the color values of the pixels in each channel.

- Converting a CMYK image to multichannel creates cyan, magenta, yellow, and black spot channels.

- Converting an RGB image to multichannel creates cyan, magenta, and yellow spot channels.

- Deleting a channel from an RGB, CMYK, or Lab image automatically converts the image to Multichannel mode. (See "About color channels" on page 155 for more information on channels.)

- To export a multichannel image, save it in Photoshop DCS 2.0 format.

Adjusting the monitor display

Although the RGB color model used by computer monitors is capable of displaying much of the visible spectrum, the video system sending data to a given monitor often limits how many colors can be displayed at once. By understanding how color data is measured in digital files and on-screen, you can better adjust color display settings to offset the limitations of your video system. For critical work, your monitor should be calibrated and characterized for use in a color management system. At the very least, your monitor should be calibrated to display colors as accurately as possible. For more information on calibrating your monitor and creating a display profile, see "Calibrating and creating a profile of your monitor" on page 119.

Specifying 8-bit color display (Photoshop)
Most monitors are capable of displaying 24-bit color (8 bits per channel), which is capable of displaying millions of colors. To achieve the best results, avoid using 8-bit display mode (256 colors) when editing color images.

When you work with a display system that supports only 8-bit color, Adobe Photoshop uses a technique called *dithering* to mix pixels of available colors and thus simulate colors not currently available.

By default, Adobe Photoshop uses *pattern dithering,* which can result in a distinctive pattern of darker or lighter areas in the image. In contrast, *diffusion dithering* eliminates this distinctive patterning by using the surrounding pixels in the mix of pixel color. But diffusion dithering can cause visual inconsistencies when only part of a screen is redrawn as you scroll, edit, or paint. Keep in mind that dithering effects only appear on-screen, not in print.

To select a color display option:

1 Do one of the following:

- In Windows, choose Edit > Preferences > Display & Cursors.

- In Mac OS, choose Photoshop > Preferences > Display & Cursors.

2 Select Use Diffusion Dither to minimize dither patterns produced by dithering.

Making previews display more quickly (Photoshop)
The Use Pixel Doubling preference option speeds up the preview of a tool or command's effects by temporarily doubling the size of the pixels (halving the resolution) in the preview. This option has no effect on the pixels in the file; it simply provides faster previews with the tools and commands.

To speed up previews:

1 Do one of the following:

• In Windows, choose Edit > Preferences > Display & Cursors.

• In Mac OS, choose Photoshop > Preferences > Display & Cursors.

2 Select Use Pixel Doubling, and click OK.

Adjusting color display for cross-platform variations

RGB color display on a computer monitor varies with the operating system used by the computer. For example, an image appears darker on a Windows system than on a Mac OS computer (because the standard RGB color space is darker in Windows than in Mac OS). The Preview commands in ImageReady enable you to compensate for cross-platform differences in RGB color display during image preview. In Photoshop, you can simulate cross-platform differences by using the Macintosh RGB, Windows RGB, and Monitor RGB commands in the View > Proof Setup menu. (See "Soft-proofing colors" on page 140.)

RGB color display can also vary between Photoshop and ImageReady. In Photoshop, you can select from several RGB color spaces when editing images. As a result, images created in Photoshop may use an RGB color space that differs from the monitor RGB color space used by ImageReady. You can adjust the RGB color display during image preview to compensate for differences between Photoshop and ImageReady.

To adjust RGB color display for cross-platform variations (ImageReady):

Choose View > Preview and choose an option for adjusting the color display:

• Uncompensated Color to view the image with the monitor gamma uncorrected

• Standard Macintosh Color to view the image with a gamma value of 1.8

• Standard Windows Color to view the image with a gamma value of 2.2

• Use Embedded Color Profile to view the image using the embedded profile

These options adjust color display only. No changes are made to pixels in the image.

💡 You can edit your image in one window and view the same image with a different gamma value in a second window. Choose Window > Arrange > New Window for [file name]. With the new window active, choose View > Preview and then choose a different gamma than the one used in the first window.

To adjust RGB color display to match Photoshop color display (ImageReady):

Choose View > Preview > Use Embedded Color Profile.

Note: In order to use the Use Embedded Color Profile command in ImageReady, you must save the original image, with the color profile embedded, in Photoshop. Keep in mind that ImageReady does not use profiles in PNG or TIFF files.

Channels and bit depth (Photoshop)

A working knowledge of color channels and bit depth is key to understanding how Photoshop stores and displays color information in images.

About color channels

Every Photoshop image has one or more *channels,* each storing information about color elements in the image. The number of default color channels in an image depends on its color mode. For example, a CMYK image has at least four channels, one each for cyan, magenta, yellow, and black information. Think of a channel as analogous to a plate in the printing process, with a separate plate applying each layer of color.

In addition to these default color channels, extra channels, called *alpha channels,* can be added to an image for storing and editing selections as masks, and spot color channels can be added to add spot color plates for printing. (See "Storing masks in alpha channels" on page 254 and "Adding spot colors (Photoshop)" on page 362.)

An image can have up to 56 channels. By default, Bitmap-mode, grayscale, duotone, and indexed-color images have one channel; RGB and Lab images have three; and CMYK images have four. You can add channels to all image types except Bitmap-mode images.

About bit depth

Bit depth—also called pixel depth or color depth—measures how much color information is available to display or print each pixel in an image. Greater bit depth (more bits of information per pixel) means more available colors and more accurate color representation in the digital image. For example, a pixel with a bit depth of 1 has two possible values: black and white. A pixel with a bit depth of 8 has 2^8, or 256, possible values. And a pixel with a bit depth of 24 has 2^{24}, or roughly 16 million, possible values. Common values for bit depth range from 1 to 64 bits per pixel.
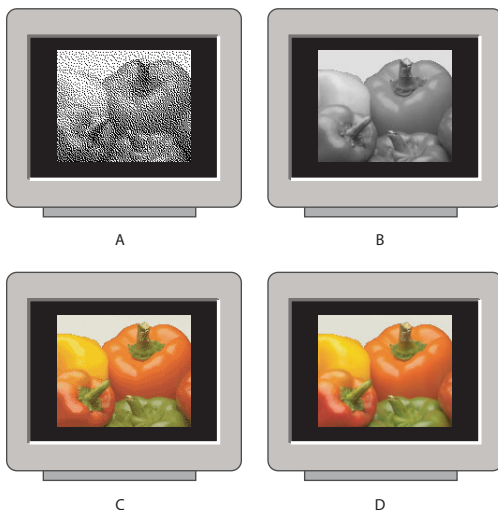
Pixel depth
A. 1-bit (Bitmap) **B.** 8-bit (Grayscale) **C.** 8-bit (Indexed Color) **D.** 24-bit (RGB)

In most cases, Lab, RGB, grayscale, and CMYK images contain 8 bits of data per color channel. This translates to a 24-bit Lab bit depth (8 bits x 3 channels), a 24-bit RGB bit depth (8 bits x 3 channels), an 8-bit grayscale bit depth (8 bits x 1 channel), and a 32-bit CMYK bit depth (8 bits x 4 channels). Photoshop can also work with Lab, RGB, CMYK, multi-channel, and grayscale images that contain 16 bits of data per color channel.

Converting between bit depths

A 16-bit-per-channel image provides finer distinctions in color, but it can have twice the file size of an 8-bit-per-channel image. Photoshop CS provides more support for working with 16-bit-per-channel images:

- All tools in the toolbox, except the Art History Brush tool, can be used with 16-bit-per-channel images.

- All color and tonal adjustment commands, except Variations, are available, and a limited set of filters. (See "Using filters" on page 415.)

- You can work with layers, including adjustment layers, in 16-bit-per-channel images.

To take advantage of certain Photoshop features, such as Extract, Liquify, Pattern Maker, and some filters, you can convert a 16-bit-per-channel image to an 8-bit-per-channel image. It's best if you do a Save As and convert a copy of the image file so the original file retains the full 16-bit-per-channel image data.

To convert between 8 bits per channel and 16 bits per channel:

Choose Image > Mode > 16 Bits/Channel or 8 Bits/Channel.

Converting between color modes (Photoshop)

Photoshop lets you change an image from its original mode (source mode) to a different mode (target mode). When you choose a different color mode for an image, you permanently change the color values in the image. For example, when you convert an RGB image to CMYK mode, RGB color values outside the CMYK gamut (defined by the CMYK working space setting in the Color Settings dialog box) are adjusted to fall within gamut. As a result, some image data may be lost and will not be recovered if you were to convert the image from CMYK back to RGB.

Converting an image to another mode

Before converting images, it's best to do the following:

- Do as much editing as possible in the image's original mode (usually RGB from most scanners or digital cameras, or CMYK from traditional drum scanners or if imported from a Scitex system).

- Save a backup copy before converting. Be sure to save a copy of your image that includes all layers in order to edit the original version of the image after the conversion.

- Flatten the file before converting it. The interaction of colors between layer blending modes will change when the mode changes.

To convert an image to another mode:

Choose Image > Mode and the mode you want from the submenu. Modes not available for the active image appear dimmed in the menu.

Images are flattened when converted to Multichannel, Bitmap, or Indexed Color mode, because these modes do not support layers.

Making a conditional mode change

Photoshop lets you specify conditions for a mode change so the conversion can be successfully used in an action, which is a series of commands that you play back on a single file or a batch of files. When a mode change is part of an action, an error can occur if the file being opened is not in the same source mode specified in the action. For example, one step in an action can be to convert an image with a source mode of RGB to a target mode of CMYK. Applying this action to an image in Grayscale mode, or any other source mode besides RGB, will cause an error.

While recording an action, the Conditional Mode Change command lets you specify one or more modes for the source mode and a mode for the target mode. For more information on creating actions, see "Recording actions" on page 628.

To add a conditional mode change to an action:

1 Start recording an action.

2 Choose File > Automate > Conditional Mode Change.

3 In the Conditional Mode Change dialog box, select one or more modes for the source mode. You can also use the All or None buttons to select all possible modes or no mode.

4 Choose a target mode from the Mode pop-up menu.

5 Click OK. The conditional mode change will appear as a new step in the Actions palette.

Converting images to Bitmap mode (Photoshop)

Converting an image to Bitmap mode reduces the image to two colors, greatly simplifying the color information in the image and reducing its file size.

Converting a color or grayscale image to Bitmap mode

To convert a color image to Bitmap mode, first convert it to Grayscale mode. This removes the hue and saturation information from the pixels and leaves just the brightness values. However, because few editing options are available for Bitmap-mode images, it's usually best to edit the image in Grayscale mode and then convert it to Bitmap mode.

Note: *Images in Bitmap mode are 1 bit per channel. A 16-bit-per-channel image must be converted to Grayscale 8 bits before converting to Bitmap mode.*

To convert an image to Bitmap mode:

1 Do one of the following:

- If the image is in color, choose Image > Mode > Grayscale. Then choose Image > Mode > Bitmap.

- If the image is grayscale, choose Image > Mode > Bitmap.

2 For Output, enter a value for the output resolution of the Bitmap-mode image, and choose a unit of measurement. By default, the current image resolution appears as both the input and the output resolutions.

3 Choose one of the following bitmap conversion methods from the Use pop-up menu:

• 50% Threshold converts pixels with gray values above the middle gray level (128) to white and below it to black. The result is a very high-contrast, black-and-white representation of the image.

• Pattern Dither converts an image by organizing the gray levels into geometric configurations of black and white dots.

• Diffusion Dither converts an image by using an error-diffusion process, starting at the pixel in the upper left corner of the image. If the pixel's value is above middle gray (128), the pixel is changed to white—if below it, to black. Because the original pixel is rarely pure white or pure black, error is inevitably introduced. This error is transferred to surrounding pixels and diffused throughout the image, resulting in a grainy, filmlike texture. This option is useful for viewing images on a black-and-white screen.

• Halftone Screen simulates the appearance of halftone dots in the converted image. (See "Specifying halftone screens for Bitmap-mode images" on page 159.)

• Custom Pattern simulates the appearance of a custom halftone screen in the converted image. (See "Specifying custom halftone screens for Bitmap-mode images" on page 160.)
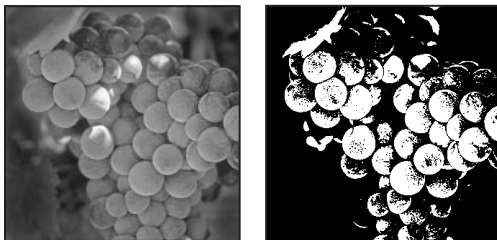
Original grayscale image, and 50% Threshold conversion method
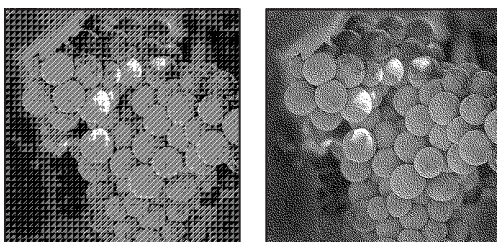
Pattern Dither conversion method, and Diffusion Dither conversion method

Converting an image from Bitmap mode to Grayscale mode

You can convert a Bitmap-mode image to Grayscale mode so you can edit it. Keep in mind that a Bitmap-mode image edited in Grayscale mode may not look the same when converted back to Bitmap mode. For example, a pixel that is black in Bitmap mode and then edited to a shade of gray in Grayscale mode may have a gray value that is light enough that it will become white when converted back to Bitmap mode.

To convert a Bitmap-mode image to grayscale:

1 Choose Image > Mode > Grayscale.

2 Enter a value between 1 and 16 for the size ratio.

The size ratio is the factor for scaling down the image. For example, to reduce a grayscale image by 50%, enter 2 for the size ratio. If you enter a number greater than 1, the program averages multiple pixels in the Bitmap-mode image to produce a single pixel in the grayscale image. This process lets you generate multiple shades of gray from an image scanned on a 1-bit scanner.

Specifying halftone screens for Bitmap-mode images

The Halftone Screen option in the Bitmap dialog box lets you convert a grayscale image to simulated halftone dots.

Important: *The halftone screen becomes part of the image. If you print the image on a halftone printer, it will print with the halftone screen you choose here plus that of the printer. On some printers, the result probably will be a moiré pattern in the image.*

To specify the halftone screen for a Bitmap-mode image:

1 Choose Image > Mode > Bitmap.

2 Choose Halftone Screen from the Use menu; then click OK. The Halftone Screen dialog box opens.

3 For Frequency, enter a value for the screen frequency, and choose a unit of measurement. Values can range from 1 to 999 for lines per inch and from 0.400 to 400 for lines per centimeter. You can enter decimal values.

The screen frequency specifies the ruling of the halftone screen in lines per inch (lpi). The frequency depends on the paper stock and type of press used for printing. Newspapers commonly use an 85-line screen. Magazines use higher resolution screens, such as 133 lpi and 150 lpi. Check with your print shop for correct screen frequencies.

4 Enter a value for the screen angle in degrees from −180 to +180.

The screen angle refers to the orientation of the screen. Continuous-tone and black-and-white halftone screens commonly use a 45° angle.

5 For Shape, choose the dot shape you want.
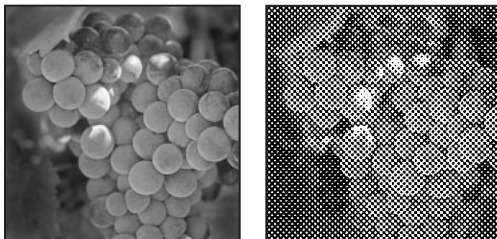
Original grayscale image, and Halftone Screen conversion: 53 lpi, 45° angle, round dot

You can save and reuse halftone screen settings by using the Save and Load buttons in the Halftone Screen dialog box.

Specifying custom halftone screens for Bitmap-mode images

The Custom Pattern option in the Bitmap dialog box simulates the effect of printing a grayscale image through a custom halftone screen. This method lets you apply a screen texture, such as a wood grain, to an image. To use this option, you must first define a pattern. (See "Filling and stroking selections and layers" on page 344.)

You can create a pattern representing the texture you want and then screen the grayscale image to apply the texture. To cover the entire image, the pattern must be as large as the image. Otherwise, the pattern will be tiled. For example, if you apply a 1-inch-by-1-inch pattern to a 4-inch-by-4-inch image, the pattern appears as 16 squares. Photoshop comes with several self-tiling patterns that can be used as halftone screen patterns. (See the procedure to use a pattern from the PostScript Patterns folder in "Filling and stroking selections and layers" on page 344.)

Because the Custom Pattern option simulates dark and light colors by making the halftone pattern thicker and thinner, it makes sense to choose a pattern that lends itself to thickness variations, typically one with a variety of gray shades.

To prepare a black-and-white pattern for conversion, you can first convert the image to grayscale and then apply the Blur More filter several times. This blurring technique creates thick lines tapering from dark gray to white.

Converting to indexed color (Photoshop)

Converting to indexed color reduces the number of colors in the image to at most 256—the standard number of colors supported by the GIF and PNG-8 formats and many multimedia applications. This conversion reduces file size by deleting color information from the image.

To convert to indexed color, you must start with an image that is 8 bits per channel and either grayscale or RGB.

To convert a grayscale or RGB image to indexed color:

1 Choose Image > Mode > Indexed Color.

Note: *All visible layers will be flattened; any hidden layers will be discarded.*

For grayscale images, the conversion happens automatically. For RGB images, the Indexed Color dialog box appears.

2 Select Preview in the Indexed Color dialog box to display a preview of the changes.

3 Specify conversion options. (See "Conversion options for indexed-color images (Photoshop)" on page 160.)

Conversion options for indexed-color images (Photoshop)

When converting an RGB image to indexed color, you can specify a number of conversion options in the Indexed Color dialog box.

Palette type

A number of palette types are available for converting an image to indexed color. For the Perceptual, Selective, and Adaptive options, you can choose between using a local palette based on the current image's colors or a master palette created in ImageReady.

Exact Creates a palette using the exact colors appearing in the RGB image—an option available only if the image uses 256 or fewer colors. Because the image's palette contains all colors in the image, there is no dithering.

System (Mac OS) Uses the Mac OS default 8-bit palette, which is based on a uniform sampling of RGB colors.

System (Windows) Uses the Windows system's default 8-bit palette, which is based on a uniform sampling of RGB colors.

Web Uses the 216-color palette that Web browsers, regardless of platform, use to display images on a monitor limited to 256 colors. This palette is a subset of the Mac OS 8-bit palette. Use this option to avoid browser dither when viewing images on a monitor display limited to 256 colors.

Uniform Creates a palette by uniformly sampling colors from the RGB color cube. For example, if Photoshop takes 6 evenly spaced color levels each of red, green, and blue, the combination produces a uniform palette of 216 colors (6 cubed = 6 x 6 x 6 = 216). The total number of colors displayed in an image corresponds to the nearest perfect cube (8, 27, 64, 125, or 216) that is less than the value in the Colors text box.

Local (Perceptual) Creates a custom palette by giving priority to colors for which the human eye has greater sensitivity.

Local (Selective) Creates a color table similar to the Perceptual color table, but favoring broad areas of color and the preservation of Web colors. This option usually produces images with the greatest color integrity.

Local (Adaptive) Creates a palette by sampling the colors from the spectrum appearing most commonly in the image. For example, an RGB image with only the colors green and blue produces a palette made primarily of greens and blues. Most images concentrate colors in particular areas of the spectrum. To control a palette more precisely, first select a part of the image containing the colors you want to emphasize. Photoshop weights the conversion toward these colors.

Custom Creates a custom palette using the Color Table dialog box. Either edit the color table and save it for later use or click Load to load a previously created color table. (See "Customizing indexed color tables (Photoshop)" on page 163.) This option also displays the current adaptive palette, which is useful for previewing the colors most often used in the image.

Previous Uses the custom palette from the previous conversion, making it easy to convert several images with the same custom palette.

Number of colors

For the Uniform, Perceptual, Selective, or Adaptive palette, you can specify the exact number of colors to be displayed (up to 256) by entering a value for Colors. The Colors text box controls only how the indexed color table is created. Adobe Photoshop still treats the image as an 8-bit, 256-color image.

Color inclusion and transparency

To specify colors to be included in the indexed color table or to specify transparency in the image, choose from the following options:

Forced Provides options to force the inclusion of certain colors in the color table. Black and White adds a pure black and a pure white to the color table; Primaries adds red, green, blue, cyan, magenta, yellow, black, and white; Web adds the 216 Web-safe colors; and Custom lets you define custom colors to add.

Transparency Specifies whether to preserve transparent areas of the image during conversion. Selecting this option adds a special index entry in the color table for transparent colors. Deselecting this option fills transparent areas with the matte color, or with white if no matte color is chosen.

Matte Specifies the background color used to fill anti-aliased edges that lie adjacent to transparent areas of the image. With Transparency selected, the matte is applied to edge areas to help blend the edges with a Web background of the same color. With Transparency deselected, the matte is applied to transparent areas. Choosing None for the matte creates hard-edged transparency if Transparency is selected; otherwise, all transparent areas are filled with 100% white. The image must have transparency for the Matte options to be available.

Dithering

Unless you're using the Exact color table option, the color table may not contain all the colors used in the image. To simulate colors not in the color table, you can dither the colors. Dithering mixes the pixels of the available colors to simulate the missing colors.

Choose a dither option from the menu, and enter a value for the dither amount. A higher amount dithers more colors but may increase file size. You can choose from the following dither options:

None Does not dither colors but instead uses the color closest to the missing color. This tends to result in sharp transitions between shades of color in the image, creating a posterized effect.

Diffusion Uses an error-diffusion method that produces a less structured dither than the Pattern option. To protect colors in the image that contain entries in the color table from being dithered, select Preserve Exact Colors. This is useful for preserving fine lines and text for Web images.

Pattern Uses a halftone-like square pattern to simulate any colors not in the color table.

Noise Helps to reduce seam patterns along the edges of image slices. Choose this option if you plan to slice the image for placement in an HTML table.

Customizing indexed color tables (Photoshop)

The Color Table command lets you make changes to the color table of an indexed-color image. These customization features are particularly useful with *pseudocolor images*— images displaying variations in gray levels with color rather than shades of gray, often used in scientific and medical applications. However, customizing the color table can also produce special effects with indexed-color images that have a limited number of colors.

Note: *To shift colors simply in a pseudocolor image, choose Image > Adjustments, and use the color adjustment commands in the submenu. For a summary description of these commands, see* "Basic steps for correcting images" on page 174.

Using the color table to edit colors and assign transparency

You can edit colors in the color table to produce special effects, or assign transparency in the image to a single color in the table.

To edit colors in the color table:

1 Open the indexed-color image.

2 Choose Image > Mode > Indexed Color.

3 In the Indexed Color dialog box, choose Custom from the Palette menu. This opens the Color Table dialog box.

4 In the Color Table dialog box, click or drag in the table to choose the color or range of colors you want to change.

5 Choose a color and click OK. For more information on choosing colors, see "Using the Adobe Color Picker" on page 164.

If you are changing a range of colors, Photoshop creates a gradient in the color table between the starting and ending colors. The first color you choose in the Color Picker is the beginning color for the range. When you click OK, the Color Picker reappears so that you can choose the last color in the range.

The colors you selected in the Color Picker are placed in the range you selected in the Color Table dialog box.

6 Click OK in the Color Table dialog box to apply the new colors to the indexed-color image.

7 Click OK in the Indexed Color dialog box.

To assign transparency to a single color:

1 Open the indexed-color image.

2 Choose Image > Mode > Indexed Color.

3 In the Indexed Color dialog box, choose Custom from the Palette menu. This opens the Color Table dialog box.

4 In the Color Table dialog box, select the Eyedropper tool 🖋, and click the desired color in the table or in the image. The sampled color is replaced with transparency in the image.

Using predefined color tables

Your indexed color table can be modeled after the following predefined color tables:

Custom Creates a palette you specify.

Black Body Displays a palette based on the different colors a black body radiator emits as it is heated—from black to red, orange, yellow, and white.

Grayscale Displays a palette based on 256 levels of gray—from black to white.

Spectrum Displays a palette based on the colors produced as white light passes through a prism—from violet, blue, and green to yellow, orange, and red.

System (Mac OS) Displays the standard Mac OS 256-color system palette.

System (Windows) Displays the standard Windows 256-color system palette.

To choose a predefined table:

1 Open the indexed-color image.

2 Do one of the following:

• Choose Image > Mode > Color Table.

• Choose Image > Mode > Indexed Color. In the Indexed Color dialog box, choose Custom from the Palette menu. This opens the Color Table dialog box.

3 In the Color Table dialog box, choose a predefined table from the Table menu.

Saving and loading color tables

You use the Save and Load buttons in the Color Table dialog box to save your indexed color tables for use with other Adobe Photoshop images. The color tables and swatch tables can also be loaded by ImageReady. Once you load a color table into an image, the colors in the image change to reflect the color positions they reference in the new color table.

Note: You can also load saved color tables into the Swatches palette. (See the procedure to save and reuse custom swatch sets in "Using the Swatches palette" on page 354.)

Using the Adobe Color Picker

The Adobe Color Picker lets you select a color by choosing from a color spectrum or by defining colors numerically. The Adobe Color Picker can be used for setting the foreground color, background color, and text color. In Photoshop, it is also used for setting target colors in some color and tonal adjustment commands, the stop colors in the Gradient Editor, the filter color in the Photo Filter command, and the color in a fill layer, certain layer styles, and shape layers.

When a color is selected in the Adobe Color Picker, the numeric values for HSB, RGB, Lab, CMYK, and hexadecimal numbers are simultaneously displayed. This is useful for viewing how a color is described by the different color modes.

About the Adobe Color Picker

In the Adobe Color Picker, you can select colors based on the HSB (hue, saturation, brightness) or RGB (red, green, blue) color models, or specify a color based on its hexadecimal values. In Photoshop, you can also select colors based on the Lab color model, and on the CMYK (cyan, magenta, yellow, black) color model. The Adobe Color Picker can be set so you choose only from Web-safe colors or choose from several custom color systems. The color field in the Adobe Color Picker can display color components in HSB color mode, RGB color mode, and (Photoshop) Lab color mode.

Note: *Although Photoshop and ImageReady use the Adobe Color Picker by default, you can set a Preference so Photoshop and ImageReady use a different color picker. (See* "Using other color pickers" on page 171*.)*
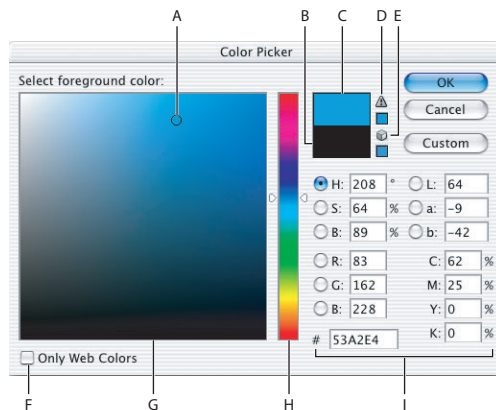
Adobe Color Picker
A. Picked color **B.** Original color **C.** Adjusted color **D.** Out-of-gamut alert icon **E.** Not Web-safe alert icon **F.** Web Colors option **G.** Color field **H.** Color slider **I.** Color values

To display the Adobe Color Picker:

Do one of the following:

- In the toolbox, click the foreground or background color selection box.
- In the Color palette, click the Set Foreground Color or Set Background Color selection box.
- In the text tool options bar, click the color swatch.
- (Photoshop) In the Layers palette, click the color swatch in a fill or shape layer.
- (Photoshop) In the Gradient Editor, double-click a color stop.
- (Photoshop) In the options bar of a shape or pen too, click the color swatch l.
- (Photoshop) In the Layer Style dialog box for certain layer styles (such as Outer Glow and Inner Glow), click the Set Color box.
- (Photoshop) In the dialog box of certain color and tonal adjustment commands, double-click an eyedropper tool or click a color swatch. Not every eyedropper tool lets you set a target color. For instance, double-clicking the eyedropper tools in the Replace Color command does not open the Adobe Color Picker. For more information on each color and tonal adjustment tool, see "Making Color and Tonal Adjustments" on page 173.

Specifying a color using the color field and color slider

With the HSB, RGB, and Lab color modes, you can use the color field and the color slider in the Color Picker dialog box to select a color.

To specify a color using the color field and color slider:

1 Click a component next to the HSB, RGB, or Lab values.

2 Select a color by doing one of the following:

• Drag the white triangles along the slider.

• Click in the color slider.

• Click in the color field.

When you select a color, a circular marker indicates the color's position in the color field.

As you adjust the color using the color field and color slider, the numerical values change to reflect the new color. The color rectangle to the right of the color slider displays the new color in the top section of the rectangle. The original color appears at the bottom of the rectangle. Alerts will appear if the color is not Web-safe ⬡ or is (Photoshop) *out of gamut* ⚠. For more information about the alerts in the Adobe Color Picker, see "Using Web-safe colors" on page 168 and "Warning alert for nonprintable colors (Photoshop)" on page 169.

💡 A color can be selected outside the Adobe Color Picker. Moving the pointer over the document window changes it to the Eyedropper tool. You can then select a color by clicking in the image. The selected color will be displayed in the Adobe Color Picker. Clicking in the image and then holding down the mouse button lets you move the Eyedropper tool anywhere on your desktop. You can select a color by releasing the mouse button.

Specifying a color using numeric values

In the Adobe Color Picker, you can select a color in any of the four color models by specifying numeric values for each color component.

To specify a color using numeric values:

Do one of the following:

• (Photoshop) In CMYK color mode (the mode PostScript printers use), specify each component value as a percentage of cyan, magenta, yellow, and black.

• In RGB color mode (the mode your monitor uses), specify component values from 0 to 255 (0 is black, and 255 is the pure color).

• In HSB color mode, specify saturation and brightness as percentages; specify hue as an angle from 0° to 360° that corresponds to a location on the color wheel. For more information on the color wheel, see "Using the color wheel" on page 172.

• Enter a hexadecimal value in the # text box. For example, 000000 is black, ffffff is white, and ff0000 is red. For more information on describing a color using hexadecimal values, see "Working with hexadecimal values for color" on page 556.

• (Photoshop) In Lab mode, enter a lightness value (*L*) from 0 to 100 and *A* (green to magenta) and *B* (blue to yellow) values from −128 to +127.

Working with the Adobe Color Picker in HSB mode

The Adobe Color Picker lets you select a color based on the HSB (hue, saturation, brightness) color model. When you select a color in HSB mode, the RGB, Lab, CMYK, and hexadecimal values update accordingly. The HSB mode is the default mode for the Adobe Color Picker.

To work with the Adobe Color Picker in HSB mode:

1 Open the Adobe Color Picker.

2 In the HSB section of the dialog box, do one of the following:

- Click the *H* option to display all hues in the color slider. Selecting a hue in the color slider displays the saturation and brightness range of the selected hue in the color field, with the saturation increasing from left to right and brightness increasing from bottom to top.

- Click the *S* option to display all hues in the color field with their maximum brightness at the top of the color field, decreasing to their minimum at the bottom. The color slider displays the color that's selected in the color field with its maximum saturation at the top of the slider and its minimum saturation at the bottom.

- Click the *B* option to display all hues in the color field with their maximum saturation at the top of the color field, decreasing to their minimum saturation at the bottom. The color slider displays the color that's selected in the color field with its maximum brightness at the top of the slider and its minimum brightness at the bottom.

3 Select a color with a specific hue, saturation, and brightness by using a combination of the color slider and the color field or entering a numeric values in the H, S, and B text boxes.

Working with the Adobe Color Picker in RGB mode

In RGB (red, green, blue) mode, the color slider displays the range of color levels available for the selected color component (R, G, or B). The color field displays the range for the remaining two components—one on the horizontal axis, one on the vertical. For example, if you click the red component (R), the color slider displays the range of color for red (0 is at the bottom of the slider and 255 is at the top). The color field displays the values for blue on its horizontal axis and for green on its vertical axis.

To work with the Adobe Color Picker in RGB mode:

1 Open the Adobe Color Picker.

2 In the RGB section of the dialog box, do one of the following:

- Click the R option to display the red color component in the color slider with its maximum brightness (255) at the top of the slider and its minimum brightness (0) at the bottom. When the color slider is set to minimum brightness, the color field displays colors created by the green and blue color components. Using the color slider to increase the red brightness mixes more red into the colors displayed in the color field.

- Click the G option to display the green color component in the color slider with its maximum brightness (255) at the top of the slider and its minimum brightness (0) at the bottom. When the color slider is set to minimum brightness, the color field displays colors created by the red and blue color components. Using the color slider to increase the green brightness mixes more green into the colors displayed in the color field.

- Click the B option to display the blue color component in the color slider with its maximum brightness (255) at the top of the slider and its minimum brightness (0) at the bottom. When the color slider is set to minimum brightness, the color field displays colors created by the green and red color components. Using the color slider to increase the blue brightness mixes more blue into the colors displayed in the color field.

3 Select an RGB color using a combination of the color slider and the color field or entering numeric values in the R, G, and B text boxes.

Working with the Adobe Color Picker in Lab mode (Photoshop)

The Adobe Color Picker lets you select a color based on the Lab color model. The *L* value specifies the luminance of a color. The *a* value specifies how red or green a color is. The *b* value specifies how blue or yellow a color is.

To work with the Adobe Color Picker in Lab mode:

1 Open the Adobe Color Picker.

2 In the Lab section of the dialog box, do one of the following:

- Click the *L* option to display all hues in the color field. A hue is selected by either clicking in the color field or entering values in the *A* and *B* text boxes. The color slider displays the selected hue with its maximum luminance at the top and its minimum luminance at the bottom.

- Click the *A* option and the color slider adjusts whether a hue is red or green. Moving the slider or clicking in the color slider changes the range of colors displayed in the color field. The color field also displays the colors' luminance with maximum luminance at the top decreasing to minimum luminance at the bottom. The *B* (blue or yellow) color component is represented in the color field with blue on the left and yellow on the right.

- Click the *B* option and the color slider adjusts whether a hue is yellow or blue. Moving the slider or clicking in the color slider changes the range of colors displayed in the color field. The color field also displays the colors' luminance on the vertical axis with maximum luminance at the top. The *A* (green or red) color component is represented in the color field with green on the left and red on the right.

3 Select a color using a combination of the color slider and the color field or entering numeric values in the *L*, *A*, and *B* text boxes.

Using Web-safe colors

The *Web-safe colors* are the 216 colors used by browsers regardless of the platform. The browser will change all colors in the image to these colors when displaying the color on an 8-bit screen. The 216 colors are a subset of the Mac OS 8-bit color palettes. By working only with these colors, you can be sure that art you prepare for the Web will not dither on a system set to display in 256 colors.

To identify Web-safe colors in the Adobe Color Picker:

Select the Only Web Colors option in the lower left corner of the color picker, and then choose any color in the color picker. Any color you pick with this option selected is Web-safe.

To change a non-Web color to a Web-safe color:

If you select a non-Web color, an alert cube 🧊 appears next to the color rectangle in the Adobe Color Picker. Click the alert cube to select the closest Web color. (If no alert cube appears, the color you chose is Web-safe.)

To select a Web-safe color using the Color palette:

1 Click the Color palette tab, or choose Window > Color to view the Color palette.

2 Choose an option for selecting a Web-safe color:

• Choose Make Ramp Web Safe from the Color palette menu. With this option selected, any color you choose in the Color palette is Web-safe.

• Choose Web Color Sliders from the Color palette menu (Photoshop), or choose any Slider option from the Color palette menu (ImageReady). By default, Web Color Sliders snap to Web-safe colors (indicated by tick marks) when you drag them. (To override Web-safe color selection, Alt-drag (Windows) or Option-drag (Mac OS) the sliders.)

If you choose a non-Web color, an alert cube 🧊 appears above the color ramp on the left side of the Color palette. Click the alert cube to select the closest Web color.

In ImageReady, drag around the alert icon to select other close Web colors. (If no alert cube appears, the color you chose is Web-safe.)

Note: In Photoshop, you must choose Web Color Sliders from the Color palette menu to view the Web-safe alert cube. In ImageReady, you can view the alert cube with any color slider option.

Warning alert for nonprintable colors (Photoshop)

Some colors in the RGB, HSB, and Lab color models, such as neon colors, cannot be printed because they have no equivalents in the CMYK model. When you select a nonprintable color, an alert triangle appears in the Color Picker dialog box and in the Color palette. The closest CMYK equivalent is displayed below the triangle. (See "Identifying out-of-gamut colors (Photoshop)" on page 184.)

Note: The alert triangle is not available if you've chosen to use Web-safe sliders.

Printable colors are determined by your current CMYK working space as defined in the Color Settings dialog box.

To select the closest CMYK equivalent for a nonprintable color:

Click the alert triangle ⚠ that appears in the Color Picker dialog box or the Color palette.

Choosing custom colors (Photoshop)

The Adobe Color Picker lets you choose custom colors from the PANTONE® MATCHING SYSTEM®, the TRUMATCH® SWATCHING SYSTEM™, the FOCOLTONE® COLOUR SYSTEM, the TOYO Color Finder™ 1050 system, the ANPA-COLOR™ system, the HKS® color system, and the DIC Color Guide.

To ensure that the final printed output is the color you want, consult your printer or service bureau and choose your custom color based on a printed color swatch. Manufacturers recommend that you get a new swatch book each year to compensate for fading inks and other damage.

Important: *Photoshop prints custom colors to CMYK (process color) plates in every image mode except Duotone. To print true spot color plates, create spot color channels. (See "Adding spot colors (Photoshop)" on page 362.)*

To choose a custom color:

1 Open the Adobe Color Picker, and click Custom.

The Custom Colors dialog box displays the color closest to the color currently selected in the Adobe Color Picker.

2 For Book, choose a color system. (See "Choosing a custom color system (Photoshop)" on page 170.)

3 Locate the color you want by entering the ink number or by dragging the triangles along the scroll bar.

4 Click the desired color patch in the list.

Choosing a custom color system (Photoshop)

The Adobe Color Picker supports various color systems:

ANPA-COLOR Commonly used for newspaper applications. The *ANPA-COLOR ROP Newspaper Color Ink Book* contains samples of the ANPA colors.

DIC Color Guide Commonly used for printing projects in Japan. For more information, contact Dainippon Ink & Chemicals, Inc. in Tokyo, Japan.

FOCOLTONE Consists of 763 CMYK colors. FOCOLTONE colors help avoid prepress trapping and registration problems by showing the overprints that make up the colors. A swatch book with specifications for process and spot colors, overprint charts, and a chip book for marking up layouts are available from FOCOLTONE. For more information, contact Focoltone International, Ltd., in Stafford, United Kingdom.

HKS swatches Used for printing projects in Europe. Each color has a specified CMYK equivalent. You can select from HKS E (for continuous stationery), HKS K (for gloss art paper), HKS N (for natural paper), and HKS Z (for newsprint). Color samplers for each scale are available. HKS Process books and swatches have been added to the color system menu.

PANTONE® Colors are the worldwide standards for spot color reproduction. In 2000, a major revision was made to the PANTONE MATCHING SYSTEM® Color guides. 147 new solid colors and seven additional metallic colors were added to the System to include a total of 1,114 colors. PANTONE® Color guides and chip books are now printed on coated, uncoated, and matte paper stocks to ensure accurate visualization of the printed result and better on-press control. You can print a solid PANTONE® Color in CMYK. To compare a solid PANTONE® Color to its closest process color match, use the PANTONE® solid to process guide. The CMYK screen tint percentages are printed under each color. The guide is now printed on a brighter coated stock and includes comparisons of the 147 new solid colors to CMYK. For more information, contact Pantone, Inc. in Carlstadt, NJ (www.pantone.com).

TOYO Color Finder 1050 Consists of more than 1000 colors based on the most common printing inks used in Japan. The *TOYO Process Color Finder* book and swatches have been added to the color system menu. The *TOYO Color Finder 1050 Book* contains printed samples of Toyo colors and is available from printers and graphic arts supply stores. For more information, contact Toyo Ink Manufacturing Co., Ltd. in Tokyo, Japan.

TRUMATCH Provides predictable CMYK color matching with more than 2000 achievable, computer-generated colors. TRUMATCH colors cover the visible spectrum of the CMYK gamut in even steps. The TRUMATCH COLORFINDER displays up to 40 tints and shades of each hue, each originally created in four-color process and each reproducible in four colors on electronic imagesetters. In addition, four-color grays using different hues are included. For more information, contact Trumatch Inc., in New York City, New York, U.S.A.

Using other color pickers

In addition to the default Adobe Color Picker, you can use the built-in color pickers on your system or a plug-in color picker to select colors. Any plug-in color pickers you install appear under Color Picker in the General section of the Preferences dialog box. For information on installing and using a plug-in color picker, see the documentation that came with the plug-in.

To use the Windows Color Picker (Windows):

1 Choose Edit > Preferences > General.

2 Choose Windows from the Color Picker menu, and click OK.

For more information, see your Windows documentation.

To use the Apple Color Picker (Mac OS):

1 Do one of the following:

- (Photoshop) Choose Photoshop > Preferences > General.

- (ImageReady) Choose ImageReady > Preferences > General.

2 For Color Picker, do one of the following:

- (Photoshop) Choose Apple and click OK.

- (ImageReady) Choose System, and click OK.

For more information, see your Mac OS documentation.

To return to the Adobe Color Picker after using another color picker:

1 Do one of the following:

- In Windows, choose Edit > Preferences > General.

- (Photoshop) In Mac OS, choose Photoshop > Preferences > General.

- (ImageReady) In Mac OS, choose ImageReady > Preferences > General.

2 Choose Adobe from the Color Picker menu, and click OK.

Using the color wheel

When working with color, there are numerous ways to achieve similar results in color balance. It's useful to consider the type of image you have and the effect you want to produce. If you're new to adjusting color components, it helps to keep a diagram of the standard color wheel on hand. You can use the color wheel to predict how a change in one color component affects other colors and also how changes translate between RGB and CMYK color models.
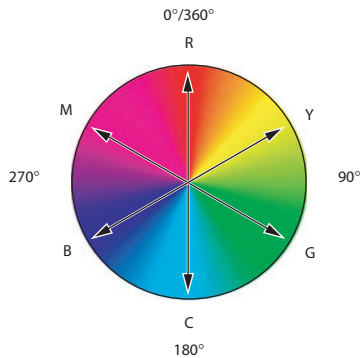
Color wheel
R. Red **Y.** Yellow **G.** Green **C.** Cyan **B.** Blue **M.** Magenta

For example, you can decrease the amount of any color in an image by increasing the amount of its opposite on the color wheel—and vice versa. Colors that lie opposite each other on the standard color wheel are known as *complementary* colors. Similarly, you can increase and decrease a color by adjusting the two adjacent colors on the wheel, or even by adjusting the two colors adjacent to its opposite.

In a CMYK image, you can decrease magenta either by decreasing the amount of magenta or by increasing its complement (by adding cyan and yellow). You can even combine these two corrections, minimizing their effect on overall lightness. In an RGB image, you can decrease magenta by removing red and blue or by adding green. All of these adjustments result in an overall color balance containing less magenta.

Making Color and Tonal Adjustments

Before making color and tonal adjustments

The powerful tools in Photoshop and ImageReady can enhance, repair, and correct the color and tonality (lightness, darkness, and contrast) in an image. Here are some items to consider before making color and tonal adjustments.

- Work with a monitor that's calibrated and profiled. For critical image editing, this is absolutely essential. Otherwise, the image you see on your monitor will look different when printed. For more information on keeping color consistent throughout your workflow, see "An introduction to color management" on page 108.

- Whenever you make a color or tonal adjustment to an image, some image information is discarded. It's best to be judicious regarding the amount of correction you apply to an image.

- (Photoshop) For critical work and maximum preservation of image data, it's best if the image you work with is 16 bits per channel (16-bit image) rather than 8 bits per channel (8-bit image). As you make tonal and color adjustments and image data is discarded, the loss of image information is more critical in an 8-bit image than a 16-bit image. Photoshop CS has improved support for 16-bit images. Generally, 16-bit images have a larger file size than 8-bit images.

Note: *If you jump back and forth between Photoshop and ImageReady, be aware that ImageReady converts 16-bit images to 8-bit for editing. Once the files are saved in ImageReady, they are permanently converted to 8-bit, and the discarded data is unrecoverable. However, if you are editing a 16-bit image in ImageReady and haven't saved it yet, you can return to Photoshop and the image will open as 16-bit without data loss.*

- Duplicate or make a copy of the image file. Working on a copy of your image preserves the original in the event you need to use the image in its original state. (See "Duplicating images" on page 39.)

- Remove any flaws such as dust spots, blemishes, and scratches from the image before making color and tonal adjustments. For more information on retouching an image, see "Retouching and repairing images" on page 270.

- (Photoshop) Plan to use adjustment layers to adjust the tonal range and color balance of your image rather than applying an adjustment directly to the image layer itself. Adjustment layers let you go back and make successive tonal adjustments without discarding data from the image layer. Keep in mind that using adjustment layers adds to the file size of the image and demands more RAM from your computer. For more information on using adjustment layers, see "Using adjustment layers and fill layers (Photoshop)" on page 402.

- (Photoshop) Open the Info or Histogram palette in Expanded view. As you evaluate and correct the image, both palettes display invaluable feedback on your adjustments. For more information on using the Info palette, see "Viewing the color values of pixels (Photoshop)" on page 181 and for more information on the Histogram palette, see "About the Histogram palette" on page 177.

- You can make a selection or use a mask to confine your color and tonal adjustments to part of an image. Another method to selectively apply color and tonal adjustments is to set up your document with image components on different layers. Color and tonal adjustments are applied to only one layer at a time and will affect only the image components on the targeted layer.

Basic steps for correcting images

The following workflow overview is a starting point for correcting the tonality and color of an image.

Note: *For some images, the use of the quick adjustment commands in Photoshop and ImageReady might give satisfactory results. For more information on the various Auto commands, see "Making quick overall adjustments to an image" on page 215.*

To make color and tonal adjustments:

1 (Photoshop) Use the histogram to check the quality and tonal range of the image. For information on using the histogram, see "Using a histogram to view the tonal range of an image (Photoshop)" on page 176.

2 Adjust the color balance to remove unwanted color casts or to correct oversaturated or undersaturated colors.

You can choose from the following color adjustment methods:

(Photoshop) Auto Color command Quickly corrects the color balance in an image. Although its name implies an automatic adjustment, you can fine tune how the Auto Color command behaves. For more information, see "Using the Auto Color command (Photoshop)" on page 217.

(Photoshop) Match Color command Matches the color from one photo to another photo, from one layer to another layer, and from a selection in an image to another selection in the same image or different image. This command also adjusts the luminance and color range and neutralizes color casts in an image. For more information, see "Using the Match Color command (Photoshop)" on page 206.

(Photoshop) Color Balance command Changes the overall mixture of colors in an image. For more information, see "Using the Color Balance command (Photoshop)" on page 199.

Hue/Saturation command Adjusts the hue, saturation, and lightness values of the entire image or of individual color components. For more information on the Hue/Saturation command, see "Using the Hue/Saturation command" on page 200.

(Photoshop) Replace Color command Replaces specified colors in an image with new color values. For more information on the Replace Color command, see "Using the Replace Color command (Photoshop)" on page 210.

(Photoshop) Selective Color command Adjusts the amount of process colors in individual color components. For more information on the Selective Color command, see "Using the Selective Color command (Photoshop)" on page 214.

(Photoshop) Channel Mixer command Modifies a color channel and makes color adjustments not easily done with other color adjustment tools. For more information on the Channel Mixer command, see "Mixing color channels (Photoshop)" on page 212.

Levels command Adjusts color balance by setting the pixel distribution for individual color channels. For more information on the Levels command, see "Using Levels to adjust color (Photoshop)" on page 188.

(Photoshop) Curves command Provides up to 14 controls points for highlight, midtone, and shadow adjustments for individual channels. For more information on the Curves command, see "Using the Curves dialog box (Photoshop)" on page 189.

Photo Filter command Makes color adjustments by simulating the effects of photographing with a Kodak Wratten filter in front of a camera lens. For more information on the Photo Filter command, see "Using the Photo Filter command (Photoshop)" on page 203.

3 Adjust the tonal range.

Begin tonal corrections by adjusting the values of the extreme highlight and shadow pixels in the image, setting an overall tonal range for the image. This process is known as *setting the highlights and shadows* or *setting the white and black points*.

Setting the highlights and shadows typically redistributes the midtone pixels appropriately. However, you may need to adjust your midtones manually.

There are several different ways to set an image's tonal range:

- You can drag sliders along the histogram in the Levels dialog box. For more information using the sliders in Levels, see "Using Levels to set highlights, shadows, and midtones" on page 186.

- (Photoshop) You can adjust the shape of the graph in the Curves dialog box. This method lets you adjust any point along a 0–255 tonal scale and provides the greatest control over an image's tonal quality. For more information on using the Curves command, see "Using the Curves dialog box (Photoshop)" on page 189.

- (Photoshop) You can assign target values to the highlight and shadow pixels using either the Levels or Curves dialog box. This can help preserve important highlight and shadow details in images being sent to a printing press or laser printer. You might also need to tweak the target values after sharpening. For more information on setting target values, see "Setting highlight and shadow target values (Photoshop)" on page 194.

- Adjust the tonality in the shadow and highlight areas using the Shadow/Highlight command. This adjustment is especially useful to correct photos, where the subject is silhouetted due to strong backlighting or where the subject is a bit light from being too close to the camera flash. For more information on the Shadow/Highlight command, see "Using the Shadow/Highlight command (Photoshop)" on page 204.

4 (Optional) Make other special color adjustments.

Once you have corrected the overall color balance of your image, you can make optional adjustments to enhance colors or produce special effects. For more information on special color effects, see "Applying special color effects to images" on page 221.

5 Sharpen the edges of the image.

As one of the final steps, use the Unsharp Mask filter to sharpen the clarity of edges in the image. The amount of sharpening required for an image varies due to differences in quality produced by different digital cameras and scanners. For more information on sharpening images, see "Sharpening images" on page 224.

6 (Photoshop) Use the Output sliders in the Levels dialog box or the Curves dialog box to bring important details in the highlights and shadows into the gamut of an output device, like a desktop printer. Do this if your image is being sent out to a printing press and you know the characteristics of the press.

Because sharpening increases the contrast of neighboring pixels, it's possible that some pixels in critical areas might become unprintable on the press that you're sending your images to. This is why it's best to tweak the output settings after sharpening. For more information on adjusting the output settings, see "Setting highlight and shadow target values (Photoshop)" on page 194.

Using a histogram to view the tonal range of an image (Photoshop)

A *histogram* illustrates how pixels in an image are distributed by graphing the number of pixels at each color intensity level. This can show you whether the image contains enough detail in the shadows (shown in the left part of the histogram), midtones (shown in the middle), and highlights (shown in the right part) to make a good correction.

Reading a histogram

The histogram also gives a quick picture of the tonal range of the image, or the image *key type.* A low-key image has detail concentrated in the shadows; a high-key image has detail concentrated in the highlights; and an average-key image has detail concentrated in the midtones. An image with full tonal range has a number of pixels in all areas. Identifying the tonal range helps determine appropriate tonal corrections.
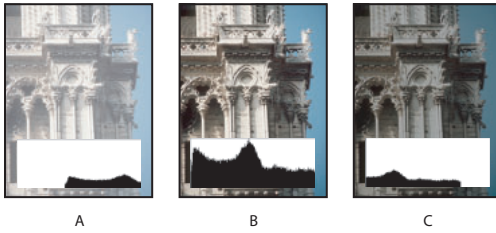
How to read a histogram
A. Overexposed photo **B.** Properly exposed Photo with full tonality **C.** Underexposed photo

About the Histogram palette

The Histogram palette offers many options for viewing tonal and color information about an image. By default, the histogram displays the tonal range of the entire image. To display histogram data for a portion of the image, first select that portion.

Opening the Histogram palette   Choose Window > Histogram or click the Histogram tab to open the Histogram palette. By default, the Histogram palette opens in Compact View with no controls or statistics. See the following section to learn how to show the Histogram palette in different views.
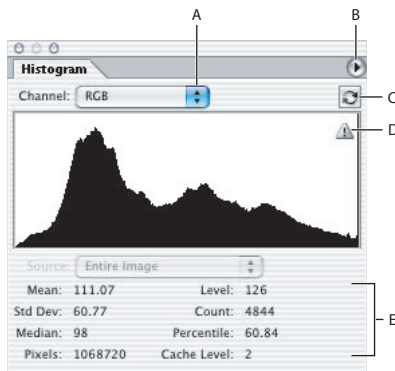
Histogram palette
A. Channel menu **B.** Palette menu **C.** Uncached Refresh button **D.** Cached Data Warning icon
E. Statistics

Adjusting the view of the Histogram palette   Choose one of the following views from the palette menu.

• Choose Expanded View to view the histogram with statistics, and access controls for choosing the channel represented by the histogram, viewing options in the Histogram palette, refreshing the histogram to display uncached data, and choosing a specific layer in a multi-layered document.

• Choose Compact View to display a histogram with no controls or statistics. The histogram represents the entire image.

- Choose All Channels View to display individual histograms of the channels in addition to all the options of the Expanded View. The individual histograms do not include alpha channels, spot channels, or masks.
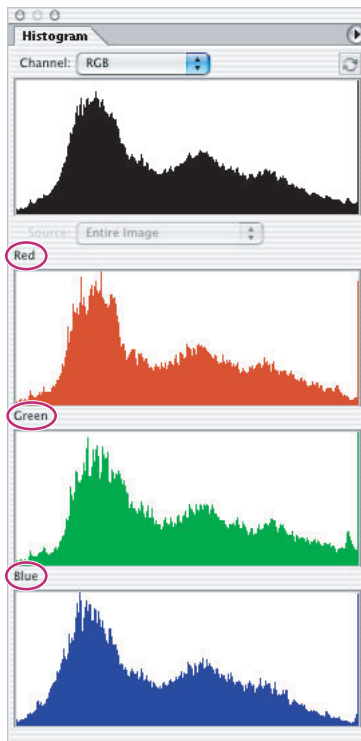
Histogram palette with all channels displayed and statistics hidden

Viewing a specific channel If you chose the Expanded View or All Channels View, you can choose a setting from the Channel menu. The setting you choose will be remembered and displayed if you switch from either Expanded View or All Channels View back to Compact View.

- Choose an individual channel to display a histogram of the document's individual channels including color channels, alpha channels, and spot channels.
- Depending on the image's color mode, choose RGB, CMYK, or Composite to view a composite histogram of all the channels. This is the default view when first choosing Expanded View or All Channels View.
- If the image is RGB or CMYK, choose Luminosity to display a histogram representing the luminance or intensity values of the composite channel.
- If the image is RGB or CMYK, choose Colors to display a composite histogram of the individual color channels in color.

In the All Channels View, choosing from the Channels menu only affects the topmost histogram in the palette.

Viewing channels in color To view channels in color, do one of the following:

- In the All Channels View, choose Show Channels in Color from the palette menu.

- In Expanded View or All Channels View, choose an individual channel from the Channel menu and choose Show Channels in Color from the palette menu. Switching to Compact View will continue to show the individual channel in color.

- In Expanded View or All Channels View, choose Colors from the Channel menu to show a composite histogram of the channels in color. Switching to Compact View will continue to show the composite histogram in color.

Showing and hiding statistics By default, statistics are displayed in the Expanded View and All Channels View. To hide the statistics, make sure Show Statistics is not chosen in the Histogram palette menu. For more information on statistics in the Histogram palette, see "Viewing statistical information about pixel values" on page 180.

Viewing specific statistics You can place the pointer in the histogram to view information about a specific pixel value. To view information about a range of values, drag in the histogram to highlight the range. For more information on statistics in the Histogram palette, see "Viewing statistical information about pixel values" on page 180.

Viewing options for multilayered documents If your document is multilayered, you can choose a setting from the Source menu. The Source menu is not available for single-layered documents.

- Choose Entire Image to display a histogram of the entire image including all layers in the multilayered document.

- Choose Selected Layer to display a histogram of the layer that's selected in the Layers palette.

- Choose Adjustment Composite to display a histogram of an adjustment layer selected in the Layers palette, including all the layers below the adjustment layer.

Previewing adjustments If the Preview option is selected in the dialog boxes of adjustment commands, the Histogram palette displays a preview of how the adjustment affects the histogram.
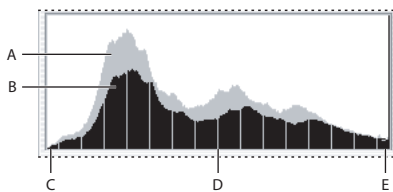
Preview of histogram adjustment in the Histogram palette
A. Original histogram **B.** Adjusted histogram **C.** Shadows **D.** Midtones **E.** Highlights

Refreshing the histogram display When a histogram is being read from a cache instead of the document's current state, the Cached Data Warning icon ⚠ appears in the Histogram palette. Using the image cache, the histogram displays faster and is based on a representative sampling of pixels in the image. This option is enabled and the *cache level* (from 2 to 8) is specified in the Memory and Image Cache Preference. To refresh the histogram so it displays all of the pixels of the original image in its current state, do one of the following:

- Double-click anywhere in a histogram.

- Click the Cached Data Warning icon ⚠.

- Click the Uncached Refresh button ↻.

- Choose Uncached Refresh from the Histogram palette menu.

For information about cache level, see "Viewing statistical information about pixel values" on page 180.

Viewing statistical information about pixel values

Statistical information about the intensity values of the pixels appears below the histogram in the Histogram palette. The Histogram palette must be in either the Expanded View or All Channels View, and Show Statistics must be chosen from the palette menu.

The statistical information includes:

Mean   Represents the average intensity value.

Standard deviation (Std Dev)   Represents how widely intensity values vary.

Median   Shows the middle value in the range of intensity values.

Pixels   Represents the total number of pixels used to calculate the histogram.

Level   Displays the intensity level of the area underneath the pointer.

Count   Shows the total number of pixels corresponding to the intensity level underneath the pointer.

Percentile   Displays the cumulative number of pixels at or below the level underneath the pointer. This value is expressed as a percentage of all the pixels in the image, from 0% at the far left to 100% at the far right.

Cache Level   Shows the current image cache used to create the histogram. If the Use Cache for Histograms option is selected in the Memory and Image Cache preferences, the histogram displays faster and is based on a representative sampling of pixels in the image (based on the magnification), rather than on all of the pixels. The original image is cache level 1. Each level above that averages four adjacent pixels below to get a single pixel, so each level is half the dimensions (1/4 the number of pixels) of the one below. When Photoshop needs to do a quick approximation, it can just use one of the upper levels. If you want to check for posterization in the image, choose Edit > Preferences > Memory & Image Cache, and then deselect the Use Cache for Histograms option.

Using the color adjustment tools

All Photoshop and ImageReady color adjustment tools work essentially the same way: by mapping an existing range of pixel values to a new range of values. The difference between the tools is the amount of control they provide. For an overview summary of the color adjustment tools, see "Basic steps for correcting images" on page 174.

Making color adjustments

There are two ways to adjust the colors in an image. One method is to choose a command from the Image > Adjustments submenu. This method permanently alters the pixels in the active layer.

A more flexible method is to use an adjustment layer. Adjustment layers let you experiment with color and tonal adjustments without permanently modifying the pixels in the image. The color and tonal changes reside within the adjustment layer, which acts as a veil through which the underlying image layers appear. You must use Photoshop to create and edit adjustment layers; however, you can view existing adjustment layers in ImageReady.

To open a color adjustment dialog box:

1 If you want to make adjustments to just a portion of your image, select that portion. If you make no selection, the adjustment will be applied to the entire image.

2 Do one of the following:

• Choose Image > Adjustments, and choose a command from the submenu.

• (Photoshop) Create an adjustment layer. (See "Using adjustment layers and fill layers (Photoshop)" on page 402.)

• (Photoshop) Double-click the thumbnail of an existing adjustment layer in the Layers palette.

3 To see your adjustments in the image before accepting them, select Preview in the color adjustment dialog box.

To cancel changes without closing a color adjustment dialog box, hold down Alt (Windows) or Option (Mac OS) to change the Cancel button to Reset; then click Reset. This resets the dialog box to the values it had prior to your changes.

Viewing the color values of pixels (Photoshop)

You can use the Info palette and the Color palette to see the color value of pixels as you make color corrections. This feedback is useful while you make color adjustments. For instance, referring to the color values can help when neutralizing a color cast or can alert you to whether a color is saturated.

When you work with a color adjustment dialog box, the Info palette displays two sets of color values for the pixels under the pointer. The value in the left column is the original color value. The value in the right column is the color value after the adjustment is made.
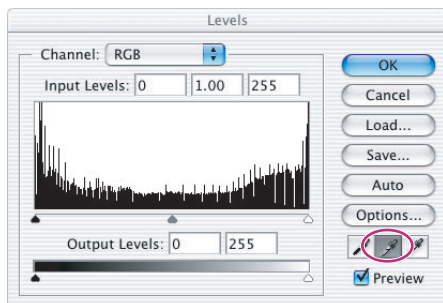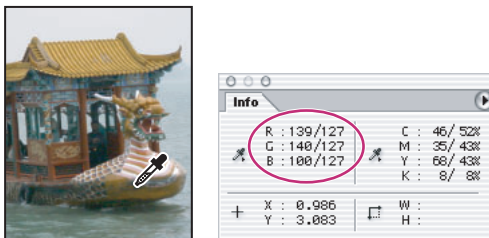
Using Levels and Info palette to neutralize the tone of an image

You can view the color of a single location using the Eyedropper tool 🖉, or you can use up to four Color Samplers ✛ to display color information for one or more locations in the image. These samplers are saved in the image, so you can refer to them repeatedly as you work, even if you close and reopen the image.
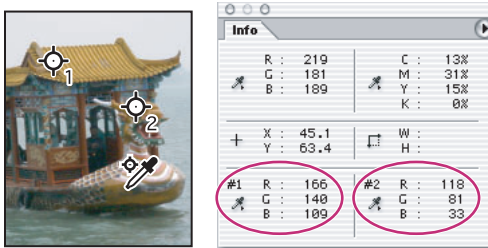
Color samplers and Info palette

To use the Info palette and the Eyedropper or Color Sampler tool to see color values:

1 Choose Window > Info to open the Info palette.

2 Select the Eyedropper tool 🖉 or Color Sampler tool 🖉, and if necessary, choose a sample size in the options bar:

• Point Sample to read the value of a single pixel.

• 3 by 3 Average to read the average value of a 3-by-3 pixel area.

• 5 by 5 Average to read the average value of a 5-by-5 pixel area.

3 If you selected the Color Sampler tool 🖉, place up to four color samplers on the image. Click where you want to place a sampler.

4 Open an adjustment dialog box. (See "Making color adjustments" on page 180.)

5 Make your adjustments in the dialog box and, before applying them, view the before and after color values in the Info palette:

• To view color values using the Eyedropper tool 🖉, move the pointer over the area of the image you want to examine. Opening an adjustment dialog box activates the Eyedropper tool outside the dialog box. You still have access to the scroll controls and to the Hand 🖐 and Zoom 🔍 tools using keyboard shortcuts.

• To view the color values under the color samplers, look at the lower half of the Info palette. To place additional color samplers in the image while the adjustment dialog box is open, Shift-click in the image.

To move a color sampler:

Select the Color Sampler tool 🖉, and drag the sampler to the new location.

To delete a color sampler:

1 Select the Color Sampler tool 🖉.

2 Do any of the following:

• Drag the sampler out of the document window.

• Hold down Alt (Windows) or Option (Mac OS) until the pointer becomes a scissors ✂ and click the sampler.

- Right-click (Windows) or Control-click (Mac OS) a sampler, and then choose Delete from the contextual menu.

- To delete all color samplers, click Clear in the options bar.

- To delete a color sampler while an adjustment dialog box is open, hold down Alt+Shift (Windows) or Option+Shift (Mac OS), and click the sampler.

To hide/show color samplers in an image:

Choose View > Extras. A check mark indicates that color samplers are showing.

To change the display of color sampler information in the Info palette:

Do any of the following:

- To display or hide color sampler information in the Info palette, choose Color Samplers from the palette menu. A check mark indicates that the color sampler information is showing.

- To change the color space in which a color sampler displays values, move the pointer onto the color sampler icon 🔧 in the Info palette, hold down the mouse button, and choose another color space from the menu.

To use the Eyedropper tool and Color palette to see color values:

1 Choose Window > Color to open the Color palette.

2 Open a color adjustment dialog box. This activates the Eyedropper tool 🖊 outside the dialog box and over the image.

3 Click the pixel you want to check in the image.

4 Make the adjustments in the dialog box and, before applying them, view the adjusted color values in the Color palette.

Saving and reapplying settings

The Save and Load buttons in the Levels, Curves (Photoshop), Hue/Saturation, Match Color (Photoshop), Replace Color (Photoshop), Selective Color (Photoshop), Channel Mixer (Photoshop), Shadow/Highlight (Photoshop), and Variations dialog boxes let you save your settings and apply them to other images. The procedure for saving and loading a setting in the Match Color command is slightly different. For saving and loading settings in the Match Color command, see "Saving and reusing Match Color settings" on page 210.

To save a setting:

1 Click Save in the adjustment dialog box you are using.

2 Name and save the settings.

To apply a saved setting:

In one of the adjustment dialog boxes mentioned above, click Load. Locate and load the saved adjustment file.

💡 If you apply the same adjustment often, consider recording and running the adjustment as an action or creating a droplet.

Comparing corrections in CMYK and RGB (Photoshop)

Even though you can perform all color and tonal corrections in RGB mode and nearly all adjustments in CMYK, you should choose a mode carefully. Whenever possible, avoid multiple conversions between modes, because color values are rounded and lost with each conversion. If an RGB image is to be used on-screen, you needn't convert it to CMYK mode. Conversely, if a CMYK scan is to be separated and printed, you needn't perform corrections in RGB mode.

If you must convert your image from one mode to another, it makes sense to perform most of your tonal and color corrections in RGB mode and use CMYK mode for fine-tuning. Advantages of working in RGB mode include the following:

- You can save memory and improve performance because you are working with fewer channels.

- The range of colors in RGB spaces is much larger than that of CMYK spaces, so more colors are likely to be preserved after adjustments. For more information, see "Understanding color space and gamut" on page 115.

Using the Proof Setup and Proof Color commands, you can preview composite CMYK colors and separation plates using the CMYK working space defined in the Color Settings dialog box. Or, you can preview colors using a custom CMYK color profile. (See "Soft-proofing colors" on page 140.)

You can edit an image in RGB mode in one window and view the same image in CMYK colors in another window. Choose Window > Arrange > New Window for (file name) to open a second window with the image you're working on. Make sure Working CMYK is chosen for Proof Setup and then use the Proof Color command to turn on the CMYK preview in one of the windows.

Identifying out-of-gamut colors (Photoshop)

A *gamut* is the range of colors that a color system can display or print. A color that can be displayed in RGB may be out of gamut, and therefore unprintable, for your CMYK setting. (See "Understanding color space and gamut" on page 115.)

Photoshop automatically brings all colors into gamut when you convert an RGB image to CMYK. But you might want to identify the out-of-gamut colors in an image or correct them manually before converting to CMYK.

In RGB mode, you can identify out-of-gamut colors in the following ways:

- In the Info palette, an exclamation point appears next to the CMYK values whenever you move the pointer over an out-of-gamut color.

- In both the Color Picker and the Color palette, an alert triangle ⚠ appears and the closest CMYK equivalent is displayed whenever you select an out-of-gamut color. To select the CMYK equivalent, click the triangle or the color patch.

- Use the Gamut Warning command.

To turn on or off the highlighting of out-of-gamut colors:

1 Choose View > Proof Setup, and choose the proof profile on which you want to base the gamut warning. (See "Soft-proofing colors" on page 140.)

2 Choose View > Gamut Warning. All pixels outside the gamut of the current proof profile space are highlighted.

To change the gamut warning color:

1 Do one of the following:

- In Windows, choose Edit > Preferences > Transparency & Gamut.

- In Mac OS, choose Photoshop > Preferences > Transparency & Gamut.

2 Under Gamut Warning, click the color box to display the Color Picker. Then choose a new warning color, and click OK. For best results, use a color that is not already present in the image.

3 Enter a value in the Opacity text box. Values can range from 0 to 100%. Use this setting to reveal more or less of the underlying image through the warning color. Then click OK.

Original image, and preview of out-of-gamut colors with green chosen for the gamut warning color

Using the Levels dialog box

The Levels dialog box lets you correct the tonal range and color balance of an image by adjusting intensity levels of the image's shadows, midtones, and highlights. The Levels histogram serves as a visual guide for adjusting the image's key tones. For more information on how to read a histogram, see "Using a histogram to view the tonal range of an image (Photoshop)" on page 176.

Settings made in the Levels dialog box can be saved for use on another image. See "Saving and reapplying settings" on page 183.
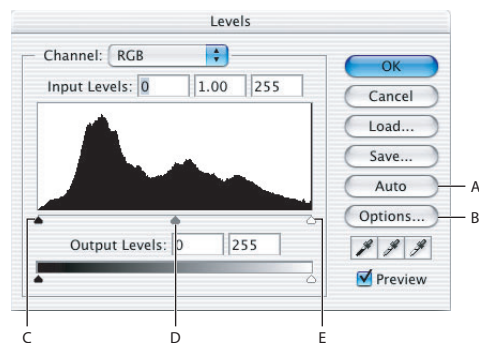
Levels dialog box
A. Apply Auto Color Correction **B.** Open Auto Color Correction Options dialog box **C.** Shadows
D. Midtones **E.** Highlights

Using Levels to set highlights, shadows, and midtones

The outer two Input Levels sliders map the black point and white point to the settings of the Output sliders. By default, the Output sliders are at level 0, where the pixels are completely black, and level 255, where the pixels are completely white. So in the default position for the Output sliders, moving the black point slider maps the pixel value to level 0 and moving the white point slider maps the pixel value to level 255. *Clipping* the pixels causes the remaining levels to redistribute themselves between levels 0 and 255. This redistribution increases the tonal range of the image, in effect increasing the overall contrast of the image.

Note: *When shadows are clipped, the pixels are completely black—no detail. When highlights are clipped, the pixels are completely white—no detail.*

The middle Input slider adjusts the gamma in the image. It moves the midtone (level 128) and changes the intensity values of the middle range of gray tones without dramatically altering the highlights and shadows.

To adjust tonal range using Levels:

1 Do one of the following:

• Choose Image > Adjustments > Levels.

• (Photoshop) Layer > New Adjustment Layer > Levels. Click OK in the New Layer dialog box.

2 To adjust tones for a specific color channel, choose an option from the Channel menu.

To edit a combination of color channels at the same time, Shift-select the channels in the Channels palette before choosing the Levels command. The Channel menu then displays the abbreviations for the target channels—for example, CM for cyan and magenta. The menu also contains the individual channels for the selected combination. You can only edit spot channels and alpha channels individually. Keep in mind that this method does not work in a Levels adjustment layer.

3 To adjust the shadows and highlights manually, do one of the following:

• Drag the black and white Input Levels sliders to the edge of the first group of pixels on either end of the histogram. For example, moving the black point slider to the right at level 5 tells Photoshop to map all the pixels at level 5 and lower to level 0. Similarly, moving the white point slider to the left at level 243 tells Photoshop to map all pixels at level 243 and higher to level 255. The mapping affects the darkest and lightest pixels in each channel. The corresponding pixels in the other channels are adjusted proportionately to avoid altering the color balance.

Note: *You can also enter values directly into the first and third Input Levels text boxes.*
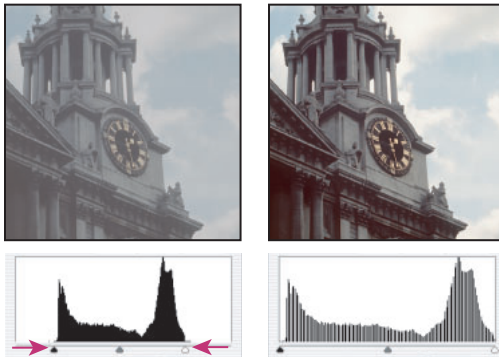
Before and after adjusting the black point and white point

- Drag the black and white Output Levels sliders to define new shadow and highlight values. You can also enter values directly in the Output Levels text boxes. For more information, see "Using Levels to preserve highlight and shadow details for printing" on page 188 and "Setting highlight and shadow target values (Photoshop)" on page 194.

You can also set the white and black points by using the eyedropper tools. See "Using the eyedropper tools to set the black and white points" on page 193.

It's also possible to adjust the shadows and highlights automatically by clicking Auto. In Photoshop, clicking Auto applies settings specified in the Auto Color Correction Options dialog box. For more information on adjusting the Auto Color Correction settings, see "Setting auto color correction options (Photoshop)" on page 218. In ImageReady, clicking Auto is the same as using the Auto Levels command. (See "Using the Auto Levels command" on page 216.)

If your image needs midtone corrections, use the middle Input slider to make a gamma adjustment. Move the middle Input slider to the left makes the overall image lighter. It maps a lower (darker) level up to the midpoint level between the Output sliders. If the Output sliders are in their default position (0 and 255), the midpoint would be level 128. In this example, the shadows expand to fill the tonal range from 0 to 128 and the highlights get compressed. Move the middle Input slider to the right has the opposite effect, making the image darker.

Note: *You can also enter a gamma adjustment value directly in the middle Input Levels text box.*
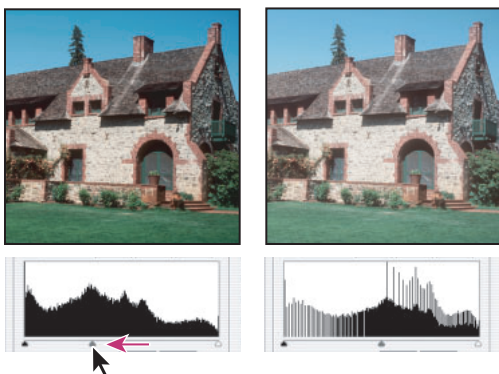
Moving the middle slider adjusts the image gamma

4 Click OK.

The adjusted histogram can be viewed in the Histogram palette.

Using Levels to preserve highlight and shadow details for printing

The Output Levels sliders let you set the shadow and highlight levels to compress the image into a range less than 0 to 255. Use this adjustment to preserve the shadow and highlight details when an image is being printed on a press whose characteristics you know. For example, suppose there's important image details in the highlights with a value of 245, and the printing press that you're sending your image to won't hold a dot smaller than 5%. You can pull the highlight slider to level 242 (which is a 5% dot on the press) to shift the highlight detail from 245 to 242. Now, the highlight detail will safely print on that particular press. For more information on setting the Output to target an output desti-nation, see "Setting highlight and shadow target values (Photoshop)" on page 194.
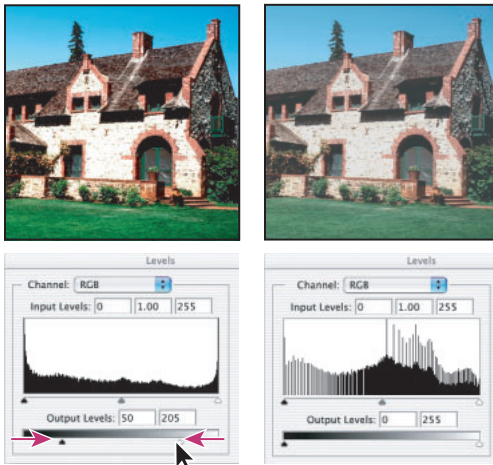
Before and after adjusting the Output Levels to set the shadow and highlight levels

Using Levels to adjust color (Photoshop)

In addition to setting the tonal range, you can use Levels to adjust the color balance of an image.

To use Levels to adjust color balance:

1 Place a color sampler on an area of neutral gray in the image.

2 Do one of the following to open the Levels dialog box:

• Choose Image > Adjustments > Levels.

• (Photoshop) Choose Layer > New Adjustment Layer > Levels. Click OK in the New Layer dialog box.

3 Do one of the following to neutralize a color cast:

• Double-click the Set Gray Point Eyedropper tool 🖊 in the Levels dialog box to display the Adobe Color Picker. Enter the values you want to assign to the neutral gray, and click OK. Then click the color sampler in the image. For more information on using an eyedropper tool, see "Using the eyedropper tools to remove a color cast" on page 193.

- Click Options in the Levels dialog box. Click the Midtones color swatch to display the Adobe Color Picker. Enter the values you want to assign to the neutral gray, and click OK. This method has the advantage of showing you a preview of the values you're assigning.

In general, assign equal color component values to achieve a neutral gray. For example, assign equal red, green, and blue values to produce a neutral gray in an RGB image.

Using the Curves dialog box (Photoshop)

Like the Levels dialog box, the Curves dialog box lets you adjust the entire tonal range of an image. But instead of using only three adjustments (white point, black point, gamma), with Curves you can adjust up to 14 different points throughout an image's tonal range (from shadows to highlights). You can also use Curves to make precise adjustments to individual color channels in an image. Settings made in the Curves dialog box can be saved for use on another image. See "Saving and reapplying settings" on page 183.
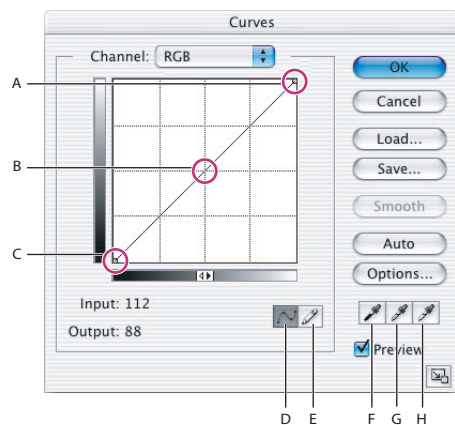
Curves dialog box
A. Highlights **B.** Midtones **C.** Shadows **D.** Adjust curve by adding points **E.** Draw a curve with the pencil **F.** Set black point **G.** Set gray point **H.** Set white point

About the Curves dialog box

The Curves dialog box opens with the curve as a straight diagonal line. The horizontal axis of the graph represents the original intensity values of the pixels (Input levels); the vertical axis represents the new color values (Output levels).

By default, Curves displays the intensity values from 0 to 255 for RGB images with black (0) at the bottom left corner. By default, Curves displays percentages from 0 to 100 for CMYK images with highlights (0%) at the bottom left corner. To reverse the display of intensity values and percentages, click the double arrow ◀▶ below the curve. For RGB images, 0 will now be at the bottom right corner and for CMYK images, 0% will be at the bottom right corner.
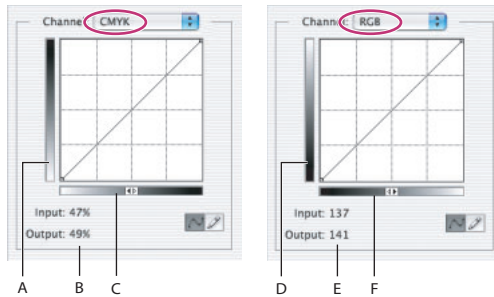
Default curve dialog for CMYK and RGB images
A. Default orientation of CMYK tonal output bar **B.** CMYK Input and Output values in percentages **C.** Default orientation of CMYK tonal input bar **D.** Default orientation of RGB tonal output bar **E.** RGB Input and Output values are in intensity levels **F.** Default orientation of RGB tonal input bar

To open the Curves dialog box:

1 Do one of the following:

• Choose Image > Adjustments > Curves.

• Choose Layer > New Adjustment Layer > Curves. Click OK in the New Layer dialog box.

2 To make the Curves grid finer, hold down Alt (Windows) or Option (Mac OS), and click the grid. Alt/Option-click again to make the grid larger.

Adjusting color and tonality with Curves

Changing the shape of the curve in the Curves dialog box alters the tonality and color of an image. Bowing the curve upward lightens an image, and bowing the curve downward darkens it. The steeper sections of the curve represent portions of an image with more contrast. Conversely, flatter sections of the curve represent areas of lower contrast in an image.

In the default state of the Curves dialog box, moving a point in the top portion of the curve primarily adjusts the highlights; moving a point in the center of the curve primarily adjusts the midtones, and moving a point in the bottom section of the curve primarily adjusts the shadows. Moving a point either down or to the right maps the Input value to a lower Output value, and the image darkens. Conversely, moving a point either up or to the left maps a lower Input value to a higher Output value, and the image lightens. So, if you want to lighten the shadows, move up a point near the bottom of the curve. And, if you want to darken highlights, move down a point near the top of the curve.

To adjust color and tonality with Curves:

1 Open the Curves dialog box.

2 (Optional) To adjust the color balance of the image, choose the channel (or channels) you want to adjust from the Channel menu.

To edit a combination of color channels at the same time, Shift-select the channels in the Channels palette before choosing Curves. The Channel menu then displays the abbreviations for the target channels—for example, CM for cyan and magenta. The menu also contains the individual channels for the selected combination. Keep in mind that this method does not work in a Curves adjustment layer.

3 Add a point along the curve by doing one of the following:

• Click directly on the curve.

• (RGB images only) Ctrl-click (Windows) or Command-click (Mac OS) a pixel in the image.

Ctrl/Command-clicking pixels in the image is the best way to add points when you want to preserve or adjust specific details in an image.

You can add up to 14 control points to the curve. To remove a control point, drag it off the graph, select it and press Delete, or Ctrl-click (Windows) or Command-click (Mac OS) it. You cannot delete the endpoints of the curve.
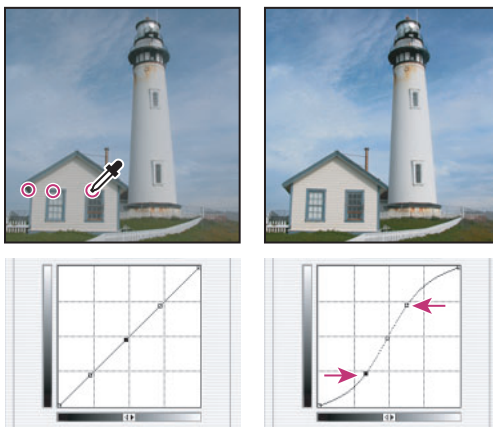
Ctrl-clicking (Windows) or Command-clicking (Mac OS) three areas of an image to add points to the curve. By default, moving a point to the left or up raises the tonal value, and moving a point to the right or down lowers the tonal value. Lightening the highlights and darkening the shadows is represented by an S-curve where the image's contrast is increased.

💡 To determine the lightest and darkest areas in an RGB image, drag over the image. The intensity values of the area under the pointer, along with the corresponding location on the curve, are displayed in the Curves dialog box. Dragging the pointer over a CMYK image shows the percentages in the Color palette if it's displaying CMYK values.

4 Do one of the following to adjust the shape of the curve:

• Click a point and drag the curve until the image looks the way you want it.

• Click a point on the curve, and enter values in the Input and Output text boxes.

• Select the pencil at the bottom of the dialog box, and drag to draw a new curve. You can hold down Shift to constrain the curve to a straight line, and click to define endpoints. When you're finished, click Smooth if you want to smooth the curve.

Points on the curve remain anchored until you move them. As a result, you can make an adjustment in one tonal area while other areas remain unaffected.

Note: *In general, only small curve adjustments are necessary to make tonal and color corrections to most images.*

Quick adjustments in the Curves dialog box

Clicking the Auto button applies either an Auto Color, Auto Contrast, or Auto Levels correction, depending on the settings in the Auto Color Correction Options dialog box. For more information on specifying the settings for Auto Color, Auto Contrast, or Auto Levels, see "Setting auto color correction options (Photoshop)" on page 218.

The Curves dialog box also has eyedropper tools to adjust color and tonality in an image. For more information about using the eyedropper tools, see "Using the eyedropper tools in the Levels or Curves dialog box" on page 192.

Keyboard shortcuts for Curves

The following shortcuts work with the Curves dialog box:

*   Ctrl-click (Windows) or Command-click (Mac OS) in the image to set a point on the curve in the current channel specified in the Curves dialog box.

*   Shift+Ctrl-click (Windows) or Shift+Command-click (Mac OS) in the image to set a point on the curve for the selected color in each color component channel (but not in the composite channel).

*   Shift-click points on the curve to select multiple points. Selected points appear filled with black.

*   Click in the grid, or press Ctrl-D (Windows) or Command-D (Mac OS) to deselect all points on the curve.

*   Press arrow keys to move selected points on the curve.

*   Press Ctrl+Tab (Windows) or Control+Tab (Mac OS) to move forward through control points on the curve.

*   Press Shift+Ctrl+Tab (Windows) or Shift+Control+Tab (Mac OS) to move backward through control points on the curve.

Using the eyedropper tools in the Levels or Curves dialog box

Both the Levels (both Photoshop and ImageReady) and Curves (Photoshop) dialog boxes have eyedropper tools for setting the black point, setting the white point, and adjusting the color balance of an image. Simultaneously, using an eyedropper tool also applies a tonal correction to all the pixels in an image.

Note: *The Set Gray Point Eyedropper tool* 🖋 *is used primarily for color correction and is unavailable when working with grayscale images.*

For the best results, don't use the eyedropper tools in images that require a huge adjustment to map a pixel to the maximum highlight or minimum shadow values. Because the eyedropper tools shift the tonal value of all pixels in an image in equal amounts higher or lower, some pixels may get clipped. It's best to make only small adjustments with the eyedropper tools.

Important: *Using the eyedropper tools will undo any previous adjustment you've made in Levels or Curves (Photoshop). If you plan to use the eyedropper tools, it's best to use them first, and then tweak your adjustments with the Levels sliders or Curves points (Photoshop).*

Using the eyedropper tools to set the black and white points

You can use the eyedropper tools to set the black or white points in an image. Keep in mind that when the eyedropper tools shift the tonal value of a pixel to the black point (0) or white point (255), the amount of shift in the pixel value is applied to every pixel in the image. So, all pixel values are shifted equally higher or lower, depending on whether you're setting the black point or white point.

This behavior differs from the Input Levels sliders and the Curves (Photoshop) end points, which set the black point in an image while preserving most of the tonality in the highlights and set the white point while preserving most of the tonality in the shadows. Further, both Levels and Curves (Photoshop) make gamma adjustments without affecting either the black or white points. For more information, see "Using the Levels dialog box" on page 185 and "Using the Curves dialog box (Photoshop)" on page 189.

To set the black and white points using the eyedropper tools:

1 Open the Levels or Curves (Photoshop) dialog box.

By default, the target value for the Set Black Point Eyedropper tool 🖋 is 0 and the target value for the Set White Point Eyedropper tool 🖋 is 255.

2 To specify the target value for the black point or white point, double-click the Set Black Point Eyedropper tool or the Set White Point Eyedropper tool. Use the Color Picker to specify the target value.

Depending on the output device for your image, you may want to set a higher black point value or a lower white point value.

3 Select either the Set Black Point Eyedropper tool or the Set White Point Eyedropper tool. Then click in the image where you want to set the black or white point.

4 If necessary, make any further adjustments in the Levels or Curves (Photoshop) dialog box.

5 Click OK.

Using the eyedropper tools to remove a color cast

You can use the eyedropper tools in the Levels or Curves (Photoshop) dialog boxes to correct a color cast. It's easier to color balance an image by first identifying an area that should be neutral and then removing the color cast from that area. With such a correction, all other colors in the image should be color balanced, too. The eyedropper tools work best on an image with easily identified neutrals.
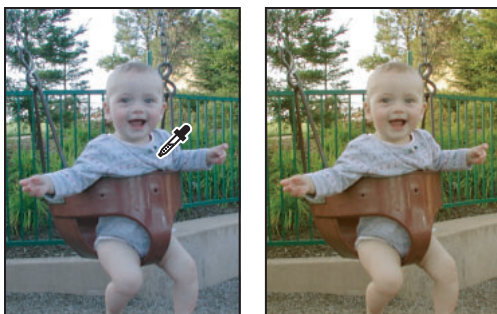
Before and after using the Set Gray Point Eyedropper tool on a color sampler placed on a neutral gray in the image

To color correct using an eyedropper tool:

1 (Optional) Place a color sampler on a pixel in an area of the image that should be neutral gray. Choose a pixel in the shadows, midtone, or highlight, depending on the eyedropper tool that you plan to use. Use the Info palette to help you locate an appropriate pixel. For more information on placing a color sampler and using the Info palette, see "Viewing the color values of pixels (Photoshop)" on page 181.

If you plan to use more than one eyedropper tool, you might want to place more than one color sampler in the image.

2 Open the Levels or Curves (Photoshop) dialog box. For more information, see "Using the Levels dialog box" on page 185 and "Using the Curves dialog box (Photoshop)" on page 189.

3 Double-click the Set Black Point 🖊, the Set Gray Point 🖊, or the Set White Point Eyedropper tool 🖊. Use the Adobe Color Picker to specify a neutral target color.

If you're working in RGB, enter the same values for R, G, and B to specify a neutral color. The neutral color should be close as possible to the values of the color sampler.

If you want to preserve specific details in the shadow or highlight, be sure to specify a values for the Set Black Point and the Set White Point Eyedropper tools that are within the gamut of the output device (printing press, laser printer, and so forth).

4 With the targeted eyedropper tool, click the color sampler that you want mapped to the target color specified in step 3. If you didn't place a color sampler in the image, then click a pixel that you want mapped to the target color.

5 Repeat steps 3 and 4 using a different eyedropper tool if necessary.

6 If necessary, make final adjustments in the Levels or Curves (Photoshop) dialog box.

7 Click OK. If you specified new target colors for the Set Black Point 🖊, the Set Gray Point 🖊, or the Set White Point Eyedropper tool 🖊, Photoshop will ask if you want to save the new target colors as defaults.

Setting highlight and shadow target values (Photoshop)

Assigning (targeting) an image's highlight and shadow values is necessary because most output devices (usually printing presses) cannot print detail in the blackest shadow values (near level 0) nor the whitest highlight values (near level 255). Specifying the minimum shadow level and maximum highlight level helps to bring the important shadow and highlight details within the gamut of the output device. For more information about the gamut of a device, see "Why each device has a different color space" on page 116.

If you are printing an image on a desktop printer and your system is color managed, it's unnecessary to set the highlight and target values. The Photoshop color management system automatically makes adjustments to the image you see on the screen so it prints properly on your profiled desktop printer. For more information on producing consistent color from image editing to printing, see "Producing consistent color with a desktop printer" on page 146.

Note: You can do the following procedure in the Levels dialog box in ImageReady.

To use target values to set highlights and shadows:

1 Select the Eyedropper tool 🖊. You can choose 3 by 3 Average from the Sample Size menu in the Eyedropper tool options. This ensures a representative sample of an area rather than the value of a single screen pixel.

2 Open the Levels or Curves dialog box. (See "Using the Levels dialog box" on page 185 or "Using the Curves dialog box (Photoshop)" on page 189.)

When you open Levels or Curves, the Eyedropper tool 🖊 is active outside the dialog box. You still have access to the scroll controls, the Hand tool 🖑, and the Zoom tool 🔍 using keyboard shortcuts.

3 Do one of the following to identify areas of highlights and shadows that you want to preserve in the image:

- Move the pointer around the image, and look at the Info palette to find the lightest and darkest areas that you want preserved (not clipped to pure black or white). (See "Viewing the color values of pixels (Photoshop)" on page 181.)

- Drag the pointer in the image, and look at the Curves dialog box to find the lightest and darkest points you want to preserve. This method does not work if the Curves dialog box is set to the CMYK composite channel.

When identifying the lightest highlight details that you want targeted to a printable (lower) value, don't include specular highlights. Specular highlights such as the highlight glint in jewelry or a spot of glare are meant to be the brightest points in an image. It's usually desirable to let specular highlight pixels be clipped (pure white, no detail) so no ink is printed on the paper.

💡 You can also use the Threshold command to identify representative highlights and shadows before opening Levels or Curves. (See "Using the Threshold command (Photoshop)" on page 222.)

4 Do one of the following to assign highlight values to the lightest area of the image:

- In Levels, move the Output Levels highlight slider to set the highest highlight value. As you move the slider, the highlight value displays in the Output Levels text box and you can see a preview in the document window. The Output Levels slider lowers the values of the highlight pixels. Don't use the Output Levels slider if your image has a specular highlight and you want it to be pure white (level 255).

- Double-click the Set White Point Eyedropper tool 🖊 in the Levels or Curves dialog box to display the Color Picker. Enter the values you want to assign to the lightest area in the image, and click OK. Then click the highlight you identified in step 3.

💡 If you accidentally click the wrong highlight, hold down Alt (Windows) or Option (Mac OS), and click Reset in the Levels or Curves dialog box.

- Click Options in the Levels or Curves dialog box. In the Auto Color Correction Options dialog box, click the Highlights color swatch to display the Color Picker. Enter the values you want to assign to the lightest area in the image, and click OK.

Depending on the output device, when you are printing on white paper, you can achieve a good highlight in an average-key image using CMYK values of 5, 3, 3, and 0, respectively. An approximate RGB equivalent is 244, 244, 244, and an approximate grayscale equivalent is a 4% dot. You can approximate these target values quickly by entering 96 in the Brightness (B) text box under the HSB area of the Color Picker.

With a low-key image, you might want to set the highlight to a lower value to avoid too much contrast. Experiment with Brightness values between 96 and 80.

Using the Eyedropper tool 🔍 or the Auto Color Correction Options, you can adjust the pixel values throughout the image proportionately to the new highlight values. Any pixels lighter than the area you clicked are clipped (adjusted to level 255, pure white). The Info palette shows the values both before and after the color adjustment.
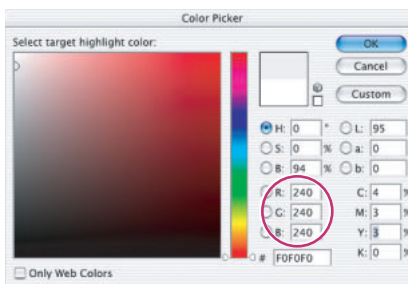
Setting the target value for the Set White Point Eyedropper tool and then clicking a highlight to assign it the target value

5 Do one of the following to assign shadow values to the darkest area of the image that you want preserved:

• In Levels, move the Output Levels shadow slider to set the lowest shadow value.

• Double-click the Set Black Point Eyedropper tool 🔍 in the Levels or Curves dialog box to display the Color Picker. Enter the values you want to assign to the darkest area in the image, and click OK. Then click the shadow you identified in step 3.

• Click Options in the Levels or Curves dialog box. In the Auto Color Correction Options dialog box, click the Shadows color swatch to display the Color Picker. Enter the values you want to assign to the darkest area in the image, and click OK.

In most situations when you're printing on white paper, you can achieve a good shadow in an average-key image using CMYK values of 65, 53, 51, and 95. An approximate RGB equivalent is 10, 10, 10, and an approximate grayscale equivalent is a 96% dot. You can approximate these same values quickly by entering 4 in the Brightness (B) text box under the HSB area of the Color Picker.

💡 With a high-key image, you might want to set the shadow to a higher value to maintain detail in the highlights. Experiment with Brightness values between 4 and 20.

To use Threshold mode to identify the lightest and darkest areas in an image:

1 Open the Levels dialog box, and make sure the Preview option is selected.

Note: The Threshold mode in Levels is not available for CMYK images.

2 Hold down Alt (Windows) or Option (Mac OS), and drag the white or black Input Levels triangle.

The image changes to Threshold mode, and a high-contrast preview image appears. The visible areas of the image indicate the lightest parts of the image if you are dragging the white slider, and the darkest parts if you are dragging the black slider. If a color channel is selected in the Levels dialog box, the black area indicates where none of the given color component exists.
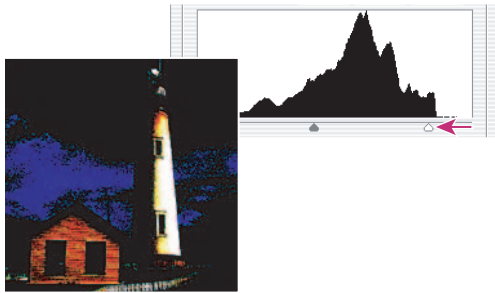
Image preview in Threshold mode

3 Slowly drag the slider to the center of the histogram to identify areas in the image that are being clipped (completely black or completely white). Use the pixels in these areas for targeting the black point and white point in your image.

Adjusting the gamma value of an image (ImageReady)

In very simplistic terms, gamma is the measure of the contrast—brightness of the midtone values—produced by a device (like a computer monitor) or in a photographic image. A higher gamma value yields an overall darker image. Windows systems use a higher gamma value (usually 2.2) than Mac OS systems (usually 1.8), with the result that the same image is noticeably darker on a Windows system than on a Mac OS system.

Designers, particularly those who use Mac OS systems to create images that will be viewed on Windows systems, must consider the issue of cross-platform gamma. You can modify the gamma value of an image to compensate for the differences between Windows and Mac OS monitors.

The Gamma command modifies the pixel values in an image. By contrast, the Preview commands adjust the appearance of the image on your monitor but do not change the image's pixel values.

To preview an image using different gamma values:

Choose View > Preview, and then choose one of the following:

- Uncompensated Color to view the image with the monitor gamma uncorrected

- Standard Macintosh Color to view the image with a gamma value of 1.8

- Standard Windows Color to the image with a gamma value of 2.2

- Use Embedded Color Profile to view the image using the embedded profile

💡 You can edit your image in one window and view the same image with a different gamma value in a second window. Choose Window > Arrange > New Window for (file name). With the new window active, choose View > Preview, and then choose a different gamma than the one used in the first window.

To adjust the gamma value automatically:

1 Choose Image > Adjustments > Gamma.

2 Select Preview to preview the adjustment in the image.

3 Adjust the gamma:

- Select Windows to Macintosh to adjust gamma for display in Mac OS.

- Select Macintosh to Windows to adjust gamma for display in Windows.

Note: Images created in Photoshop 4.0 or earlier use the Mac OS gamma value (1.8) by default and should be adjusted for display in Windows (unless gamma was adjusted when the image was created). Images created in Photoshop 5.0 or later use the Windows gamma value (2.2) by default and will be at the correct gamma for display in Windows with no adjustment.

To adjust the gamma value manually:

1 Choose Image > Adjustments > Gamma.

2 Select Preview to preview the adjustment in the image.

3 Drag the Gamma slider, or enter a value in the text box between 0.1 and 9.99. The Gamma slider measures the amount of change from the current gamma value. (The slider does not indicate the actual gamma value.)

Using the Color Balance command (Photoshop)

The Color Balance command changes the overall mixture of colors in an image for generalized color correction.
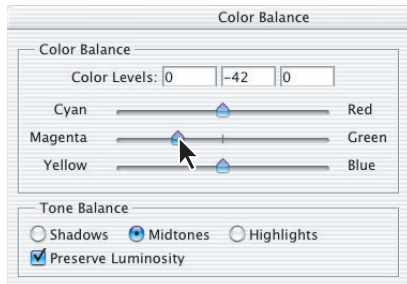
Original image with greenish cast, and magenta/green level adjusted in midtones

To use the Color Balance command:

1 Make sure the composite channel is selected in the Channels palette. This command is available only when you're viewing the composite channel.

2 Do one of the following:

• Choose Image > Adjustments > Color Balance.

• Choose Layer > New Adjustment Layer > Color Balance. Click OK in the New Layer dialog box.

3 Select Shadows, Midtones, or Highlights to select the tonal range on which you want to focus the changes.

4 Select Preserve Luminosity to prevent changing the luminosity values in the image while changing the color. This option maintains the tonal balance in the image.

5 Drag a slider toward a color you want to increase in the image; drag a slider away from a color you want to decrease in the image.

The values above the color bars show the color changes for the red, green, and blue channels. (For Lab images, the values are for the *a* and *b* channels.) Values can range from −100 to +100.

Using the Hue/Saturation command

The Hue/Saturation command lets you adjust the hue, saturation, and brightness of a specific color component in an image or simultaneously adjust all the colors in an image. In Photoshop, this command is especially good for tweaking specific colors in a CMYK image so they are within the gamut of an output device. For more information about the hue, saturation, and brightness (HSB) color model, see "HSB model" on page 112.

Settings in the Hue/Saturation dialog box can be saved and loaded for reuse on other images. For more information, see "Saving and reapplying settings" on page 183.

To use the Hue/Saturation command:

1 Do one of the following:

• Choose Image > Adjustments > Hue/Saturation.

• (Photoshop) Choose Layer > New Adjustment Layer > Hue/Saturation. Click OK in the New Layer dialog box.

The two color bars in the dialog box represent the colors in their order on the color wheel. The upper color bar shows the color before the adjustment; the lower bar shows how the adjustment affects all of the hues at full saturation.

2 (Photoshop) Choose which colors to adjust using the Edit pop-up menu:

• Choose Master to adjust all colors at once.

• Choose one of the other preset color ranges listed for the color you want to adjust.

3 For Hue, enter a value or drag the slider until the colors appear as you want.

The values displayed in the text box reflect the number of degrees of rotation around the wheel from the pixel's original color. A positive value indicates clockwise rotation, a negative value counterclockwise rotation. Values can range from –180 to +180.
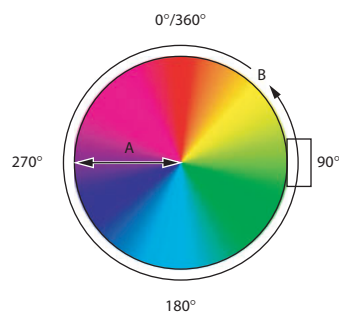
Color wheel and radius of color wheel
A. Saturation **B.** Hue

4 For Saturation, enter a value or drag the slider to the right to increase the saturation or to the left to decrease it.

The color shifts away from or toward the center of the wheel, relative to the beginning color values of the selected pixels. Values can range from –100 (percentage of desaturation, duller colors) to +100 (percentage of saturation increase).

5 For Lightness, enter a value or drag the slider to the right to increase the lightness (add white to a color) or to the left to decrease it (add black to a color). Values can range from –100 (percentage of black) to +100 (percentage of white).

Note: *Click the Reset button to undo a setting in the Hue/Saturation dialog box. Press the Alt (Windows) or Option (Mac OS) key to change the Cancel button to Reset.*

To specify or modify the range of colors being adjusted in the Hue/Saturation command (Photoshop):

1 Do one of the following:

• Choose Image > Adjustments > Hue/Saturation.

• (Photoshop) Choose Layer > New Adjustment Layer > Hue/Saturation. Click OK in the New Layer dialog box.

2 In the Hue/Saturation dialog box, choose an individual color from the Edit menu.

Four color wheel values (in degrees) display in the dialog box. They correspond to the adjustment sliders that appear between the color bars. The two inner vertical sliders define the color range. The two outer triangle sliders show where the adjustments on a color range "fall-off" (a feathering or tapering of the adjustments instead of a sharply defined on/off application of the adjustments).

3 Use either the eyedropper tools or the adjustment sliders to modify the range of colors.

Click or drag in the image with the Eyedropper tool to select a color range. To expand the range of color, click or drag in the image with the Add to Sample Eyedropper tool. To reduce the range of color, click or drag in the image with the Subtract from Sample Eyedropper tool. While an eyedropper tool is selected, you can also press Shift to add to the range, or Alt (Windows) or Option (Mac OS) to subtract from it.
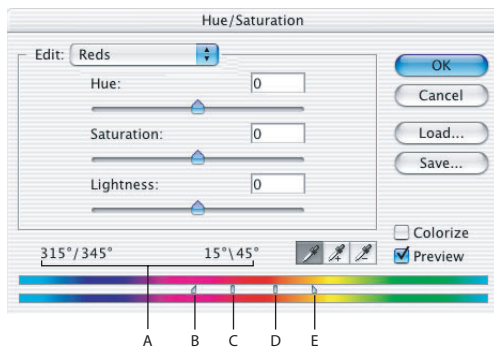
Hue/Saturation adjustment slider
A. Hue slider values **B.** Adjusts fall-off without affecting range **C.** Adjusts range without affecting fall-off **D.** Moves entire slider **E.** Adjusts range of color component

Or, do any of the following to the adjustment sliders:

•   Drag one of the white triangle sliders to adjust the amount of color fall-off (feathering of adjustment) without affecting the range.

•   Drag the area between the triangle and the vertical bar to adjust the range without affecting the amount of fall-off.

•   Drag the center area to move the entire adjustment slider (which includes the triangles and vertical bars) to select a different color area.

•   Drag one of the vertical white bars to adjust the range of the color component. Moving a vertical bar out from the center of the adjustment slider and closer to a triangle increases the color range and decreases the fall-off. Moving a vertical bar closer to the center of the adjustment slider and away from a triangle decreases the color range and increases the fall-off.

•   Ctrl-drag (Windows) or Command-drag (Mac OS) the color bar so that a different color is in the center of the bar.

If you modify the adjustment slider so that it falls into a different color range, the name in the Edit menu changes to reflect this. For example, if you choose Yellow and alter its range so that it falls in the red part of the color bar, the name changes to Red 2. You can convert up to six of the individual color ranges to varieties of the same color range (for example, Red through Red 6).

Note: *By default, the range of color selected when you choose a color component is 30° wide, with 30° of fall-off on either side. Setting the fall-off too low can produce banding in the image.*

To colorize a grayscale image or create a monotone effect:

1 (Photoshop) If you are colorizing a grayscale image, choose Image > Mode > RGB Color to convert the image to RGB.

2 Do one of the following to open the Hue/Saturation dialog box:

•   Choose Image > Adjustments > Hue/Saturation.

•   (Photoshop) Choose Layer > New Adjustment Layer > Hue/Saturation. Click OK in the New Layer dialog box.

3 Select the Colorize option. If the foreground color is black or white, the image is converted to a red hue (0°). If the foreground color is not black or white, the image is converted to the hue of the current foreground color. The lightness value of each pixel does not change.

4 Use the Hue slider to select a new color if desired. Use the Saturation and Lightness sliders to adjust the saturation and lightness of the pixels.

Using the Photo Filter command (Photoshop)

The Photo Filter command mimics the technique of putting a colored filter in front of the camera lens to adjust the color balance and color temperature of the light transmitted through the lens and exposing the film. The Photo Filter command also lets you choose a color preset to apply a hue adjustment to an image. If you want to apply a custom color adjustment, the Photo Filter command lets you specify a color using the Adobe Color Picker.

Original image, and Warming Filter (81) with 60% Density applied

To change the color balance using the Photo Filter command:

1 Do one of the following:

- Choose Image > Adjustments > Photo Filter.

- Choose Layer > New Adjustment Layer > Photo Filter. Click OK in the New Layer dialog box.

2 To choose the filter color, do one of the following in the Photo Filter dialog box:

- Select the Filter option and choose one of the following presets from the Filter menu:

Warming Filter (85) and Cooling Filter (80)   Are color conversion filters that tune the white balance in an image. If an image was photographed with a lower color temperature of light (yellowish), the Cooling Filter (80) makes the image colors bluer to compensate for the lower color temperature of the ambient light. Conversely, if the photo was taken with a higher color temperature of light (bluish), the Warming Filter (85) makes the image colors warmer to compensate for the higher color temperature of the ambient light.

Warming Filter (81) and Cooling Filter (82)   Are light balancing filters for minor adjustments in the color quality of an image. The Warming Filter (81) makes the image warmer (yellower), and the Cooling Filter (82) makes the image cooler (bluer).

Individual Colors   Apply a hue adjustment to the image depending on the color preset you choose. Your choice of color depends on how you're using the Photo Filter command. If your photo has a color cast, you can choose a complement color to neutralize the color cast. You can also apply colors for special color effects or enhancements. For example, the Underwater color simulates the greenish-blue color cast caused when photographing underwater.

- Select the Color option, click the color square, and use the Adobe Color Picker to specify a color for a custom color filter. You can click the New Swatch button ⬚ to save your custom color in the Swatches palette for future use.

Make sure Preview is selected to view the results of using a color filter.

If you don't want the image darkened by adding the color filter, be sure that the Preserve Luminosity option is selected.

3 To adjust the amount of color applied to the image, use the Density slider or enter a percentage in the Density text box. A higher Density applies a stronger color adjustment.

4 Click OK.

Using the Shadow/Highlight command (Photoshop)

The Shadow/Highlight command is suitable for correcting photos with silhouetted images due to strong backlighting or correcting subjects that have been slightly washed out because they were too close to the camera flash. The adjustment is also useful for brightening up areas of shadow in an otherwise well-lit image. The Shadow/Highlight command does not just lighten or darken an image, it lightens or darkens based on the surrounding pixels (local neighborhood) in the shadows or highlights. This enables separate controls of the shadows and the highlights. The defaults are set to fix images suffering from backlighting problems. The Shadow/Highlight command also has a Midtone Contrast slider, Black Clip option, and White Clip option for adjusting the overall contrast of the image.
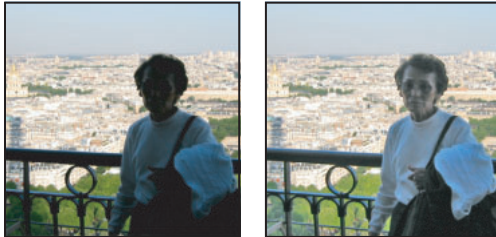
Original image, and Shadow/Highlight Correction applied

To adjust the shadows and highlights in an image:

1 Choose Image > Adjustments > Shadow/Highlight.

Make sure the Preview option is selected in the dialog box if you want the image to update as you make adjustments.

2 Adjust the amount of lighting correction by moving the Amount slider or entering a value in the percentage text box for Shadows or Highlights. Larger values provide either greater lightening of shadows or greater darkening of highlights. You can make adjustments to both Shadows and Highlights in an image.

3 For finer control, select Show More Options to make the additional shadow or highlight adjustments:

Tonal Width   Controls the range of tones in the shadows or highlights that are modified. Move the slider to the left or right to decrease or increase the Tonal Width value. Smaller values restrict the adjustments to only the darker regions for Shadow correction and only the lighter regions for Highlight correction. Larger values include more tonal regions (such as adding the midtones) that are being adjusted. A value of 100% produces a linear effect; for Shadow correction, deep shadows get modified the most with no correction to bright highlights and half the shadow correction to midtones. The tonal width requirements will vary from image to image. Specifying a value that is too large for a given image might introduce halos around strong dark to light edges. The default settings attempt to reduce these artifacts. These halos may occur when the Shadow or Highlight Amount values are too large; they can also be reduced by decreasing these values.

The Tone Width default is set to 50%. If you find that you are trying to lighten a dark subject but the midtones or lighter regions are changing too much, try reducing the Shadow Tone Width towards zero. Then only the darkest regions will be lightened. On the other hand, if you need to brighten up the midtones as well as the shadows, increase the Shadows Tone Width toward 100%.

Radius   Controls the size of the local neighborhood around each pixel that is used to determine whether a pixel is in the shadows or highlights. Moving the slider to the left specifies a smaller area, and moving it to the right specifies a larger area. The optimum local neighborhood size depends on the image. It's best to experiment with the adjustment. If the Radius is too large, the adjustment tends to brighten (or darken) the whole image rather than brightening the subject only. It's best to set the radius to be roughly the size of the subjects of interest in the image. Experiment with different Radius settings to obtain the best balance between subject contrast and differential brightening (or darkening) of the subject compared to the background.

4 In the Adjustments area, do one of the following to apply an image adjustment:

Color Correction   Allows fine tuning of the colors in regions of the image that have changed. This adjustment is only available in color images. For example, if you increase the Shadows Amount slider, you will bring out colors that were dark in the original image. You may want these colors to be more or less vivid. Adjust the Color Correction slider to give the best results. In general, increasing values tend to produce more saturated colors and decreasing values produce less saturated colors.

Note: Since the Color Correction slider only affects changed portions of the image, the amount of color variation depends on how much or little Shadows or Highlights Amount is applied. The greater the correction made to the shadows and highlights, the greater the range of color correction available. The Color Correction slider applies subtle control over the darkened or lightened colors in the image. If you want to change the color hues or saturation over the whole image, use the Hue/Saturation command after applying the Shadow/Highlight command.

Brightness Adjusts the brightness in a grayscale image. This adjustment is only available for grayscale images. Moving the Brightness slider to the left darkens a grayscale image, and moving the slider to the right lightens a grayscale image.

Midtone Contrast Adjusts the contrast in the midtones. Move the slider to the left to reduce the contrast and to the right to increase the contrast. You can also enter a value in the Midtone Contrast text box. A negative value reduces contrast, and a positive value increases contrast. An increase in Midtone Contrast adjustment produces greater contrast in the midtones while tending to darken the shadows and lighten the highlights.

Black Clip and White Clip   Specifies how much of the shadows and highlights will be clipped to the new extreme shadow (level 0) and highlight (level 255) colors in the image. Larger values produce an image with greater contrast. Be careful of setting the clipping values too large, as this will lead to reduced detail in the shadows or highlights as the intensity values get clipped and sent to pure black or white.

5 Click the Save As Defaults button to save and make your current settings the Shadow/Highlights command defaults. To restore the original defaults, hold the Shift key down while clicking the Save As Defaults button.

Note: Different Shadow/Highlight settings can be reused by clicking the Save button to save the current settings to a file and later using the Load button to reload the settings. For more information on saving and loading settings, see "Saving and reapplying settings" on page 183.

6 Click OK.

Using the Match Color command (Photoshop)

The Match Color command matches colors between multiple images, between multiple layers, or between multiple color selections. It also lets you adjust the colors in an image by changing the luminance, the color range, and neutralize a color cast. The Match Color command only works in RGB mode.

💡 When you're using the Match Color command, the pointer becomes the Eyedropper tool 🖋. Use the Eyedropper tool on the image while making adjustments to view the color pixel values in the Info palette. This gives you feedback regarding the changes in color values as you use the Match Color command. For more information about using color samplers, see "Viewing the color values of pixels (Photoshop)" on page 181.

Matching colors

The Match Color command matches the colors from one image (the source image) to another image (the target image). This can be useful when you're trying to make the colors in different photos look consistent, or when the colors of a specific element (like skin tones) in one image must match the colors of an element in another image.

In addition to matching the color between two images, the Match Color command can match the color between different layers in the same image.

Original images with different skin tones (above), and Match Color applied (below)

To match the color from one image to another image:

1 (Optional) Make a selection in the images you want to match. This is useful when matching a specific region (for example, facial skin tones) in one image with a specific region in another.

If you don't make a selection, then the Match Color command matches the overall image statistics between images.

2 Make the image that you want to target active, and then choose Image > Adjustments > Match Color.

If you're applying the Match Color command to a specific layer in the target image, make sure that layer is active when you choose the Match Color command.

3 From the Source menu in the Image Statistics area of the Match Color dialog box, choose the source image whose colors you'll be matching in the target image. Choose None when you don't want to reference a different image to calculate the color adjustment. With None chosen, the target image and the source image are the same.

If necessary, use the Layer menu to choose the layer from the source image whose colors you want to match. You can also choose Merged from the Layer menu to match the colors from all the layers in the source image.

4 If you made a selection in the image, do one or more of the following:

• In the Destination Image area, select the Ignore Selection When Applying Adjustment option if you're applying the adjustment to the entire target image. This option ignores the selection in the target image and applies the adjustment to the entire target image.

- In the Image Statistics area, select the Use Selection in Source to Calculate Colors option if you made a selection in the source image and want to use the colors in the selection to compute the adjustment. Deselect this option to ignore the selection in the source image, and use the colors from the entire source image to compute the adjustment.

- In the Image Statistics area, select the Use Selection in Target to Calculate Adjustment option if you made a selection in the target image and want to use the colors in the selection to calculate the adjustment. Deselect this options to ignore the selection in the target image and compute the adjustment by using the colors of entire target image.

5 Select the Neutralize option to automatically remove a color cast in the target image. Make sure the Preview option is selected so your image updates as you make adjustments.

6 Move the Luminance slider to increase or decrease the brightness in the target image. Or, enter a value in the Luminance text box. The maximum value is 200, the minimum is 1, and the default is 100.

7 Move the Color Intensity slider to adjust the color saturation in the target image. Or, enter a value in the Color Intensity text box. The maximum value is 200, the minimum is 1 (which produces a grayscale image), and the default is 100.

8 Move the Fade slider to control the amount of adjustment applied to the image. Moving the slider to the right reduces the amount of adjustment.

9 Click OK.

To match the color from one layer in an image with the color in another layer of the same image:

1 (Optional) Make a selection in the layer you want to match. This is useful when matching a specific region (for example, facial skin tones) in one layer with a specific region in another.

If you don't make a selection, then the Match Color matches the colors of the entire source layer.

2 Make sure the layer you want to target (apply the color adjustment to) is active, and then choose Image > Adjustments > Match Color.

3 From the Source menu in the Image Statistics area of the Match Color dialog box, make sure the image in the Source menu is the same as the target image.

4 Use the Layer menu to choose the layer whose colors you want to match. You can also choose Merged from the Layer menu to match the colors from all the layers.

5 If you made a selection in the image, do one or more of the following:

- In the Destination Image area, select the Ignore Selection When Applying Adjustment option if you're applying the adjustment to the entire target layer. This option ignores the selection in the target layer and applies the adjustment to the entire target layer.

- In the Image Statistics area, select the Use Selection in Source to Calculate Colors option if you made a selection in the source image and want to use the color in the selection to compute the adjustment. Deselect the Use Selection option to ignore the selection in the source layer and use the colors in the entire source layer to compute the adjustment.

- In the Image Statistics area, select the Use Selection in Target to Calculate Adjustment option if you only want to use the colors in the selected area of the target layer to compute the adjustment. Deselect this option to ignore the selection and use the colors of the entire target layer to compute the adjustment.

6 Select the Neutralize option to automatically remove a color cast in the target layer. Make sure the Preview option is selected so your image updates as you make adjustments.

7 Move the Luminance slider to increase or decrease the brightness in the target layer. Or, enter a value in the Luminance text box. The maximum value is 200, the minimum is 1, and the default is 100.

8 Move the Color Intensity slider to adjust the range of color pixel values in the target layer. Or, enter a value in the Color Intensity text box. The maximum value is 200, the minimum is 1 (which produces a grayscale image), and the default is 100.

9 Move the Fade slider to control the amount of adjustment applied to the image. Moving the slider to the right reduces the amount of adjustment.

10 Click OK.

Adjusting color in an image using the Match Color command

The Match Color command can adjust the brightness, color saturation, and color balance in an image. The advanced algorithms in the Match Color command let you make color adjustments that have better control of luminance and the color components of the image. Since you are adjusting the color in a single image rather than matching the colors between two images, the image you're correcting is both the source and the target image.

To remove a color cast using the Match Color command:

1 Choose Image > Adjustments > Match Color.

2 In the Image Statistics area, make sure None is chosen in the Source menu. The option specifies that the source and the target are the same image.

3 Select the Neutralize option to automatically remove a color cast. Make sure the Preview option is selected so your image updates as you make adjustments.

4 Move the Luminance slider to increase or decrease the brightness in the image. Moving the Luminance slider to the left darkens the image and moving the slider to the right brightens the image. The luminance control tries not to clip pixels (change them to pure black/no detail or pure white/no detail) in either the shadows or highlights. However, it may clip pixels because the pixel values in an image can only be either 8 or 16-bits.

5 Move the Color Intensity slider to expand or reduce the color pixel values in the image. Moving the Color Intensity slider to the left reduces the color range and the image becomes monochrome. Moving the Color Intensity to the right increases the color range and intensifies the colors.

6 Move the Fade slider to control the amount of adjustment applied to the image. Moving the slider to the right reduces the amount of adjustment.

Note: *You can use the Match Color controls separately to apply a single correction to the image. For example, only adjust the Luminance slider to brighten/darken an image without affecting the color. Or, you can use the controls in different combinations, depending on the color correction you're making.*

7 Click OK.

Color cast neutralized using the Match Color command

Saving and reusing Match Color settings

The Match Color command lets you save your settings and apply them to other images.

To save a settings in the Match Color command:

1 In the Image Statistics area of the Match Color dialog box, click the Save Statistics button.

2 Name and save the settings.

To apply a saved setting:

In the Image Statistics area of the Match Color dialog box, click the Load Statistics button. Locate and load the saved settings file.

Using the Replace Color command (Photoshop)

The Replace Color command lets you create a mask to select specific colors in an image and then replace those colors. You can set the hue, saturation, and lightness of the selected areas. Or, you can use the Color Picker to select the replacement color. The mask created by the Replace Color command is temporary.
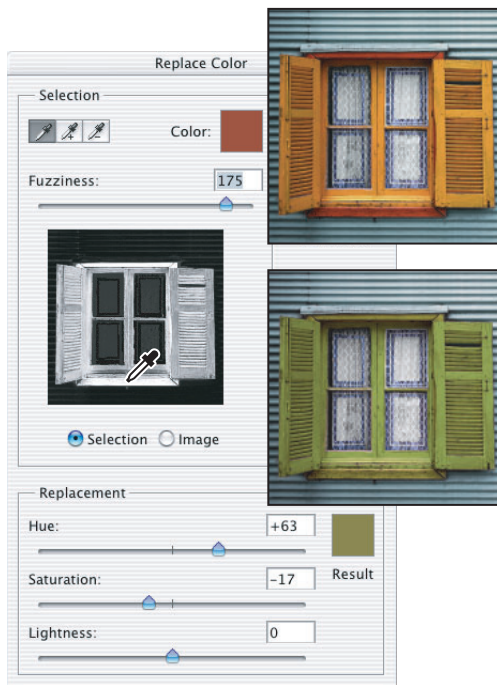
Making a selection and then transforming the color of the selection

To use the Replace Color command:

1 Choose Image > Adjustments > Replace Color.

2 Select a display option:

• Selection to display the mask in the preview box. Masked areas are black, and unmasked areas are white. Partially masked areas (areas covered with a semitransparent mask) appear as varying levels of gray according to their opacity. For more information, see "Using channel calculations to blend layers and channels (Photoshop)" on page 366.

• Image to display the image in the preview box. This option is useful when you are working with a magnified image or have limited screen space.

3 To select the areas exposed by the mask, do one of the following:

• Use the Eyedropper tool 🖊 to click in the image or in the preview box to select the areas exposed by the mask. Shift-click or use the Add to Sample Eyedropper tool 🖊 to add areas; Alt-click (Windows), Option-click (Mac OS), or use the Subtract from Sample Eyedropper tool 🖊 to remove areas.

• Double-click the Selection swatch. Use the Color Picker to target a color to be replaced. As you select a color in the Color Picker, the mask in the preview box updates.

4 Adjust the tolerance of the mask by dragging the Fuzziness slider or entering a value. This controls the degree to which related colors are included in the selection.

5 To change the color of the selected areas, do one of the following:

• Drag the Hue, Saturation, and Lightness sliders (or enter values in the text boxes).

• Double-click the Result swatch and use the Color Picker to select the replacement color.

You can also save the settings you make in the Replace Color dialog box for reuse on other images. For more information on saving and loading settings, see "Saving and reapplying settings" on page 183.

Mixing color channels (Photoshop)

The Channel Mixer command lets you create high-quality grayscale images by choosing the percentage contribution from each color channel. You can also create high-quality sepia-tone or other tinted images. Using the Channel Mixer, you can also make creative color adjustments not easily done with other color adjustment tools.

The Channel Mixer modifies a targeted (output) color channel using a mix of the existing (source) color channels in the image. Color channels are grayscale images representing the tonal values of the color components in an image (RGB or CMYK). With the Channel Mixer, you are adding or subtracting grayscale data from a source channel to the targeted channel. You are not adding or subtracting colors to a specific color component as you do with the Selective Color command. For more information about channels, see "Using Channels" on page 357, and for more information about the Selective Color command, see "Using the Selective Color command (Photoshop)" on page 214.

To create monochrome images from RGB or CMYK images:

1 In the Channels palette, select the composite color channel.

2 Do one of the following to open the Channel Mixer dialog box:

• Choose Image > Adjustments > Channel Mixer.

• Choose Layer > New Adjustment Layer > Channel Mixer. Click OK in the New Layer dialog box.

3 Select the Monochrome option to set Gray as the output channel. This creates a color image that contains only gray values.

4 Use the Source Channels sliders to control the amount of detail and contrast in the images you plan to convert to grayscale.

Before adjusting the percentages of the source channels, view how the each source channel affects the monochrome image. For example, in RGB, view the image with the Red channel set to +100% and the Green and Blue source channels set to 0%. Then, view the image with the Green source channel set to +100% and the other two channels set to 0%. Finally, view the image with Blue source channel set to +100% and the other channels set to 0%. In adjusting the percentages of the source channels, the best results are often when the combined values of the source channels add up to 100%.

5 (Optional) If you select and then deselect the Monochrome option, you can modify the blend of each channel separately, creating a handtinted appearance.

Handtinted effect by selecting (left)/deselecting (right) the Monochrome option

6 (Optional) Drag the slider or enter a value for the Constant option. This option adjusts the grayscale value of the output channel. Negative values add more black, and positive values add more white. A -200% value makes the output channel completely black, and a +200% value makes the output channel completely white.

To mix color channels:

1 In the Channels palette, select the composite color channel.

2 Do one of the following to open the Channel Mixer dialog box:

• Choose Image > Adjustments > Channel Mixer.

• Choose Layer > New Adjustment Layer > Channel Mixer. Click OK in the New Layer dialog box.

3 For Output Channel, choose the channel in which to blend one or more existing (*source*) channels. For more information, see "Using the Channels palette (Photoshop)" on page 357.

Choosing an output channel sets the source slider for that particular channel to 100% and all other channels to 0%. For example, choosing Red as the output channel sets the Source Channels sliders to 100% for Red, and 0% for Green and Blue (in an RGB image).

4 Drag any source channel's slider to the left to decrease the channel's contribution to the output channel or to the right to increase it, or enter a value between –200% and +200% in the text box. Using a negative value inverts the source channel before adding it to the output channel.

5 Drag the slider or enter a value for the Constant option. This option adjusts the grayscale value of the output channel. Negative values add more black, and positive values add more white. A -200% value makes the output channel completely black, and a +200% value makes the output channel completely white.

You can also save the settings you make in the Channel Mixer dialog box for reuse on other images. For more information on saving and loading settings, see "Saving and reapplying settings" on page 183.

Using the Selective Color command (Photoshop)

Selective color correction is a technique used by high-end scanners and separation programs to increase and decrease the amount of process colors in each of the additive and subtractive primary color components in an image. Even though Selective Color uses CMYK colors to correct an image, you can use it on RGB images as well as on images that will be printed.

Selective color correction is based on a table that shows the amount of each process ink used to create each primary color. By increasing and decreasing the amount of a process ink in relation to the other process inks, you can modify the amount of a process color in any primary color *selectively*—without affecting the other primary colors. For example, you can use selective color correction to dramatically decrease the cyan in the green component of an image while leaving the cyan in the blue component unaltered.

To use the Selective Color command:

1 Make sure the composite channel is selected in the Channels palette. The Selective Color command is available only when you're viewing the composite channel.

2 Do one of the following:

• Choose Image > Adjustments > Selective Color.

• Choose Layer > New Adjustment Layer > Selective Color. Click OK in the New Layer dialog box.

3 Choose the color you want to adjust from the Colors menu at the top of the dialog box. Color sets consist of the primary additive and subtractive colors plus whites, neutrals, and blacks.

4 For Method, select an option:

• Relative to change the existing amount of cyan, magenta, yellow, or black by its percentage of the total. For example, if you start with a pixel that is 50% magenta and add 10%, 5% is added to the magenta (10% of 50% = 5%) for a total of 55% magenta. (This option cannot adjust pure specular white, which contains no color components.)

• Absolute to adjust the color in absolute values. For example, if you start with a pixel that is 50% magenta and add 10%, the magenta ink is set to a total of 60%.

Note: The adjustment is based on how close a color is to one of the options in the Colors menu. For example, 50% magenta is midway between white and pure magenta and will receive a proportionate mix of corrections defined for the two colors.

5 Drag the sliders to increase or decrease the components in the selected color.

You can also save the settings you make in the Selective Color dialog box for reuse on other images. For more information on saving and loading settings, see "Saving and reapplying settings" on page 183.

Making quick overall adjustments to an image

The Brightness/Contrast, Auto Levels, Auto Contrast, Auto Color (Photoshop), Variations, and Equalize (Photoshop) commands provide a quick and simple way to make overall adjustments to the color and tonality in an image. Since some of these adjustments features are automatic, keep in mind that you can always undo a command if you don't like the results.
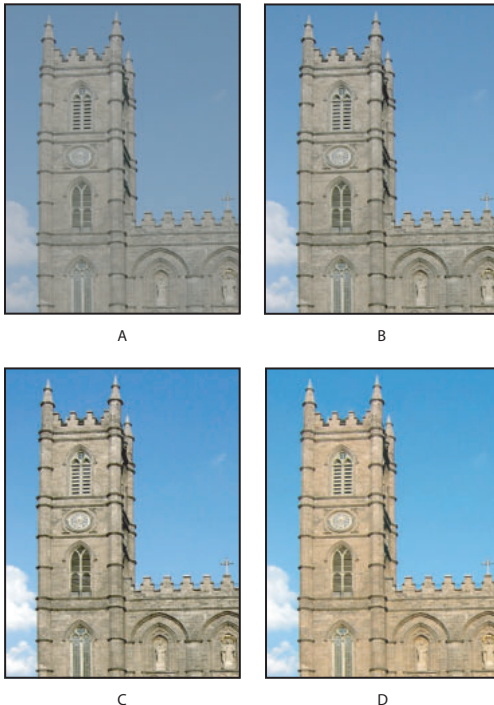
Auto adjustments
A. Original image **B.** Auto Levels applied **C.** Auto Contrast applied **D.** Auto Color applied

Using the Brightness/Contrast command

The Brightness/Contrast command lets you make simple adjustments to the tonal range of an image. Unlike Curves and Levels, which apply proportionate adjustments to the pixels in an image (nonlinear adjustment) based on whether you're setting the black or white points or the gamma, this command makes the same adjustment to every pixel in the image (linear adjustment). The Brightness/Contrast command is not recommended for high-end output because it can result in a loss of image detail.

To use the Brightness/Contrast command:

1 Do one of the following:

• Choose Image > Adjustments > Brightness/Contrast.

• Choose Layer > New Adjustment Layer > Brightness/Contrast. Click OK in the New Layer dialog box.

2 Drag the sliders to adjust the brightness and contrast.

Dragging to the left decreases the level and to the right increases it. The number at the right of each slider value displays the brightness or contrast value. Values can range from −100 to +100.

Using the Auto Levels command

The Auto Levels command automatically adjusts the black point and white point in an image. This clips a portion of the shadows and highlights in each channel and maps the lightest and darkest pixels in each color channel to pure white (level 255) and pure black (level 0). The intermediate pixel values are redistributed proportionately. As a result, using Auto Levels increases the contrast in an image because the pixel values are expanded (as opposed to being compressed, as in lower contrast images). Because Auto Levels adjusts each color channel individually, it may remove color or introduce color casts.

Auto Levels gives good results in certain images with an average distribution of pixel values that need a simple increase in contrast.

Note: *By default, Auto Levels clips the white and black pixels by 0.5%—that is, it ignores the first 0.5% of either extreme when identifying the lightest and darkest pixels in the image. The default settings for Auto Levels can be changed in the Auto Color Correction Options dialog box. For more information, see* "Setting auto color correction options (Photoshop)" on page 218.

To use the Auto Levels command:

1 Do one of the following:

• Choose Image > Adjustments > Auto Levels. The application of Auto Levels is automatic with this option. You cannot adjust any of the options in the following steps.

• (Photoshop) Choose Layer > New Adjustment Layer and choose either Levels or Curves. Click OK in the New Layer dialog box. Continue with the following steps.

2 In the Levels or Curves dialog box, click the Option button.

3 Select Enhance Per Channel Contrast under Algorithms in the Auto Color Correction Options dialog box.

4 Adjust the amount of shadow and highlight values that are clipped, and adjust the target color for the midtones.

5 Click OK in the two opened dialog boxes to apply Auto Levels. For more information on adjusting the settings in the Auto Color Correction Options, see "Setting auto color correction options (Photoshop)" on page 218.

To change the Auto Levels defaults for target colors and clipping in ImageReady:

(ImageReady) Hold down Alt (Windows) or Option (Mac OS), and click Options in the Levels dialog box. Enter the percentage of extreme highlight and shadow pixels to ignore, and click OK. A value between 0.5% and 1% is recommended.

Using the Auto Contrast command

The Auto Contrast command adjusts the overall contrast and mixture of colors in an RGB image automatically. Because it does not adjust channels individually, Auto Contrast does not introduce or remove color casts. It clips the shadow and highlight values in an image and then maps the remaining lightest and darkest pixels in the image to pure white (level 255) and pure black (level 0). This makes the highlights appear lighter and shadows appear darker.

By default, when identifying the lightest and darkest pixels in an image, Auto Contrast clips the white and black pixels by 0.5%—that is, it ignores the first 0.5% of either extreme. You can change this default using the Auto Color Correction Options found in the Levels and the Curves dialog boxes. For information changing the defaults in Auto Contrast, see "Setting auto color correction options (Photoshop)" on page 218.

Auto Contrast can improve the appearance of many photographic or continuous-tone images. It does not improve flat-color images.

To use the Auto Contrast command:

1 Do one of the following:

• Choose Image > Adjustments > Auto Contrast. The application of Auto Contrast is automatic with this option. You cannot adjust any of the options in the following steps.

• (Photoshop) Choose Layer > New Adjustment Layer and choose either Levels or Curves. Click OK in the New Layer dialog box. Continue with the following steps.

2 In the Levels or Curves dialog box, click the Option button.

3 Select the Enhance Monochromatic Contrast option under Algorithms in the Auto Color Correction Options dialog box.

4 Adjust the amount of shadow and highlight values that are clipped, and adjust the target color for the midtones.

5 Click OK in the two opened dialog boxes to apply Auto Contrast. For more information on adjusting the settings in the Auto Color Correction Options, see "Setting auto color correction options (Photoshop)" on page 218.

To change the Auto Contrast defaults for target colors and clipping in ImageReady:

(ImageReady) Hold down Alt (Windows) or Option (Mac OS), and click Options in the Levels dialog box. Enter the percentage of extreme highlight and shadow pixels to ignore, and click OK. A value between 0.5% and 1% is recommended.

Using the Auto Color command (Photoshop)
The Auto Color command adjusts the contrast and color of an image by searching the actual image to identify shadows, midtones, and highlights. By default, Auto Color neutralizes the midtones using a target color of RGB 128 gray, and clips the shadows and highlight pixels by 0.5%. You can change these defaults in the Auto Color Correction Options dialog box. For more information on adjusting the auto color correction settings, see "Setting auto color correction options (Photoshop)" on page 218.

To use the Auto Color command:

1 Do one of the following:

• Choose Image > Adjustments > Auto Color. The application of Auto Color is automatic with this option. You cannot adjust any of the options in the following steps.

• Choose Layer > New Adjustment Layer and choose either Levels or Curves. Click OK in the New Layer dialog box. Continue with the following steps.

2 In the Levels or Curves dialog box, click the Option button.

3 Select the Find Dark & Light option under Algorithms in the Auto Color Correction Options dialog box.

4 Select the Snap Neutral Midtones option.

5 Adjust the amount of shadow and highlight values that are clipped, and adjust the target color for the midtones.

6 Click OK in the two opened dialog boxes to apply Auto Color. For more information on adjusting the settings in the Auto Color Correction Options, see "Setting auto color correction options (Photoshop)" on page 218.

Setting auto color correction options (Photoshop)

The Auto Color Correction Options control tonal and color corrections applied by Auto Color, Auto Levels, Auto Contrast, and the Auto option in both Levels and Curves. The auto color correction options let you specify shadow and highlight clipping percentages, and assign color values to shadows, midtones, and highlights.

You can apply the settings during a single use of the Levels dialog box or Curves dialog box, or you can save the settings as defaults when applying Auto Levels, Auto Contrast, Auto Color, and the Auto option in Levels and Curves.
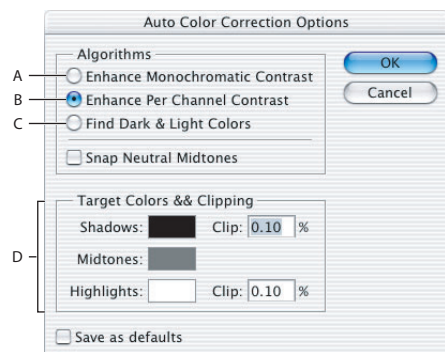
Auto Color Correction Options dialog box
A. Auto Contrast option   **B.** Auto Levels option   **C.** Auto Color option   **D.** Set target colors, black point, and white point

To set color correction settings:

1 Click the Options button in the Levels dialog box or Curves dialog box.

2 Specify the algorithm you want Photoshop to use to adjust the overall tonal range of an image:

• Enhance Monochromatic Contrast clips all channels identically. This preserves the overall color relationship while making highlights appear lighter and shadows appear darker. The Auto Contrast command uses this algorithm.

• Enhance Per Channel Contrast maximizes the tonal range in each channel to produce a more dramatic correction. Because each channel is adjusted individually, Enhance Per Channel Contrast may remove or introduce color casts. The Auto Levels command uses this algorithm.

• Find Dark & Light Colors finds the average lightest and darkest pixels in an image and uses them to maximize contrast while minimizing clipping. The Auto Color command uses this algorithm.

3 Select Snap Neutral Midtones if you want Photoshop to find an average nearly neutral color in an image and then adjust the gamma values to make the color neutral. The Auto Color command uses this algorithm.

4 To specify how much to clip black and white pixels, enter percentages in the Clip text boxes. A value between 0.0% and 1% is recommended.

By default, Photoshop clips the black and white pixels by 0.1%—that is, it ignores the first 0.1% of either extreme when identifying the lightest and darkest pixels in the image. Due to the better output quality of today's scanners and digital cameras, these default clipping percentages may be too high.

5 To assign (target) color values to the darkest, neutral, and lightest areas of an image, click a color swatch. For guidelines on setting color values, see "Setting highlight and shadow target values (Photoshop)" on page 194.

6 Do one of the following:

• To use the settings in the current Levels or Curves dialog box, click OK. If you subsequently click the Auto button, Photoshop will reapply the same settings to the image.

• To save the settings as the default, select Save as Defaults, and then click OK. The next time you open the Levels or Curves dialog box, you can apply the same setting by clicking the Auto button. The default clipping percentages are also used by the Auto Level, Auto Contrast, and Auto Color commands.

Note: When saving the Auto Color Correction Options as defaults for Auto Color, Auto Levels, and Auto Contrast, it does not matter what algorithm you select in step 2. The three auto-correction commands only use values you set for the target colors and clipping values. The only exception is that the Auto Color command also uses the Snap Neutral Midtones option.

Using the Variations command

The Variations command lets you adjust the color balance, contrast, and saturation of an image by showing you thumbnails of alternatives.

This command is most useful for average-key images that don't require precise color adjustments. It does not work on indexed-color images or 16-bit-per-channel images (Photoshop).

To use the Variations command:

1 Choose Image > Adjustments > Variations.

The two thumbnails at the top of the dialog box show the original selection (Original) and the selection with its currently selected adjustments (Current Pick). When you first open the dialog box, these two images are the same. As you make adjustments, the Current Pick image changes to reflect your choices.

2 Select the Show Clipping option if you want to display a neon preview of areas in the image that will be clipped—converted to pure white or pure black— by the adjustment. Clipping can result in undesirable color shifts, as distinct colors in the original image are mapped to the same color. Clipping does not occur when you adjust midtones.

Note: Clipped colors are not the same as out-of-gamut colors.

3 Select what to adjust in the image:

- Shadows, Midtones, or Highlights to indicate whether you want to adjust the dark, middle, or light areas.

- Saturation to change the degree of hue in the image. If you exceed the maximum saturation for a color, it may be clipped.

4 Drag the Fine/Coarse slider to determine the amount of each adjustment. Moving the slider one tick mark doubles the adjustment amount.

5 Adjust the color and brightness:

- To add a color to the image, click the appropriate color thumbnail.

- To subtract a color, click the thumbnail for its opposite color. (See "Using the Color Balance command (Photoshop)" on page 199.) For example, to subtract cyan, click the More Red thumbnail.

- To adjust brightness, click a thumbnail on the right side of the dialog box.

The effects of clicking the thumbnails are cumulative. For example, clicking the More Red thumbnail twice will apply the adjustment twice. Each time you click a thumbnail, the other thumbnails change. The three Current Pick thumbnails always reflect the current choices.

You can also save the settings you make in the Variations dialog box for reuse on other images. For more information on saving and loading settings, see "Saving and reapplying settings" on page 183.

Using the Equalize command (Photoshop)

The Equalize command redistributes the brightness values of the pixels in an image so that they more evenly represent the entire range of brightness levels. When you apply this command, Photoshop finds the brightest and darkest values in the composite image and remaps them so that the brightest value represents white and the darkest value represents black. Photoshop then attempts to equalize the brightness—that is, to distribute the intermediate pixel values evenly throughout the grayscale.

You might use the Equalize command when a scanned image appears darker than the original and you want to balance the values to produce a lighter image. Using Equalize together with the Histogram palette lets you see before-and-after brightness comparisons.

To use the Equalize command:

1 (Optional) Select an area of the image to equalize.

2 Choose Image > Adjustments > Equalize.

3 If you selected an area of the image, select what to equalize in the dialog box, and click OK:

- Equalize Selected Area Only to evenly distribute only the selection's pixels.

- Equalize Entire Image Based on Selected Area to evenly distribute all image pixels based on those in the selection.

Applying special color effects to images

The Desaturate, Invert, Equalize (Photoshop), Threshold (Photoshop), and Posterize (Photoshop) commands change colors or brightness values in an image but are typically used for enhancing color and producing special effects, rather than for correcting color.
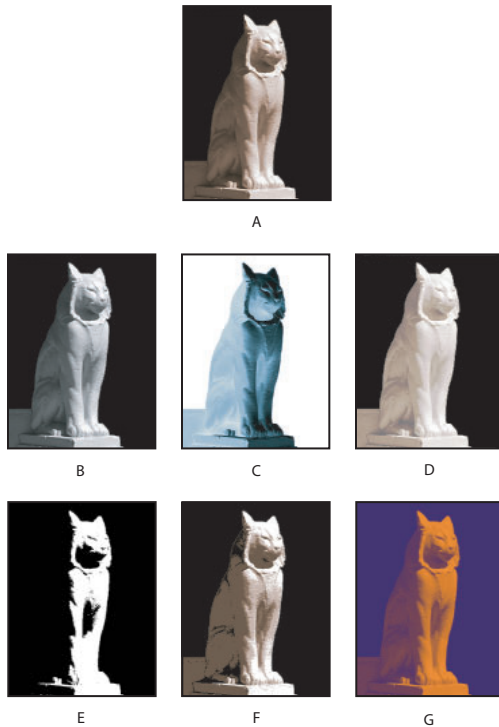
Special color effects
A. Original **B.** Desaturate **C.** Invert **D.** Equalize **E.** Threshold **F.** Posterize **G.** Gradient Map

Note: You can also make color adjustments by blending colors from different channels. (See "Mixing color channels (Photoshop)" on page 212.)

Using the Desaturate command

The Desaturate command converts a color image to a grayscale image in the same color mode. For example, it assigns equal red, green, and blue values to each pixel in an RGB image to make it appear grayscale. The lightness value of each pixel does not change.

This command has the same effect as setting Saturation to –100 in the Hue/Saturation dialog box.

Note: If you are working with a multilayer image, Desaturate converts the selected layer only.

To use the Desaturate command:

Choose Image > Adjustments > Desaturate.

Using the Invert command

The Invert command inverts the colors in an image. You might use this command as part of the process to make an edge mask for applying sharpening and other adjustments to selected areas of an image.

Note: Because color print film contains an orange mask in its base, the Invert command cannot make accurate positive images from scanned color negatives. Be sure to use the proper settings for color negatives when scanning film on slide scanners.

When you invert an image, the brightness value of each pixel in the channels is converted to the inverse value on the 256-step color-values scale. For example, a pixel in a positive image with a value of 255 is changed to 0, and a pixel with a value of 5 to 250.

To use the Invert command:

Do one of the following:

• Choose Image > Adjustments > Invert.

• (Photoshop) Choose Layer > New Adjustment Layer > Invert. Click OK in the New Layer dialog box.

Using the Threshold command (Photoshop)

The Threshold command converts grayscale or color images to high-contrast, black-and-white images. You can specify a certain level as a threshold. All pixels lighter than the threshold are converted to white; all pixels darker are converted to black. The Threshold command is useful for determining the lightest and darkest areas of an image.

To use the Threshold command to convert images to black and white:

1 Do one of the following:

• Choose Image > Adjustments > Threshold.

• Chose Layer > New Adjustment Layer > Threshold. Click OK in the New Layer dialog box.

The Threshold dialog box displays a histogram of the luminance levels of the pixels in the current selection.

2 Drag the slider below the histogram until the threshold level you want appears at the top of the dialog box, and click OK. As you drag, the image changes to reflect the new threshold setting.

To use the Threshold command to identify representative highlights and shadows:

1 Open the Threshold dialog box. (See "Making color adjustments" on page 180.)

2 Select Preview.

3 To identify a representative highlight, drag the slider to the far right until the image becomes pure black. Drag the slider slowly toward the center until some solid white areas appear in the image, and place a color sampler on one of the areas.

4 To identify a representative shadow, drag the slider to the far left until the image becomes pure white. Drag the slider slowly toward the center until some solid black areas appear in the image, and place a color sampler on one of the areas.

5 Click Cancel to close the Threshold dialog box without applying changes to the image.

You can use the Info palette readouts of the two color samplers to determine your highlight and shadow values.

Using the Posterize command (Photoshop)

The Posterize command lets you specify the number of tonal levels (or brightness values) for each channel in an image and then maps pixels to the closest matching level. For example, choosing two tonal levels in an RGB image gives six colors: two for red, two for green, and two for blue.

This command is useful for creating special effects, such as large, flat areas in a photograph. Its effects are most evident when you reduce the number of gray levels in a grayscale image. But it also produces interesting effects in color images.

If you want a specific number of colors in your image, convert the image to grayscale and specify the number of levels you want. Then convert the image back to the previous color mode, and replace the various gray tones with the colors you want.

To use the Posterize command:

1 Choose Image > Adjustments > Posterize.

2 Enter the number of tonal levels you want, and click OK.

Using the Gradient Map command (Photoshop)

The Gradient Map command maps the equivalent grayscale range of an image to the colors of a specified gradient fill. If you specify a two-color gradient fill, for example, shadows in the image map to one of the endpoint colors of the gradient fill, highlights map to the other endpoint color, and midtones map to the gradations in between.

To use the Gradient Map command:

1 Do one of the following:

- Choose Image > Adjustments > Gradient Map.

- Choose Layer > New Adjustment Layer > Gradient Map. Click OK in the New Layer dialog box.

2 Specify the gradient fill you want to use:

- To choose from a list of gradient fills, click the triangle to the right of the gradient fill displayed in the Gradient Map dialog box. Click to select the desired gradient fill, and then click in a blank area of the dialog box to dismiss the list. For information on customizing the gradient fill list, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.

- To edit the gradient fill currently displayed in the Gradient Map dialog box, click the gradient fill. Then modify the existing gradient fill or create a new gradient fill using the Gradient Editor. (See "Creating smooth gradient fills" on page 339.)

By default, the shadows, midtones, and highlights of the image are mapped respectively to the starting (left) color, midpoint, and ending (right) color of the gradient fill.

3 Select either, none, or both of the Gradient Options:

- Dither adds random noise to smooth the appearance of the gradient fill and reduce banding effects.

- Reverse switches the direction of the gradient fill, reversing the gradient map.

Sharpening images

When we view images, not only does our vision respond to color and tonality but also to the edges that define the shape of objects. Sharpening enhances the edge definition in an image. Whether your images come from a digital camera or a scanner, most images can benefit from sharpening. The degree of sharpening needed varies depending on the quality of the digital camera or scanner. Keep in mind that sharpening will not correct the problems of a severely blurred image.

About the Photoshop sharpening filters

Use the Unsharp Mask (USM) filter to sharpen your images. The controls provided by this filter make it the best choice for sharpening. Although Photoshop also has the Sharpen, Sharpen Edges, and Sharpen More filter options, these filters are automatic and do not provide controls and options. You might use these filters for producing creative effects in your image. For more information on the Sharpen filters, see "Sharpen filters" on page 428, and for more information on using the Unsharp Mask filter, see "Using the Unsharp Mask filter" on page 224.

Photoshop lets you sharpen your entire image or sharpen part of your image by using a selection or mask. Since the Unsharp Mask filter can only be applied to one layer at a time, you might need to merge layers or flatten your file to sharpen all image layers in a multi-layered file. For more information on sharpening only part of your image, see "Selective sharpening" on page 226.

Note: *The name, Unsharp Mask, makes the filter seem like an unintuitive choice for sharpening an image. The term comes from a darkroom technique used in traditional film-based photography. The effect of a sharpened edge can be produced by sandwiching a photographic negative and a slightly blurred and underexposed copy negative in the enlarger. Then the photographic paper is exposed through the sandwiched negatives.*

Using the Unsharp Mask filter

The Unsharp Mask does not detect edges in an image. Instead, it locates pixels that differ in value from surrounding pixels by the threshold you specify and increases the pixels' contrast by the amount you specify. So, for neighboring pixels specified by the threshold, the lighter pixels get even lighter and the darker pixels get even darker based on the specified amount.

In addition, you specify the radius of the region to which each pixel is compared. The greater the radius, the larger the edge effects.

Original image and Unsharp Mask applied

The degree of sharpening applied to an image is often a matter of personal choice. However, over-sharpening an image produces an unattractive halo effect around the edges.

Over-sharpening an image produces a halo effect around the edges.

The effects of the Unsharp Mask filter are more pronounced on-screen than in high-resolution output. If your final destination is print, experiment to determine what settings work best for your image.

For information on other filters for sharpening images, see "Sharpen filters" on page 428.

To use Unsharp Mask to sharpen an image:

1 (Optional) If your image is multilayered, select the layer with the image you want sharpened. The Unsharp Mask can only be applied to one layer at a time, even if layers are linked or grouped. You can merge the layers before applying the Unsharp Mask filter. For more information on merging layers, see "Merging and stamping layers" on page 383.

2 Choose Filter > Sharpen > Unsharp Mask. Make sure the Preview option is selected.

💡 Click the image in the preview window and hold down the mouse to see how the image looks without the sharpening. Drag in the preview window to see different parts of the image, and click + or – to zoom in or out.

Although there is a preview window in the Unsharp Mask dialog box, it's best to move the dialog box so you can preview the effects of the filter in the document window.

3 Drag the Radius slider or enter a value to determine the number of pixels surrounding the edge pixels that affect the sharpening. The greater the radius value, the wider the edge effects. And the wider the edge effects, the more obvious the sharpening.

Adjusting the Radius value depends on the subject matter of the image, the size that the image will be reproduced at, and output method. For high-resolution images, a Radius between 1 and 2 is usually recommended. A lower value sharpens only the edge pixels, whereas a higher value sharpens a wider band of pixels. This effect is much less noticeable in print than on-screen, because a 2-pixel radius represents a smaller area in a high-resolution printed image.

4 Do one of the following:

• Drag the Amount slider or enter a value to determine how much to increase the contrast of pixels. For high-resolution printed images, an amount between 150% and 200% is usually recommended.

- Drag the Threshold slider or enter a value to determine how different the sharpened pixels must be from the surrounding area before they are considered edge pixels and sharpened by the filter. For instance, a threshold of 4 will affect all pixels that have tonal values that are different (on a scale of 0 to 255) by 4 or greater. So, if adjacent pixels have tonal values of 128 and 129, they will not be affected. To avoid introducing noise or posterization (in images with fleshtones, for example), use an edge mask or try experimenting with Threshold values between 2 and 20. The default Threshold value (0) sharpens all pixels in the image. For more information on using an edge mask for selective sharpening, see "Selective sharpening" on page 226.

💡 If applying Unsharp Mask makes already bright colors appear overly saturated, convert the image to Lab mode and apply the filter to the Lightness channel only. This sharpens the image without affecting the color components.

Selective sharpening

You can sharpen part of your image instead of the entire image by using a mask or a selection. This is useful when you want to prevent certain parts of your image from being sharpened. For example, you can use an edge mask with the Unsharp Mask filter on a portrait to keep the facial skin soft looking but sharpen features like the eyes, mouth, nose, and outline of the head.

Using an edge mask to apply the Unsharp Mask only to specific features in a portrait

To sharpen a selection:

1 With the image layer selected in the Layers palette, draw a selection.

2 Choose Filter > Sharpen > Unsharp Mask. Adjust the options and click OK. For information on setting the Unsharp Mask options, see "Using the Unsharp Mask filter" on page 224.

The image area within the selection will be sharpened, leaving the rest of the image untouched.

To selectively sharpen an image using an edge mask:

1 Create an edge mask.

There are many ways to create an edge mask. For more information on creating masks, see "About masks (Photoshop)" on page 251 or experiment with the following method:

• Open the Channels palette and select the channel that displays the grayscale image with the greatest contrast in the document window. Often, the green or the red channel will be the one you select.
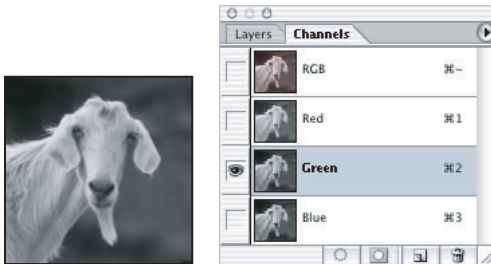
Showing a channel with the greatest contrast

• Duplicate the selected channel.

• With the duplicate channel selected, choose Filter > Stylize > Find Edges.

• Choose Image > Adjustments > Invert to invert the image.
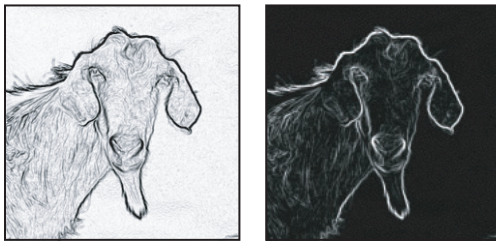
Find Edges filter applied and image inverted

• With the inverted image still selected, choose Filter > Other > Maximum. Set the radius to a low number and click OK to thicken the edges and randomize the pixels.

• Choose Filter > Noise > Median. Set the radius to a low number and click OK. This averages the neighboring pixels.

• Choose Filter > Blur > Gaussian Blur to feather the edges.

Note: *The Maximum, the Median, and the Gaussian Blur filters soften the edge mask so the sharpening effects will blend better in the final image. Although this procedure recommends using all three filters, you can experiment using only one or two.*

- Choose Image > Adjustment > Levels and set the black point high to get rid of random pixels. If necessary, you can also paint with black to retouch the final edge mask.

Set the black point high in Levels to eliminate random pixels in the edge mask

2 In the Channels palette, Ctrl-click (Windows) or Command-click (Mac OS) the duplicate channel to make the edge mask a selection.

3 In the Layers palette, select the image layer. Make sure the selection is visible on the image.

4 Choose Select > Inverse.

5 With the selection active on the image layer, choose Filter > Sharpen > Unsharp Mask. Set the desired options and click OK. For more information on setting the Unsharp Mask options, see "Using the Unsharp Mask filter" on page 224.

Note: *You can create an action to conveniently apply all the steps in the procedure.*

Selecting

About selections

There are separate sets of tools to make selections of bitmap and vector data. For example, to select bitmap pixels, you can use the marquee tools or the lasso tools.

To select vector data, you can use the pen or shape tools, which produce precise outlines called *paths*. You can convert paths to selections or convert selections to paths. (See "Converting between paths and selection borders (Photoshop)" on page 310.)

Using the Select menu

You can use commands in the Select menu to select all pixels, to deselect, or to reselect.

To select all pixels on a layer within the canvas boundaries:

1 Select the layer in the Layers palette.

2 Choose Select > All.

To deselect selections:

Do one of the following:

• Choose Select > Deselect.

• If you are using the Rectangle Marquee tool, the Rounded Rectangle Marquee tool (ImageReady), the Elliptical Marquee tool, or the Lasso tool, click anywhere in the image outside the selected area.

To reselect the most recent selection:

Choose Select > Reselect.

Using the marquee tools

The marquee tools let you select rectangles, ellipses, rounded rectangles (ImageReady), and 1-pixel rows and columns. By default, a selection border is dragged from its corner.

To use the marquee tools:

1 Select a marquee tool:

• Rectangle Marquee ⬚ to make a rectangular selection.

• (ImageReady) Rounded Rectangle Marquee ⬚ to select a rounded rectangle such as a Web page button.

• Elliptical Marquee ◯ to make an elliptical selection.

• Single Row ⚏ or Single Column ⚎ Marquee to define the border as a 1-pixel-wide row or column.

2 In the options bar, specify whether to add a new selection ▪, add to a selection ▪, subtract from a selection ▫, or select an area intersected by other selections ▪.

3 Specify a feathering setting in the options bar. Turn anti-aliasing on or off for the Rounded Rectangle tool or the Elliptical Marquee tool. (See "Softening the edges of a selection" on page 239.)

4 For the Rectangle tool, the Rounded Rectangle tool, or the Elliptical Marquee tool, choose a style in the options bar:

- Normal to determine marquee proportions by dragging.

- Fixed Aspect Ratio to set a height-to-width ratio. Enter values (decimal values are valid in Photoshop) for the aspect ratio. For example, to draw a marquee twice as wide as it is high, enter 2 for the width and 1 for the height.

- Fixed Size to specify set values for the marquee's height and width. Enter pixel values in whole numbers. Keep in mind that the number of pixels needed to create a 1-inch selection depends on the resolution of the image. (See "Understanding image size and resolution" on page 62.)

5 For aligning your selection to guides, a grid, slices, or document bounds, do one of the following to snap your selection:

- (Photoshop) Choose View > Snap, or choose View > Snap To and choose a command from the submenu. The marquee selection can snap to a document boundary and more than one Photoshop Extra. This is controlled in the Snap To submenu. (See "Using the Snap command" on page 246.)

- (ImageReady) Choose View > Snap To > Guides.

6 Do one of the following to make a selection:

- With the Rectangle tool, the Rounded Rectangle tool, or the Elliptical Marquee tool, drag over the area you want to select. Hold down Shift as you drag to constrain the marquee to a square or circle (release the mouse button before Shift to keep the shape contsrained). To drag a marquee from its center, hold down Alt (Windows) or Option (Mac OS) after you begin dragging.
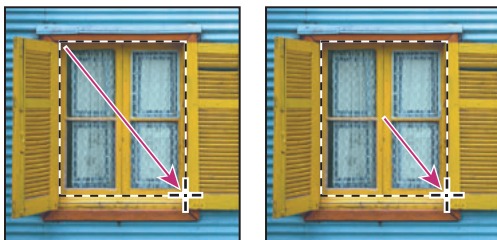
Dragging a marquee from the corner of an image (left), and from the center of an image (right)

- With the single row or single column marquee, click near the area you want to select, and then drag the marquee to the exact location. If no marquee is visible, increase the magnification of your image view.

💡 To reposition a rectangle, rounded rectangle, or Elliptical Marquee, first drag to create the border, keeping the mouse button depressed. Then hold down the spacebar and continue to drag. Release the spacebar, but keep the mouse button depressed, if you need to continue adjusting the selection border.

Using the Lasso, Polygonal Lasso, and Magnetic Lasso tools

The Lasso tool ⌒ and the Polygonal Lasso tool ⌒ let you draw both straight-edged and freehand segments of a selection border. With the Magnetic Lasso tool (Photoshop), the border snaps to the edges of defined areas in the image.

The Magnetic Lasso tool is especially useful for quickly selecting objects with complex edges set against high-contrast backgrounds.

To use the Lasso tool:

1 Select the Lasso tool ⌒, and select options. (See "Setting options for the Lasso, Polygonal Lasso, and Magnetic Lasso tools" on page 232.)

2 Drag to draw a freehand selection border.

3 To draw a straight-edged selection border, hold down Alt (Windows) or Option (Mac OS), and click where segments should begin and end. You can switch between drawing freehand and straight-edged segments.

4 To erase recently drawn segments, hold down the Delete key until you've erased the fastening points for the desired segment.

5 To close the selection border, release the mouse without holding down Alt (Windows) or Option (Mac OS).

To use the Polygonal Lasso tool:

1 Select the Polygonal Lasso tool ⌒, and select options. (See "Setting options for the Lasso, Polygonal Lasso, and Magnetic Lasso tools" on page 232.)

2 Click in the image to set the starting point.

3 Do one or more of the following:

• To draw a straight segment, position the pointer where you want the first straight segment to end, and click. Continue clicking to set endpoints for subsequent segments.

• To draw a freehand segment, hold down Alt (Windows) or Option (Mac OS), and drag. When finished, release Alt or Option and the mouse button.

• To erase recently drawn straight segments, press the Delete key.

4 Close the selection border:

• Position the Polygonal Lasso tool pointer over the starting point (a closed circle appears next to the pointer), and click.

• If the pointer is not over the starting point, double-click the Polygonal Lasso tool pointer, or Ctrl-click (Windows) or Command-click (Mac OS).

To use the Magnetic Lasso tool (Photoshop):

1 Select the Magnetic Lasso tool ⌒, and select options. (See "Setting options for the Lasso, Polygonal Lasso, and Magnetic Lasso tools" on page 232.)

2 Click in the image to set the first fastening point. Fastening points anchor the selection border in place.

3 To draw a freehand segment, move the pointer along the edge you want to trace. (You can also drag with the mouse button depressed.)

The most recent segment of the selection border remains active. As you move the pointer, the active segment snaps to the strongest edge in the image, based on the detection Width set in the options bar. Periodically, the Magnetic Lasso tool adds fastening points to the selection border to anchor previous segments.

4 If the border doesn't snap to the desired edge, click once to add a fastening point manually. Continue to trace the edge, and add fastening points as needed.
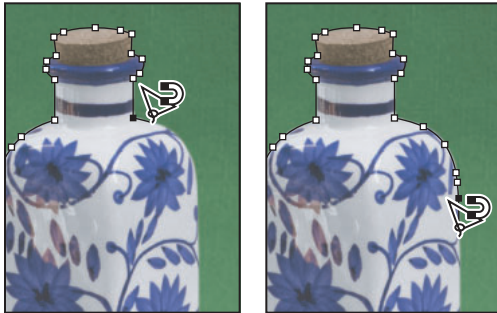
Fastening points anchor selection border to edges

5 To switch temporarily to the other lasso tools, do one of the following:

• To activate the Lasso tool, hold down Alt (Windows) or Option (Mac OS), and drag with the mouse button depressed.

• To activate the Polygonal Lasso tool, hold down Alt (Windows) or Option (Mac OS), and click.

6 To erase recently drawn segments and fastening points, press the Delete key until you've erased the fastening points for the desired segment.

7 Close the selection border:

• To close the border with a freehand Magnetic segment, double-click, or press Enter or Return.

• To close the border with a straight segment, hold down Alt (Windows) or Option (Mac OS), and double-click.

• To close the border, drag back over the starting point and click.

Setting options for the Lasso, Polygonal Lasso, and Magnetic Lasso tools

The Lasso tool options let you customize how the different lasso tools detect and select edges.

To set options for the lasso tools:

1 If needed, select the tool.

2 In the options bar, specify whether you want to create a new selection ▢, add to an existing selection ▣, subtract from a selection ▢, or select an area intersected by other selections ▣.

3 Specify feather and anti-aliasing options. (See "Softening the edges of a selection" on page 239.)

4 For the Magnetic Lasso tool (Photoshop), set any of these options:

• To specify a detection width, enter a pixel value for Width. The Magnetic Lasso tool detects edges only within the specified distance from the pointer.

• To specify the lasso's sensitivity to edges in the image, enter a value between 1% and 100% for Edge Contrast. A higher value detects only edges that contrast sharply with their surroundings; a lower value detects lower-contrast edges.

• To specify the rate at which the lasso sets fastening points, enter a value between 0 and 100 for Frequency. A higher value anchors the selection border in place more quickly.

On an image with well-defined edges, try a higher width and higher edge contrast, and trace the border roughly. On an image with softer edges, try a lower width and lower edge contrast, and trace the border more precisely.

• To change the lasso cursor to indicate the lasso width, press the Caps Lock key on the keyboard. Change the cursor while the tool is selected but not in use.

• If you are working with a stylus tablet, select or deselect the Stylus Pressure option. When the option is selected, an increase in stylus pressure will cause the edge width to decrease.

While creating a selection, you can press] to increase the Magnetic Lasso edge width by 1 pixel; press [to decrease the width by 1 pixel.

Using the Magic Wand tool

The Magic Wand tool ✎ lets you select a consistently colored area (for example, a red flower) without having to trace its outline. You specify the color range, or *tolerance*, for the Magic Wand tool's selection.

Note: *You cannot use the Magic Wand tool on an image in Bitmap mode.*

To use the Magic Wand tool:

1 Select the Magic Wand tool ✎.

2 In the options bar, specify whether to add a new selection ▣, add to an existing selection ▣, subtract from a selection ▣, or select an area intersected by other selections ▣. The Magic Wand tool's cursor changes depending on which option is selected.

3 For Tolerance, enter a value in pixels, ranging from 0 to 255. Enter a low value to select the few colors very similar to the pixel you click, or enter a higher value to select a broader range of colors.

4 To define a smooth edge, select Anti-aliased. (See "Softening the edges of a selection" on page 239.)

5 To select only adjacent areas using the same colors, select Contiguous. Otherwise, all pixels using the same colors will be selected.

6 To select colors using data from all the visible layers, select Use All Layers. Otherwise, the Magic Wand tool selects colors from the active layer only.

7 In the image, click the color you want to select. If Contiguous is selected, all adjacent pixels within the tolerance range are selected. Otherwise, all pixels in the tolerance range are selected.

Using the Color Range command (Photoshop)

The Color Range command selects a specified color or color subset within an existing selection or an entire image. If you want to replace a selection, be sure to deselect everything before applying this command.

To refine an existing selection, use the Color Range command repeatedly to select a subset of colors. For example, to select the green areas in a cyan selection, select Cyans in the Color Range dialog box, and click OK. Then reopen the Color Range dialog box, and select Greens. (The results are subtle because the technique selects parts of colors within a color mix.)

To select a color range using sampled colors:

1 Choose Select > Color Range.

2 For Select, choose the Sampled Colors tool 🖋.

3 Select one of the display options:

• Selection to preview only the selection as you build it.

• Image to preview the entire image. For example, you might want to sample from a part of the image that isn't on-screen.

💡 To toggle between the Image and Selection previews in the Color Range dialog box, press Ctrl (Windows) or Command (Mac OS).

4 Position the pointer over the image or preview area, and click to sample the colors you want included.
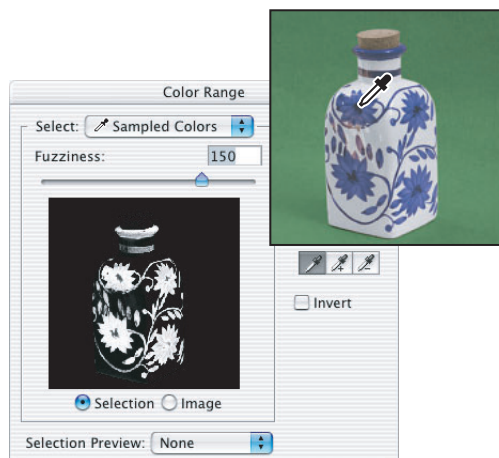
Sampling color

5 Adjust the range of colors using the Fuzziness slider or by entering a value. To decrease the range of colors selected, decrease the value. The Fuzziness option partially selects pixels by controlling the degree to which related colors are included in the selection (whereas the Tolerance option for the Magic Wand tool and the paint bucket options increases the range of colors that are fully selected).

Increasing Fuzziness expands selection

6 Adjust the selection:

• To add colors, select the plus eyedropper, and click in the preview area or image.

• To remove colors, select the minus eyedropper, and click in the preview area or image.

💡 To activate the plus eyedropper temporarily, hold down Shift. Hold down Alt (Windows) or Option (Mac OS) to activate the minus eyedropper.

7 To preview the selection in the image window, choose an option for Selection Preview:

• None to display no preview in the image window.

• Grayscale to display the selection as it would appear in a grayscale channel.

• Black Matte to display the selection in color against a black background.

• White Matte to display the selection in color against a white background.

• Quick Mask to display the selection using the current quick mask settings. (See "Using Quick Mask mode to make selections (Photoshop)" on page 252.)

8 To revert to the original selection, hold down Alt (Windows) or Option (Mac OS), and click Reset.

To select a color range using preset colors:

1 Choose Select > Color Range.

2 For Select, choose a color or tonal range. The Out-of-Gamut option works only on RGB and Lab images. (An out-of-gamut color is an RGB or Lab color that cannot be printed using process color printing.)

3 Click Selection to display the selected areas in the preview area.

4 To preview the selection in the image window, choose an option for Selection Preview:

• None to display no preview in the image window.

• Grayscale to display the selection as it would appear in a grayscale channel.

• Black Matte to display the selection in color against a black background.

• White Matte to display the selection in color against a white background.

• Quick Mask to display the selection using the current quick mask settings. (See "Using Quick Mask mode to make selections (Photoshop)" on page 252.)

5 To revert to the original selection, hold down Alt (Windows) or Option (Mac OS), and click Reset.

Note: If a message appears stating "No pixels are more than 50% selected," the selection border will not be visible. You may have selected a color, such as red, when the image didn't contain the fully saturated color.

To save and load color range settings:

Use the Save and Load buttons in the Color Range dialog box to save and reuse the current settings.

Creating selections from slices (ImageReady)

If you create a slice in ImageReady, it can be converted into a selection.

To create a selection from a slice:

1 Select a slice. (See "Selecting slices" on page 478.)

2 Choose Select > Create Selection from Slice.

Adjusting pixel selections

You can adjust and refine your pixel selections using the selection tools and a variety of commands in the Select menu.

In addition, you can apply geometric transformations to change the shape of a selection border. (See "Transforming objects" on page 265.)

Moving, hiding, or inverting a selection

You can move a selection border around an image, hide a selection border, and invert a selection so that the previously unselected part of the image is selected.

To move a selection border:

1 Using any selection tool, select new selection ▢ from the options bar, and position the pointer inside the selection border. The pointer changes to indicate that you can move the selection ▷.

2 Drag the border to enclose a different area of the image. You can drag a selection border partly beyond the canvas boundaries. When you drag it back, the original border reappears intact. You can also drag the selection border to another image window.
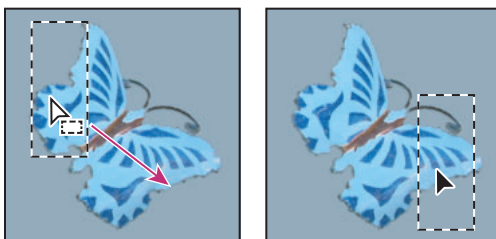
Original selection border (left), and selection border moved (right)

To control the movement of a selection:

- To constrain the direction to multiples of 45°, begin dragging, and then hold down Shift as you continue to drag.
- To move the selection in 1-pixel increments, use an arrow key.
- To move the selection in 10-pixel increments, hold down Shift, and use an arrow key.

To hide or show selection edges:

Do one of the following:

- Choose View > Extras. This command also shows or hides (Photoshop) selection edges, grids, guides, target path, slices, and annotations, or (ImageReady) selection edges, layer edges, grids, guides, smart guides, slices, auto slices, image maps, and text selections. (See "Working with Extras" on page 45.)
- Choose View > Show > Selection Edges. This toggles the view of the selection edges and affects the current selection only. The selection edges reappear when you make a different selection.

To select the unselected parts of an image:

Choose Select > Inverse.

💡 You can use this option to select an object placed against a solid-colored background. Select the background using the Magic Wand tool and then inverse the selection.

Adjusting selections manually

You can use the selection tools to add to or subtract from existing pixel selections.

Before manually adding to or subtracting from a selection, set the feather and anti-aliased values in the options bar to the same settings used for the original selection. (See "Softening the edges of a selection" on page 239.)

To add to a selection or select an additional area:

1 Make a selection.

2 Using any selection tool, do one of the following

- Select the Add to Selection option 🔲 in the options bar, and drag.
- Hold down Shift, and drag to add another selection.

💡 A plus sign appears next to the pointer when you're adding to a selection.

To subtract from a selection:

1 Make a selection.

2 Using any selection tool, do one of the following:

- Select the Subtract from Selection option 🔲 in the options bar, and drag to intersect with other selections.
- Hold down Alt (Windows) or Option (Mac OS), and drag to subtract another selection.

💡 A minus sign appears next to the pointer when you're subtracting from a selection.

To select only an area intersected by other selections:

1 Make a selection.

2 Using any selection tool, do one of the following:

• Select the Intersect with Selection option ▣ in the options bar, and drag.

• Hold down Alt+Shift (Windows) or Option+Shift (Mac OS) and drag over the portion of the original selection that you want to select.

💡 An "x" appears next to the pointer when you're selecting an intersected area.
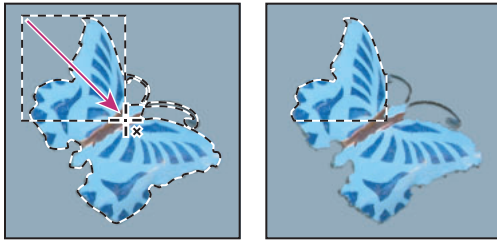
Intersected selections

Adjusting selections numerically

You can use commands in the Select menu to increase or decrease the pixels in an existing selection and to clean up stray pixels left inside or outside a color-based selection.

To expand or contract a selection by a specific number of pixels:

1 Choose Select > Modify > Expand or Contract.

2 For Expand By or Contract By, enter a pixel value between 1 and 100, and click OK.

The border is increased or decreased by the specified number of pixels. Any portion of the selection border running along the canvas's edge is unaffected.

To frame an existing selection with a new selection:

1 Use a selection tool to make a selection.

2 Choose Select > Modify > Border.

3 Enter a value between 1 and 200 pixels for the border width of the new selection, and click OK.

The new selection frames the original selected area.
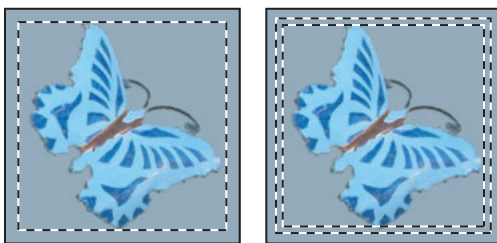
Original selection (left), and after Border command: 5 pixels (right)

The Border command creates an anti-aliased selection. (See "Softening the edges of a selection" on page 239.) To paint a hard-edged border around a selection, use the Stroke command. (See "Filling and stroking selections and layers" on page 344.)

To expand a selection to include areas with similar color:

Do one of the following:

- (Photoshop) Choose Select > Grow to include all adjacent pixels falling within the tolerance range specified in the magic wand options.

- Choose Select > Similar to include pixels throughout the image, not just adjacent ones, falling within the tolerance range.

To increase the selection in increments, choose either command more than once.

Note: *You cannot use the Grow and Similar commands on images in Bitmap mode.*

To clean up stray pixels left inside or outside a color-based selection:

1 Choose Select > Modify > Smooth.

2 For Sample Radius, enter a pixel value between 1 and 100, and click OK.

Photoshop or ImageReady checks around each selected pixel to find any unselected pixels falling within the specified range. For example, if you enter 16 for the sample radius, the program uses each pixel as the center of a 33-by-33-pixel area (16 pixels in the horizontal and vertical directions). If most pixels in the range are selected, any unselected pixels are added to the selection. If most pixels are unselected, any selected pixels are removed from the selection.

Note: *The relationship between physical distance and pixel distance depends on the resolution of the image. For example, 5 pixels is a longer distance in a 72-ppi image than in a 300-ppi image. (See "Understanding image size and resolution" on page 62.)*

Softening the edges of a selection

You can smooth the hard edges of a selection by anti-aliasing and by feathering.

Anti-aliasing   Smooths the jagged edges of a selection by softening the color transition between edge pixels and background pixels. Since only the edge pixels change, no detail is lost. Anti-aliasing is useful when cutting, copying, and pasting selections to create composite images.

Anti-aliasing is available for the Lasso tool, the Polygonal Lasso tool, the Magnetic Lasso tool, the Rounded Rectangle Marquee tool (ImageReady), the Elliptical Marquee tool, and the Magic Wand tool. (Select a tool to display its options bar.) You must specify this option before using these tools. Once a selection is made, you cannot add anti-aliasing.

Feathering   Blurs edges by building a transition boundary between the selection and its surrounding pixels. This blurring can cause some loss of detail at the edge of the selection.

You can define feathering for the Marquee tool, the Lasso tool, the Polygonal Lasso tool, or the Magnetic Lasso tool as you use the tool, or you can add feathering to an existing selection. Feathering effects become apparent when you move, cut, copy, or fill the selection.

To use anti-aliasing:

1　Select the Lasso tool, the Polygonal Lasso tool, the Magnetic Lasso tool, the Rounded Rectangle Marquee tool (ImageReady), the Elliptical Marquee tool, or the Magic Wand tool.

2　Select Anti-aliased in the options bar.

To define a feathered edge for a selection tool:

1　Select any of the lasso or marquee tools.

2　Enter a Feather value in the options bar. This value defines the width of the feathered edge and can range from 0 to 250 pixels.

To define a feathered edge for an existing selection:

1　Choose Select > Feather.

2　Enter a value for the Feather Radius, and click OK.

Note: A small selection made with a large feather radius may be so faint that its edges are invisible and thus not selectable. If a message appears stating "No pixels are more than 50% selected," either decrease the feather radius or increase the selection's size. Or click OK to accept the mask at its current setting and create a selection in which you cannot see the edges.
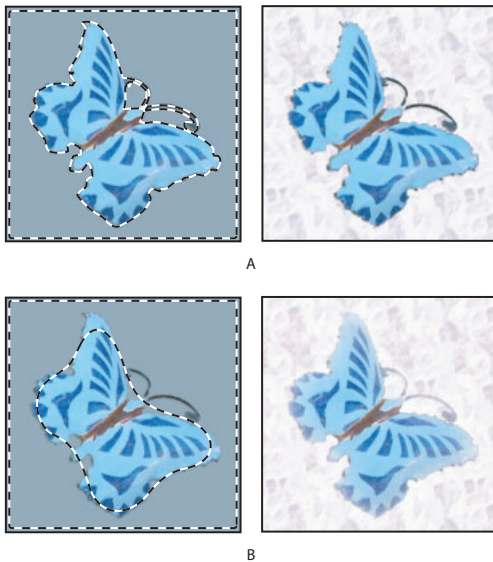
Selection without feathering and with feathering
A. Selection with no feather, same selection filled with pattern　**B.** Selection with feather, same selection filled with pattern

Moving, copying, and pasting selections and layers

You can move or copy selections and layers within or between images—and also between images in other applications.

Moving selections and layers within an image

The Move tool lets you drag a selection or layer to a new location in the image. With the Info palette open, you can track the exact distance of the move. You can also use the Move tool to align selections and layers and distribute layers within an image. To move objects in ImageReady layers, see "Selecting layers" on page 374.

To specify Move tool options:

1 Select the Move tool ⬆.

2 Select any of the following in the options bar:

• Auto Select Layer to select the topmost layer that has pixels under the Move tool, rather than the selected layer.

• Show Bounding Box to display the bounding box around the selected item.

To move a selection or layer:

1 Select the Move tool ⬆.

To activate the Move tool when another tool is selected, hold down Ctrl (Windows) or Command (Mac OS). (This technique does not work with the Pen tool ✎, the Freeform Pen tool ✎, the Path Selection tool ▸, the Direct Selection tool ▹, the Hand tool ✋, the Slice Select tool ✄, or the anchor point tools ✎ ✎ ▸.)

2 Do one of the following:

• Move the pointer inside the selection border, and drag the selection to a new position. If you have selected multiple areas, all move as you drag.
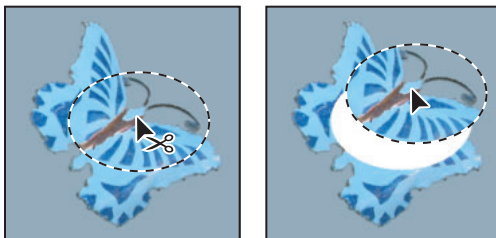
Original selection (left), and after the selection is moved with the Move tool (right)

• Select the layer you want to move. Then drag the layer to a new position.

To align selections and layers within an image:

1 Do one of the following:

• To align the content of a layer to a selection, make a selection in the image. Then select a layer in the Layers palette.

• To align the contents of multiple layers to a selection border, make a selection in the image. Then link together the layers you want to align in the Layers palette. (See "Linking layers" on page 378.)

- To align the contents of layers with the content of the active layer, link the layers you want to align to the active layer. (See "Linking layers" on page 378.)

2 Select the Move tool ▶₊.

3 Click one or more alignment buttons in the options bar: Align Top Edges ▯, Align Vertical Centers ▯, Align Bottom Edges ▯, Align Left Edges ▯, Align Horizontal Centers ▯, or Align Right Edges ▯.

To distribute layers within an image:

1 In the Layers palette, link three or more layers. (See "Linking layers" on page 378.)

2 Select the Move tool ▶₊.

3 Click one or more Distribute buttons in the options bar: Distribute Top Edges ▤, Distribute Vertical Centers ▤, Distribute Bottom Edges ▤, Distribute Left Edges ▥, Distribute Horizontal Centers ▥, or Distribute Right Edges ▥.

Copying selections or layers

You can use the Move tool to copy selections as you drag them within or between images, or you can copy and move selections using the Copy, Copy Merged, Cut, and Paste commands. Dragging with the Move tool saves memory because the Clipboard is not used as it is with the Copy, Copy Merged, Cut, and Paste commands.

- The Copy command copies the selected area on the active layer.

- The Copy Merged command makes a merged copy of all the visible layers in the selected area.

- The Paste command pastes a cut or copied selection into another part of the image or into another image as a new layer. If you have a selection, the Paste command places the copied selection over the current selection. Without an active selection, Paste places the copied selection in the middle of the view area.

- (Photoshop) The Paste Into command pastes a cut or copied selection inside another selection in the same image or different image. The source selection is pasted onto a new layer, and the destination selection border is converted into a layer mask. (See "Masking layers" on page 408.)

Keep in mind that when a selection or layer is pasted between images with different resolutions, the pasted data retains its pixel dimensions. This can make the pasted portion appear out of proportion to the new image. Use the Image Size command to make the source and destination images the same resolution before copying and pasting (see "Determining a recommended resolution for an image (Photoshop)" on page 69), and then set the zoom of both images to the same magnification.

Depending on your color management settings and the color profile associated with the file (or imported data), you may be prompted to specify how to handle color information in the file (or imported data). For more information, see "Using the Photoshop Color Settings" on page 122.

To copy a selection:

1 Select the area you want to copy.

2 Choose Edit > Copy or Edit > Copy Merged.

To copy a selection while dragging:

1 Select the Move tool ▸⊕ , or hold down Ctrl (Windows) or Command (Mac OS) to activate the Move tool.

2 Hold down Alt (Windows) or Option (Mac OS), and drag the selection you want to copy and move.

When copying between images, drag the selection from the active image window into the destination image window. If nothing is selected, the entire active layer is copied. As you drag the selection over another image window, a border highlights the window if you can drop the selection into it.

To create multiple copies of a selection within an image:

1 Select the Move tool ▸⊕ , or hold down Ctrl (Windows) or Command (Mac OS) to activate the Move tool.

2 Copy the selection:

• Hold down Alt (Windows) or Option (Mac OS), and drag the selection.

• To copy the selection and offset the duplicate by 1 pixel, hold down Alt or Option, and press an arrow key.

• To copy the selection and offset the duplicate by 10 pixels, press Alt+Shift (Windows) or Option+Shift (Mac OS), and press an arrow key.

As long as you hold down Alt or Option, each press of an arrow key creates a copy of the selection and offsets it by the specified distance from the last duplicate. In this case, the copy isn't made on a new layer.
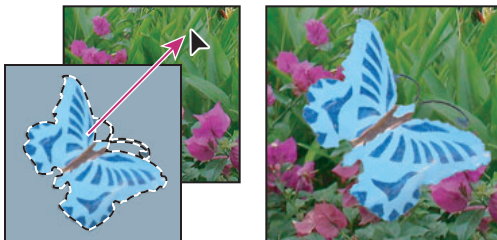
Dragging a selection into another image

To paste one selection into another (Photoshop):

1 Cut or copy the part of the image you want to paste.

2 Select the part of the image into which you want to paste the selection. The source selection and the destination selection can be in the same image or in two different Photoshop images.

3 Choose Edit > Paste Into. The contents of the source selection appear masked by the destination selection.

In the Layers palette, the layer thumbnail for the source selection appears next to the layer mask thumbnail for the destination selection. The layer and layer mask are unlinked—that is, you can move each one independently.

Using the Paste Into command
A. Window panes selected **B.** Copied image **C.** Paste Into command **D.** Layer thumbnails and layer mask in Layers palette **E.** Pasted image repositioned

For more information on editing layer masks, see "Applying and discarding layer masks" on page 412.

4 Select the Move tool ⊹, or hold down the Ctrl (Windows) or Command (Mac OS) key to activate the Move tool. Then drag the source contents until the part you want appears through the mask.

5 To reveal more or less of the image underlying the layer, click the layer mask thumbnail in the Layers palette, select a painting tool, and edit the mask:

• To hide more of the image underlying the layer, paint the mask with black.

• To reveal more of the image underlying the layer, paint the mask with white.

• To partially reveal the image underlying the layer, paint the mask with gray.

6 If you are satisfied with your results, you can choose Layer > Merge Down to merge the new layer and layer mask with the underlying layer and make the changes permanent.

Using drag and drop to copy between applications

The drag-and-drop feature lets you copy and move images between Photoshop or ImageReady and other applications.

In Windows, the application must be OLE-compliant. To duplicate an entire image by dragging and dropping, use the Move tool to drag the image. To copy an OLE object that contains PSD data, use the OLE Clipboard. (See your Windows documentation.)

Dragging vector artwork from Adobe Illustrator or from other applications that use the Illustrator Clipboard rasterizes the artwork—the mathematically defined lines and curves of the vector art are converted into the pixels or bits of a bitmap image. To copy the vector artwork as a path in Photoshop, hold down Ctrl (Windows) or Command (Mac OS) as you drag from Adobe Illustrator. To copy type, you must first convert it to outlines.

Using the Clipboard to copy between applications

You can often use the Cut or Copy command to copy selections between Photoshop or ImageReady and other applications. The cut or copied selection remains on the Clipboard until you cut or copy another selection.

In some cases, the contents of the Clipboard are converted to a raster image. Photoshop prompts you when vector artwork will be rasterized.

Note: *The image is rasterized at the resolution of the file into which you paste it.*

To change the Export Clipboard preference (Photoshop):

1 Do one of the following:

• In Windows, choose Edit > Preferences > General.

• In Mac OS, choose Photoshop > Preferences > General.

2 Select Export Clipboard to save any Photoshop contents on the Clipboard when you exit from Photoshop. If you leave this deselected, the contents are deleted when you exit from the program.

To paste PostScript artwork from another application:

1 In the supporting application, select your artwork, and choose Edit > Copy. (See "About file formats" on page 582.)

2 In Photoshop or ImageReady, select the image into which you'll paste the selection.

3 Choose Edit > Paste.

4 (Photoshop) In the dialog box, select from the following options:

• Paste as Pixels to have the artwork rasterized as it is pasted. Rasterizing converts mathe- matically defined vector artwork to pixels.

• Paste as Paths to paste the copy as a path in the Paths palette. When copying type from Illustrator, you must first convert it to outlines.

• Paste as Shape Layer to create a new shape layer that uses the path as a vector mask.

Important: *When copying artwork from Adobe Illustrator, Illustrator's default Clipboard preferences may prevent the Paste dialog box from appearing in Photoshop. Select AICB in the Files and Clipboard area of Illustrator's Preferences dialog box if you want the Paste options to appear when you paste the artwork in Photoshop.*

5 If you chose Paste as Pixels in the previous step, you can choose Anti-alias in the options bar to make a smooth transition between the edges of the selection and the surrounding pixels. (See "Softening the edges of a selection" on page 239.)

Note: You can use the Matting commands if you have already merged data and are trying to reextract the rasterized data. (See "Removing fringe pixels from a selection (Photoshop)" on page 247.)

Using the Snap command

Snapping helps with precise placement of selection edges, cropping marquees, slices, shapes, and paths. However, sometimes snapping prevents you from correctly placing elements. You can enable or disable snapping using the Snap command. You can also specify different elements to which you want to snap when snapping is enabled.

To enable or disable snapping:

Choose View > Snap. A check mark indicates that snapping is enabled.

To specify what to snap to:

Choose View > Snap To, and choose one or more options from the submenu:

- Guides to snap to guides.

- Grid to snap to the grid. You cannot select this option when the grid is hidden.

  See "Using guides and the grid" on page 43 for more information about guides and the grid.

- Slices to snap to slice boundaries. You cannot select this option when slices are hidden. (See "Viewing slices" on page 476.)

- Document Bounds to snap to the edges of the document.

- All to select all Snap To options.

- None to deselect all Snap To options.

A check mark indicates that the option is selected and snapping is enabled. A dot (Windows) or a dash (Mac OS) indicates that the option is selected but snapping is disabled.

To enable snapping for one Snap To option:

1 With the Snap command disabled, choose View > Snap To.

2 Choose an option. This automatically enables snapping for the selected option, and deselects all other Snap To options.

Saving and loading selections

Selections can be saved and loaded for reuse. (See "Saving a mask selection" on page 256.)

To save a selection:

Choose Select > Save Selection.

To load a saved selection (Photoshop):

1 Choose Select > Load Selection, and then enter the options in the Load Selection dialog window.

2 Click OK to load selection. (See "Loading a selection into an image" on page 257.)

To load a saved selection (ImageReady):

Choose Select > Load Selection, and then choose an option from the submenu.

Deleting selections

To delete a selection, choose Edit > Clear, or press Backspace (Windows) or Delete (Mac OS). To cut a selection to the Clipboard, choose Edit > Cut.

Deleting a selection on a background or on a layer with the Lock Transparency option selected in the Layers palette replaces the original location with the background color. Deleting a selection on a layer without Lock Transparency selected replaces the original area with the layer transparency.

Removing fringe pixels from a selection (Photoshop)

When you move or paste an anti-aliased selection, some of the pixels surrounding the selection border are included with the selection. This can result in a fringe or halo around the edges of the pasted selection. These Matting commands let you edit unwanted edge pixels:

- Defringe replaces the color of any fringe pixels with the colors of nearby pixels containing pure colors (those without background color). For example, if you select a yellow object on a blue background and then move the selection, some of the blue background is selected and moved with the object. Defringe replaces the blue pixels with yellow ones.

- Remove Black Matte and Remove White Matte are useful when you want to paste a selection anti-aliased against a white or black background onto a different background. For example, anti-aliased black text on a white background has gray pixels at the edges, which are visible against a colored background.

♡ You can also remove fringe areas by using the Advanced Blending sliders in the Layer Styles dialog box to remove, or make transparent, areas from the layer. In this case, you would make the black or white areas transparent. Alt-click (Windows) or Option-click (Mac OS) the sliders to separate them; separating the sliders allows you to remove fringe pixels and retain a smooth edge.

To decrease a fringe on a selection:

1 Choose Layer > Matting > Defringe.

2 Enter a value in the Width text box for the distance to search for replacement pixels. In most cases, a distance of 1 or 2 pixels is enough.

3 Click OK.

To remove a matte from a selection:

Choose Layer > Matting > Remove Black Matte or Layer > Matting > Remove White Matte.

Using the Extract filter (Photoshop)

The Extract filter dialog box provides a sophisticated way to isolate a foreground object and erase its background on a layer. Even objects with wispy, intricate, or undefinable edges may be clipped from their backgrounds with a minimum of manual work. You use tools in the Extract dialog box to specify which part of the image to extract. You can resize the dialog box by dragging its lower right corner.

💡 For simpler cases, try using the Background Eraser tool (see "Using the Background Eraser tool (Photoshop)" on page 336).

When you extract the object, Photoshop erases its background to transparency. Pixels on the edge of the object lose their color components derived from the background, so they can blend with a new background without producing a color halo.
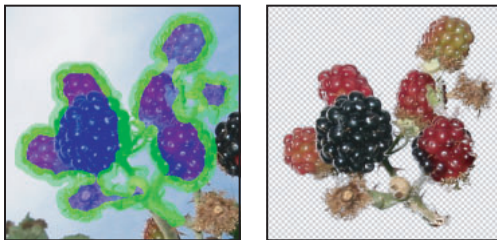
Selected area highlighted and filled, and extracted object

💡 You can add back opacity to the background and create other effects by using the Edit > Fade command after an extraction. (See "Blending filter effects (Photoshop)" on page 418.)

To extract an object from its background:

1 In the Layers palette, select the layer containing the object you want to extract. If you select a background layer, it becomes a normal layer after the extraction. If the layer contains a selection, the extraction erases the background only in the selected area.

💡 To avoid losing the original image information, duplicate the layer or make a snapshot of the original image state.

2 Choose Filter > Extract, and then specify options for tools on the right side of the dialog box:

• For Brush Size, enter a value, or drag the slider to specify the width of the edge highlighter, eraser, cleanup, and edge touchup tools. This setting affects the size of the Highlighter tool ✎ .

• For Highlight, choose a preset color option for the highlight that appears around objects you choose with the Highlighter tool, or choose Other to specify a custom color for the highlight.

• For Fill, choose a preset color option, or choose Other to specify a custom color for the area covered by the Fill tool.

- If you are highlighting a well-defined edge, select Smart Highlighting. This option helps you keep the highlight on the edge, and applies a highlight that is just wide enough to cover the edge, regardless of the current brush size.

  💡 If you use Smart Highlighting to mark an object edge that is near another edge, decrease the brush size if conflicting edges pull the highlight off the object edge. If the object edge has a uniform color on one side and high-contrast edges on the other side, keep the object edge within the brush area but center the brush on the uniform color.

3 Specify Extraction options:

- Select Textured Image if the foreground or background of your image contains a lot of texture.

- For Smooth, enter a value or drag the slider to increase or decrease the smoothness of the outline.

- To base the highlight on a selection saved in an alpha channel, choose the alpha channel from the Channel menu. The alpha channel should be based on a selection of the edge boundary. If you modify a highlight based on a channel, the channel name in the menu changes to Custom. (See "About channels" on page 357.)

- Select Force Foreground if the object is especially intricate or lacks a clear interior.

4 Adjust the view as needed:

- To magnify an area, select the Zoom tool 🔍 in the dialog box, and click in the preview image. To zoom out, hold down Alt (Windows) or Option (Mac OS) as you click.

- To view a different area, select the Hand tool in the dialog box, and drag in the preview image.

5 Define the edge of the object you want to extract:

- To draw a highlight that marks the edge, select the Edge Highlighter tool ✍ in the dialog box, and drag so that the highlight slightly overlaps both the foreground object and its background. Use Smart Highlighting to trace sharper edges. Use a large brush to cover wispy, intricate edges where the foreground blends into the background, such as hair or trees.

- If the object has a well-defined interior, make sure that the highlight forms a complete enclosure. You do not need to highlight areas where the object touches the image boundaries. If the object lacks a clear interior, highlight the entire object.

- To erase the highlight, select the Eraser tool ⬦ in the dialog box, and drag over the highlight. To erase the entire highlight, press Alt+Backspace (Windows) or Option+Delete (Mac OS).

6 Define the foreground area:

- If the object has a well-defined interior, select the Fill tool 🪣 in the dialog box. Click inside the object to fill its interior. (Clicking a filled area with the Fill tool removes the fill.)

Note: You can't highlight the entire object if you've selected Texture or Force Foreground.

- If you've selected Force Foreground, select the Eyedropper tool 🖉 in the dialog box, and click inside the object to sample the foreground color, or click in the Color text box and use a color picker to select the foreground color. This technique works best with objects that contain tones of a single color.

7 Click Preview to preview the extracted object, or skip to step 10 to extract the object without a preview.

Zoom in as needed, and set any preview options:

- Use Show menu options to switch between previews of the original and extracted images.

- Use Display menu options to preview the extracted object against a colored matte background or as a grayscale mask. To display a transparent background, choose None.

- Select Show Highlight or Show Fill to display the object's highlight or fill.

8 If necessary, repeat the extraction to improve the results (when you are finished, you can perform final touchups as described in step 9):

- To perform another extraction after adjusting the highlight and fill, repeat steps 5, 6, and 7.

- To perform another extraction with new extraction settings, change the Smooth, Force Foreground, or Color settings, and repeat step 7.

Note: *To specify the amount of smoothing of the extracted object, drag the Smooth slider or enter a value. It is usually best to begin with a zero or small value to avoid unwanted blurring of details. If there are sharp artifacts in the extraction result, you can increase the Smooth value to help remove them in the next extraction.*

9 Touch up the extraction results as needed:

- To erase background traces in the extracted area, use the Cleanup tool 🖉. The tool subtracts opacity and has a cumulative effect. You can also use the Cleanup tool to fill gaps in the extracted object. Hold down Alt (Windows) or Option (Mac OS) while dragging to add back opacity.

- To edit the edge of the extracted object, use the Edge Touchup tool 🖉. The tool sharpens edges and has a cumulative effect. If there is no clear edge, the Edge Touchup tool adds opacity to the object or subtracts opacity from the background.

10 Click OK to apply the final extraction. On the layer, all pixels outside the extracted object are erased to transparency.

Note: *For best results in cleaning up stray edges, use the cleanup and Edge Touchup tools in the Extract dialog box. You can also clean up after an extraction by using the Background Eraser and History Brush tools in the toolbox.*

About masks (Photoshop)

Masks let you isolate and protect areas of an image as you apply color changes, filters, or other effects to the rest of the image. When you select part of an image, the area that is not selected is "masked" or protected from editing. You can also use masks for complex image editing such as gradually applying color or filter effects to an image.
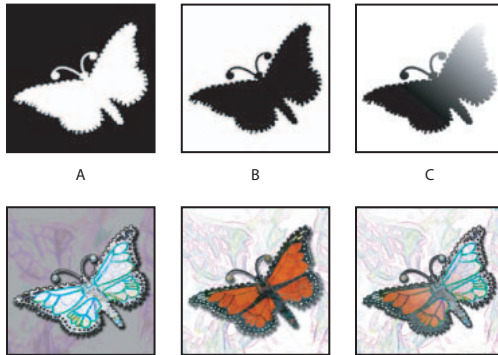
Examples of masks
A. Opaque mask used to protect the background and edit the butterfly **B.** Opaque mask used to protect the butterfly and color the background **C.** Semitransparent mask used to color the background and part of the butterfly

Masks and channels are grayscale images, so you can edit them like any other image. With masks and channels, areas painted black are protected, and areas painted white are editable. Masks let you save and reuse time-consuming selections as alpha channels. Alpha channels can store selections so you can use them again, or you can load a saved selection into another image.

Photoshop lets you create masks in the following ways:

Quick Mask mode   Lets you edit any selection as a mask. The advantage of editing your selection as a mask is that you can use almost any Photoshop tool or filter to modify the mask. For example, if you create a rectangular selection with the Marquee tool, you can enter Quick Mask mode and use the paintbrush to extend or contract the selection, or you can use a filter to distort the edges of the selection. You can also use selection tools, because the quick mask is not a selection. (See "Using Quick Mask mode to make selections (Photoshop)" on page 252.) You can also save and load selections you make using Quick Mask mode in Alpha channels (see "Saving a mask selection" on page 256).

Alpha channels   Lets you save and load selections. (See "Storing masks in alpha channels" on page 254.) You can edit Alpha channels using any of the editing tools. When a channel is selected in the Channels palette, foreground and background colors appear as grayscale values. (See "Using Quick Mask mode to make selections (Photoshop)" on page 252.)

💡 Layer masks and vector masks let you produce a mix of soft and hard masking edges on the same layer. By making changes to the layer mask or the vector masks, you can apply a variety of special effects. (See "Masking layers" on page 408.)

Using Quick Mask mode to make selections (Photoshop)

To use Quick Mask mode, start with a selection and then add to or subtract from it to make the mask. Alternately, create the mask entirely in Quick Mask mode. Color differentiates the protected and unprotected areas. When you leave Quick Mask mode, the unprotected areas become a selection.

A temporary Quick Mask channel appears in the Channels palette while you work in Quick Mask mode. However, you do all mask editing in the image window.

To create a temporary mask:

1 Using any selection tool, select the part of the image you want to change.

2 Click the Quick Mask mode button ▣ in the toolbox.

A color overlay (similar to a rubylith) covers and protects the area outside the selection. Selected areas are left unprotected by this mask. By default, Quick Mask mode colors the protected area using a red, 50% opaque overlay.
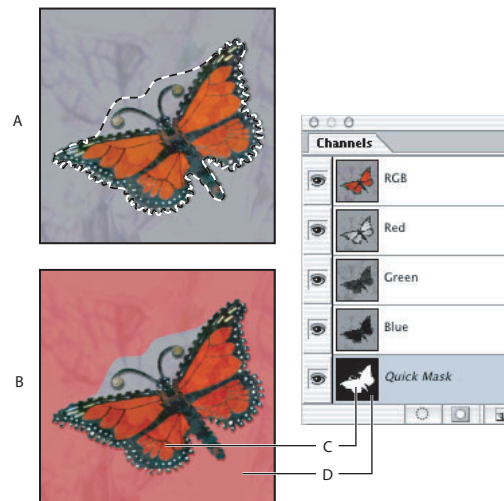
Selecting in Standard mode and Quick Mask mode
A. Standard mode **B.** Quick Mask mode **C.** Selected pixels appear as white in channel thumbnail
D. Rubylith overlay protects area outside selection and unselected pixels appear as black in channel thumbnail

3 To edit the mask, select a painting tool from the toolbox. The swatches in the toolbox automatically become black and white.

4 Paint with white to select more of an image (the color overlay is removed from areas painted with white). To deselect areas, paint over them with black (the color overlay covers areas painted with black). Painting with gray or another color creates a semitransparent area, useful for feathering or anti-aliased effects (semitransparent areas may not appear selected when you exit Quick Mask Mode, but they are).

A

B

C
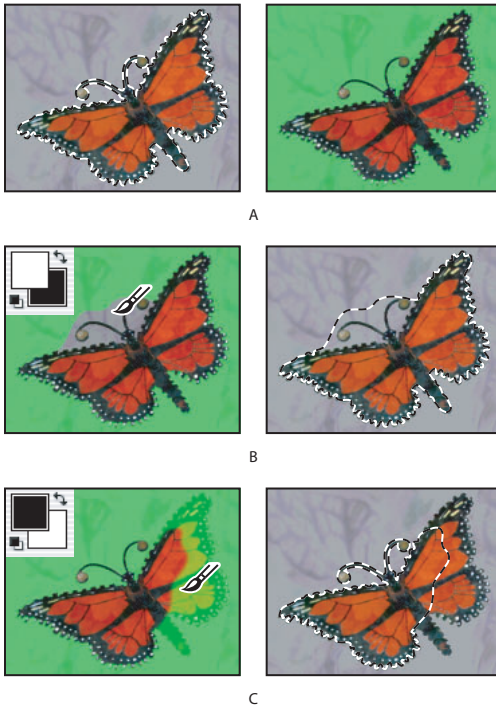
Painting in Quick Mask mode
A. Original selection and Quick Mask mode with green chosen as mask color **B.** Painting with white in Quick Mask mode adds to the selection **C.** Painting with black in Quick Mask mode subtracts from the selection

5 Click the Standard Mode button ▢ in the toolbox to turn off the quick mask and return to your original image. A selection border now surrounds the unprotected area of the quick mask.

If a feathered mask is converted to a selection, the boundary line runs halfway between the black pixels and the white pixels of the mask gradient. The selection boundary indicates the pixels' transition from being less than 50% selected to more than 50% selected.

6 Apply the desired changes to the image. Changes affect only the selected area.

7 Choose Select > Deselect to deselect the selection, or save the selection.

💡 You can convert this temporary mask to a permanent alpha channel by switching to standard mode and choosing Select > Save Selection

To change the Quick Mask options:

1 Double-click the Quick Mask Mode button ▣ in the toolbox.

2 Choose from the following display options:

• Masked Areas to have masked areas appear black (opaque) and to have selected areas appear white (transparent). Painting with black increases the masked area; painting with white increases the selected area. With this option, the Quick Mask button in the toolbox appears as a white circle on a gray background ▣.

• Selected Areas to have masked areas appear white (transparent) and to have selected areas appear black (opaque). Painting with white increases the masked area; painting with black increases the selected area. With this option, the Quick Mask button in the toolbox appears as a gray circle on a white background ▣.

💡 To toggle between the Masked Areas and Selected Areas options for quick masks, Alt-click (Windows) or Option-click (Mac OS) the Quick Mask Mode button.

3 To choose a new mask color, click the color box, and choose a new color. (See "Using the Swatches palette" on page 354.)

4 To change the opacity, enter a value between 0% and 100%.

Both the color and opacity settings affect only the appearance of the mask and have no effect on how underlying areas are protected. Changing these settings may make the mask more easily visible against the colors in the image.

Storing masks in alpha channels

In addition to the temporary masks of Quick Mask mode, you can create more permanent masks by storing them in *alpha channels*. This allows you to use the masks again in the same image or in a different image.

You can create an alpha channel in Photoshop and then add a mask to it. You can also save an existing selection in a Photoshop or ImageReady image as an alpha channel that will appear in the Channels palette in Photoshop.
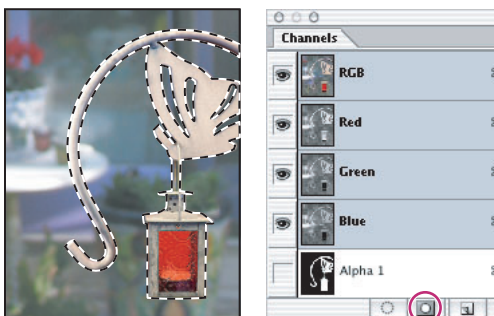
Selection saved as an alpha channel in Channels palette

Tips for using alpha channels (Photoshop)

An alpha channel has these properties:

- Each image can contain up to 56 channels, including all color and alpha channels.

- You can specify a name, color, mask option, and opacity for each channel. (The opacity affects the preview of the channel, not the image.)

- All new channels have the same dimensions and number of pixels as the original image.

- You can edit the mask in an alpha channel using painting tools, editing tools, and filters.

Original mask (left), and after a filter was applied (right)

- You can convert alpha channels to spot color channels.

Creating alpha channels (Photoshop)

You can create a new alpha channel and then use painting tools, editing tools, and filters to add the mask to it.

To create an alpha channel using current options:

1 Click the New Channel button ▣ at the bottom of the Channels palette. The new channel is named according to the sequence in which it was created.

2 Use a painting or editing tool to paint in the image. Paint with black to add to the channel; paint with white to remove from the channel; paint with a lower opacity or a color to add to the channel with lower opacities.

To create an alpha channel and specify options:

1 Do one of the following:

- Alt-click (Windows) or Option-click (Mac OS) the New Channel button ▣ at the bottom of the palette.

- Choose New Channel from the Channels palette menu.

2 Type a name for the channel.

3 Select display options for the channel, as described in steps 2 through 4 of the procedure for changing Quick Mask options in "Using Quick Mask mode to make selections (Photoshop)" on page 252. Alpha channel options are identical to Quick Mask options.

4 Click OK. A new channel appears at the bottom of the Channels palette and is the only channel visible in the image window.

5 Click the eye icon 👁 next to a color channel or the composite color channel to display the image with a color overlay.

6 Use a painting or editing tool to paint in the image. Paint with black to add to the new channel, paint with white to remove from the new channel, or paint with a lower opacity or a color to add to the new channel with lower opacities.

Saving a mask selection

You can save any selection as a mask in a new or existing alpha channel.

To save a selection to a new channel with default options (Photoshop):

1 Select the area or areas of the image that you want to isolate.

2 Click the Save Selection button ▣ at the bottom of the Channels palette. A new channel appears, named according to the sequence in which it was created.

To save a selection to a new or existing channel:

1 Select the area or areas of the image that you want to isolate.

2 Choose Select > Save Selection.

3 Do the following in the Save Selection dialog box, and click OK:

• (Photoshop) Choose a destination image for the selection in the Document menu. By default, the selection is placed in a channel in your active image. You can choose to save the selection to a channel in another open image with the same pixel dimensions or to a new image.

• Choose a destination channel for the selection from the Channel pop-up menu. By default, the selection is saved in a new channel. You can choose to save the selection to any existing channel in the selected image or to a layer mask if the image contains layers.

• If you're saving the selection as a new channel, enter a name for the channel in the Name text box. In ImageReady, you can change the default channel name if desired.

• If you're saving the selection to an existing channel, select how to combine the selections: Replace Channel to replace the current selection in the channel, Add to Channel to add the selection to the current channel contents, Subtract from Channel to delete the selection from the channel contents, or Intersect with Channel to keep the areas of the new selection that intersect with the channel contents.

In Photoshop, you can select the channel in the Channels palette to see the saved selection displayed in grayscale. A selection saved in ImageReady will appear in a new or existing channel in the Photoshop Channels palette.

Modifying alpha channels (Photoshop)

You can edit an alpha channel to add or remove color in it, and you can specify settings for the masking colors and opacity. See "Managing channels (Photoshop)" on page 360 for information on rearranging, duplicating, or deleting alpha channels.

To edit an alpha channel:

Use a painting or editing tool to paint in the image. Paint with black to add to the channel, paint with white to remove from the channel, or paint with a lower opacity or a color to add to the channel with lower opacities.

To change an alpha channel's options:

1 Do one of the following:

- Select the channel in the Channels palette, and choose Channel Options from the palette menu.

- Double-click the channel thumbnail in the Channels palette.

2 Enter a new name for the channel.

3 Choose display options, as described in steps 2 through 4 of the procedure on Quick Mask options in "Using Quick Mask mode to make selections (Photoshop)" on page 252.

See "Modifying spot channels" on page 364 for information on changing Spot Color channel options.

Loading a selection into an image

You can reuse a previously saved selection by loading it into an image. In Photoshop, you can also load the selection into an image when you have finished modifying an alpha channel.

You can drag a selection from one open Photoshop image into another.

To load a saved selection (Photoshop):

Do one of the following in the Channels palette:

- Select the alpha channel, click the Load Selection button ⊙ at the bottom of the palette, and then click the composite color channel near the top of the palette.

- Drag the channel containing the selection you want to load onto the Load Selection button.

- Ctrl-click (Windows) or Command-click (Mac OS) the channel containing the selection you want to load.

- To add the mask to an existing selection, press Ctrl+Shift (Windows) or Command+Shift (Mac OS), and click the channel.

- To subtract the mask from an existing selection, press Ctrl+Alt (Windows) or Command+Option (Mac OS), and click the channel.

- To load the intersection of the saved selection and an existing selection, press Ctrl+Alt+Shift (Windows) or Command+Option+Shift (Mac OS), and select the channel.

To load a saved selection into an image (Photoshop):

1 Choose Select > Load Selection. For Document, the active filename is selected.

2 For Channel, choose the channel containing the selection you want to load.

3 Click Invert to make the nonselected areas selected and vice versa.

4 If the destination image already has a selection, indicate how to combine the selections. (For information on these options, see "Saving a mask selection" on page 256.)

To load a saved selection into an image (ImageReady):

Choose Select > Load Selection, and then choose an option from the submenu.

To load a selection from another image (Photoshop):

1 Open the two images you want to use.

2 Make the destination image active, and choose Select > Load Selection.

3 For Document, choose the source image.

4 For Channel, choose the channel containing the selection you want to use as a mask.

5 Click Invert if you want to make the nonselected areas selected and vice versa.

6 If the destination image already has a selection, indicate how to combine the selections. (For information on these options, see "Saving a mask selection" on page 256.)

Transforming and Retouching

Changing the size of the work canvas

The Canvas Size command lets you add or remove work space around an existing image. You can also use the command to crop an image by decreasing the canvas area. In ImageReady, added canvas appears in the same color or transparency as the background. In Photoshop, there are several options for the background of the added canvas. If your image has a transparent background, the added canvas will be transparent.

To use the Canvas Size command:

1 Choose Image > Canvas Size.

2 Do one of the following:

• Enter the dimensions you want the canvas to be in the Width and Height boxes. (Photoshop) Choose the units of measurement you want from the drop-down menus next to the Width and Height boxes.

• Select Relative, and enter the amount by which you want to increase or decrease the size of the canvas. (Enter a negative number to decrease the size of the canvas.)

3 For Anchor, click a square to indicate where to position the existing image on the new canvas.

4 (Photoshop) Choose an option from the Canvas Extension Color menu:

• Foreground to fill the new canvas with the current foreground color

• Background to fill the new canvas with the current background color

• White, Black, or Gray to fill the new canvas with that color

• Other to select a new canvas color using the Color Picker

Note: The Canvas Extension Color menu isn't available if an image doesn't contain a Background layer.

5 Click OK.
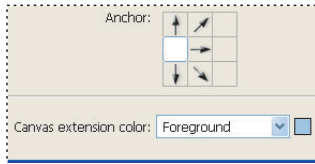
Original canvas, and canvas added to right side of image using the foreground color

Rotating and flipping entire images

The Rotate Canvas commands let you rotate or flip an entire image. The commands do not work on individual layers or parts of layers, paths, or selection borders.
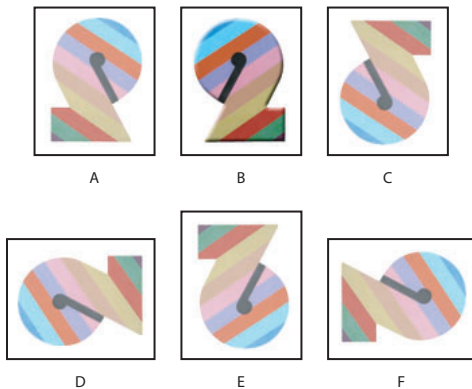
Rotating images
A. Flip Horizontal **B.** Original image **C.** Flip Vertical **D.** Rotate 90° CCW **E.** Rotate 180°
F. Rotate 90° CW

To rotate or flip an entire image:

Choose Image > Rotate Canvas, and choose one of the following commands from the submenu:

- 180° to rotate the image by a half-turn.

- 90° CW to rotate the image clockwise by a quarter-turn.

- 90° CCW to rotate the image counterclockwise by a quarter-turn.

- Arbitrary to rotate the image by the angle you specify. If you choose this option, enter an angle between –360 and 360 in the angle text box. (In Photoshop, you can select CW or CCW to rotate clockwise or counter-clockwise.) Then click OK.

- Flip Canvas Horizontal (Photoshop) or Flip Horizontal (ImageReady) to flip the image horizontally, along the vertical axis.

- Flip Canvas Vertical (Photoshop) or Flip Vertical (ImageReady) to flip the image vertically, along the horizontal axis.

Cropping images

Cropping is the process of removing portions of an image to create focus or strengthen the composition. You can crop an image using the Crop tool ⌗ and the Crop command. You can also trim pixels using the Trim command

Using the Crop tool

The Crop tool provides the most options for cropping images.

Using the Crop tool

To crop an image using the Crop tool:

1 Select the Crop tool ⌗.

2 Drag over the part of the image you want to keep to create a marquee. The marquee doesn't have to be precise—you can adjust it later.

3 If necessary, adjust the cropping marquee:

- To move the marquee to another position, place the pointer inside the bounding box and drag.

- To scale the marquee, drag a handle. To constrain the proportions, hold down Shift as you drag a corner handle.

- To rotate the marquee, position the pointer outside the bounding box (the pointer turns into a curved arrow), and drag. To move the center point around which the marquee rotates, drag the circle at the center of the bounding box.

Note: In Photoshop, you can't rotate the marquee for an image in Bitmap mode.

4 Do one of the following:

- To complete the crop, press Enter (Windows) or Return (Mac OS), click the Commit button ✔ in the options bar, or double-click inside the cropping marquee.

- To cancel the cropping operation, press Esc or click the Cancel button ⊘ in the options bar.

To set Crop tool options:

Choose from the following in the options bar to set the mode of the Crop tool:

- (Photoshop) To crop the image without resampling (default), make sure that the resolution text box in the options bar is empty. You can click the Clear button to quickly clear all text boxes.

- (Photoshop) To resample the image during cropping, enter the height and width, and a resolution in the options bar. The Crop tool won't resample the image unless the width and/or height, and resolution are provided.

- (ImageReady) To crop the image without resampling, make sure that Fixed Size is deselected in the options bar.

- (ImageReady) To resample the image during cropping, select Fixed Size, and enter a height and width in the options bar.

- To resample an image based on the dimensions and resolution of another image, open the other image, select the Crop tool, and click Front Image in the options bar. (In ImageReady, you must select the Fixed Size option to access the Front Image button.) Then make the image you want to crop active.

Resampling during cropping combines the function of the Image > Image Size command with that of the Crop tool. (See "About resampling" on page 66.)

- Specify whether you want to hide or delete the cropped area. Select Hide to preserve the cropped area in the image file. You can make the hidden area visible by moving the image with the Move tool. Select Delete to discard the cropped area.

Note: In Photoshop, the Hide option is not available for images that contain only a background layer. If you want to crop a background by hiding, convert the background to a regular layer first. (See "About the background layer" on page 371.) In ImageReady, cropping a background by hiding automatically converts the background to a regular layer.

- Specify whether you want to use a cropping shield to shade the area of the image that will be deleted or hidden. When Shield is selected, you can specify a color and opacity for the cropping shield. When Shield is deselected, the area outside the cropping marquee is revealed.

Using the Crop and Trim commands

In addition to the Crop tool, you can use the crop and trim commands to crop an image.

To crop an image using the Crop command:

1 Select the part of the image you want to keep. (See "Using the marquee tools" on page 229.)

2 Choose Image > Crop.

To crop an image using the Trim command:

1 Choose Image > Trim.

2 In the Trim dialog box, select an option:

- Transparent Pixels to trim away transparency at the edges of the image, leaving the smallest image containing non-transparent pixels.

- Top Left Pixel Color to remove an area the color of the upper left pixel from the image.

- Bottom Right Pixel Color to remove an area the color of the lower right pixel from the image.

3 Select one or more areas of the image to trim away: Top, Bottom, Left, or Right.

Transforming perspective while cropping (Photoshop)

The Crop tool in Photoshop has an additional option that allows you to transform the perspective in an image. This is very useful when working with images that contain *keystone distortion*. Keystone distortion occurs when an object is photographed from an angle rather than from a straight-on view. For example, if you take a picture of a a tall building from ground level, the edges of the building appear closer at the top than they do at the bottom.
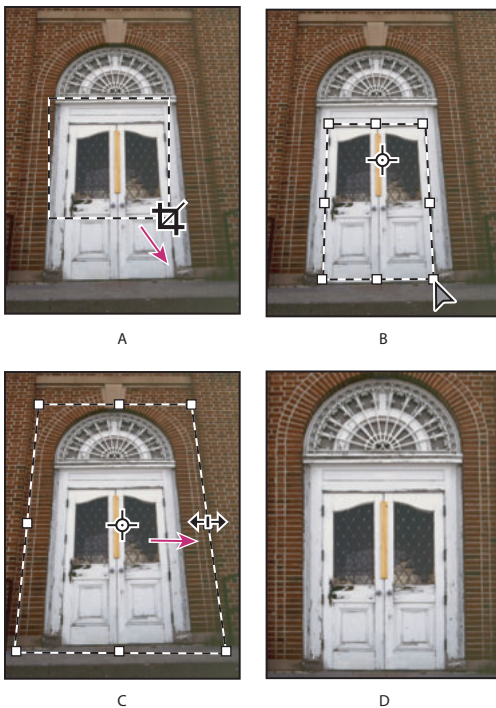
Steps to transform perspective
A. Draw initial cropping marquee **B.** Adjust cropping marquee to match the object's edges
C. Extend the cropping bounds **D.** Final image

To transform the perspective in an image:

1 Select the Crop tool ⌗ and set the crop mode. (See "Cropping images" on page 261.)

2 Drag the cropping marquee around an object that was rectangular in the original scene (although it doesn't appear rectangular in the image). You'll use the edges of this object to define the perspective in the image. The marquee doesn't have to be precise—you'll adjust it later.

Important: You must select an object that was rectangular in the original scene or Photoshop will not be able to transform the perspective in the image.

3 Select Perspective in the options bar, and set the other options as desired. (See "Cropping images" on page 261.)

4 Move the corner handles of the cropping marquee to match the object's edges. This defines the perspective in the image, so it is important to precisely match the object's edges.

5 Drag the side handles to extend the cropping bounds while preserving the perspective.

Important: *Do not move the center point of the cropping marquee. Photoshop needs to know the original center point of the image in order to perform perspective correction.*

6 Do one of the following:

- Press Enter (Windows) or Return (Mac OS), click the Commit button ✔ in the options bar, or double-click inside the cropping marquee.

- To cancel the cropping operation, press Esc or click the Cancel button ⊘ in the options bar.

  If Photoshop displays an error, it is probably due to improper placement of the corner handles or center point. Click Cancel to go back and adjust the cropping marquee; click Don't Crop to cancel the cropping operation. An error may also occur if you're working with a previously cropped image.

Using the Crop and Straighten Photos command (Photoshop)

The Crop and Straighten Photos command helps you make separate image files from multiple images in a single scan. For best results, you should keep an eighth of an inch between the images in your scan, and the background (typically the scanner bed) should be a uniform color with little "noise". Images with clearly delineated outlines work best with the Crop and Straighten Photos command.

  If the Crop and Straighten Photos command isn't processing difficult images, use the Crop tool to crop out individual images (see "Using the Crop tool" on page 261).

To use the Crop and Straighten Photos command:

1 Open the scanned file that contains the images you want to separate.

2 Select the layer that contains the images. Alternately, draw a selection border around one or more images to generate just those images into separate files.

3 Choose File > Automate > Crop and Straighten Photos. The scanned images are processed, and then each image opens in its own window.

  If the Crop and Straighten Photos command incorrectly splits one of your images, make a selection border around the image and some background, and then hold down Alt (Windows) or Option (Mac OS) when you choose the command. The modifier key indicates that there is just one image to separate from the background.

Transforming objects

You can scale, rotate, skew, distort, and apply perspective to entire layers, selected parts of layers, masks, paths, shapes, selection borders, and channels.

Specifying what to transform

You can apply transformations to a selection, an entire layer, multiple layers, or a layer mask. In Photoshop, you can also apply transformations to a path, a vector shape, a vector mask, a selection border, or an alpha channel.

Important: In Photoshop, you can apply transformations to 8-bit and 16-bit images. However, you'll need to convert images to 8-bit RGB color mode before you can edit them in ImageReady.
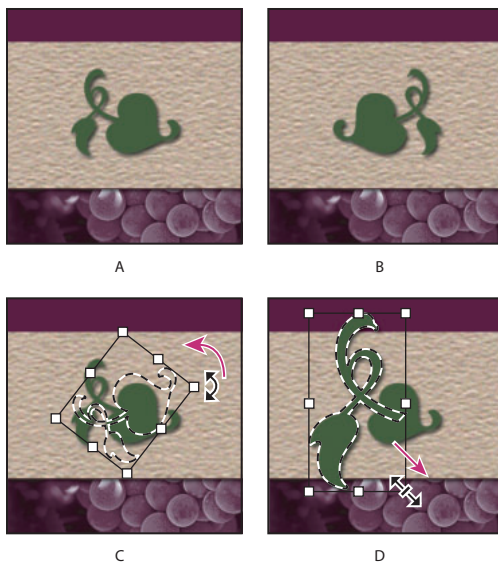
Transforming an image
A. Original image   **B.** Layer flipped   **C.** Selection border rotated   **D.** Part of object scaled

To calculate the color values of pixels that are added or deleted during transformations, Photoshop and ImageReady use the interpolation method selected in the General area of the Preferences dialog box. This setting directly affects the speed and quality of the trans-formation. Bicubic interpolation, the default, is slowest but yields the best results. (See "Choosing an interpolation method" on page 67.)

To specify what to transform:

Do one of the following:

• To transform an entire layer, make the layer active, and make sure nothing is selected.

Important: You cannot transform the background layer. However, you can convert a background layer to a regular layer. (See "Creating new layers and layer sets" on page 372.)

• To transform part of a layer, select the layer, and then select part of the image on that layer.

- To transform multiple layers, link the layers together in the Layers palette. (See "Linking layers" on page 378.)

- To transform a layer mask or a vector mask, unlink the mask, and select the mask thumbnail in the Layers palette. (See "Masking layers" on page 408.)

- (Photoshop) To transform a path or vector shape, use the Path Selection tool ➤ to select the entire path or the Direct Selection tool ➤ to select part of the path. (See "Selecting paths (Photoshop)" on page 302.) If you select one or more points on a path, only those path segments connected to the points are transformed.

- (Photoshop) To transform a selection border, make or load a selection. Then choose Select > Transform Selection.

- (Photoshop) To transform an alpha channel, select the channel in the Channels palette. (See "Storing masks in alpha channels" on page 254.)

Setting the reference point

All transformations are performed around a fixed point called the *reference point*. By default, this point is at the center of the item you are transforming. However, you can change the reference point or move the center point to a different location using the reference point locator in the options bar.

To set the reference point for a transformation:

1 Select a transformation command, as described in the following topics. A bounding box appears in the image.

2 In the options bar, click a square on the reference point locator ▦ in the options bar. Each square represents a point on the bounding box. For example, to set the reference point to the top left corner of the bounding box, click the top left square on the reference point locator.

To move the center point for the transformation:

1 Select a transformation command, as described in the following topics. A bounding box appears in the image.

2 Drag the center point. The center point can be outside the item you want to transform.

Applying transformations

The commands under the Transform submenu let you apply the following transformations to an item:

- Scaling enlarges or reduces an item relative to its reference point. You can scale horizontally, vertically, or both horizontally and vertically.

- Rotating turns an item around a reference point. By default, this point is at the center of the object; however, you can move it to another location.

- Skewing lets you slant an item vertically and horizontally.

- Distorting lets you stretch an item in all directions.

- Applying perspective lets you apply one-point perspective to an item.

In Photoshop, you can perform several commands in succession before applying the cumulative transformation. For example, you can choose Scale, drag a handle to scale, and then choose Distort, drag a handle to distort, and press Enter or Return to apply both transformations. In ImageReady, you can perform multiple types of transformations at the same time using the Transform > Numeric command.

To scale, rotate, skew, distort, or apply perspective:

1 Select what you want to transform. (See "Specifying what to transform" on page 265.)

2 Choose Edit > Transform > Scale, Rotate, Skew, Distort, or Perspective.

Note: *(Photoshop) If you are transforming a shape or entire path, the Transform menu becomes the Transform Path menu. If you are transforming multiple path segments (but not the entire path), the Transform menu becomes the Transform Points menu.*

3 In the options bar, click a square on the reference point locator ▦. (See "Setting the reference point" on page 266.)

4 Do one or more of the following:

• If you chose Scale, drag a handle on the bounding box. Press Shift as you drag a corner handle to scale proportionately. When positioned over a handle, the pointer becomes a double arrow.

• If you chose Rotate, move the pointer outside of the bounding border (it becomes a curved, two-sided arrow), and then drag. Press Shift to constrain the rotation to 15° increments.

• If you chose Skew, drag a side handle to slant the bounding box.

• If you chose Distort, drag a corner handle to stretch the bounding box.

• If you chose Perspective, drag a corner handle to apply perspective to the bounding box.

• For all types of transformations, enter a value in the options bar. For example, to rotate an item, specify degrees in the rotation △ text box.

5 If desired, switch to a different type of transformation by selecting a command from the Edit > Transform submenu.

💡 When transforming a bitmap image (versus a shape or path), it becomes slightly less sharp each time you commit a transformation; therefore, performing multiple commands before applying the cumulative transformation is preferable to applying each transformation separately.

6 When you're satisfied with the results, do one of the following:

• Press Enter (Windows) or Return (Mac OS), click the Commit button ✔ in the options bar, or double-click inside the transformation marquee.

• To cancel the transformation, press Esc or click the Cancel button ⊘ in the options bar.

To flip or rotate precisely:

1 Select what you want to transform. (See "Specifying what to transform" on page 265.)

2 Choose Edit > Transform and choose one of the following commands from the submenu:

- Rotate 180° to rotate by a half-turn

- Rotate 90° CW to rotate clockwise by a quarter-turn

- Rotate 90° CCW to rotate counterclockwise by a quarter-turn

- Flip Horizontal to flip horizontally, along the vertical axis

- Flip Vertical to flip vertically, along the horizontal axis

Note: (Photoshop) If you are transforming a shape or entire path, the Transform command becomes the Transform Path command. If you are transforming multiple path segments (but not the entire path), the Transform command becomes the Transform Points command.

To repeat a transformation:

Choose Edit > Transform > Again, Edit > Transform Path > Again, or Edit > Transform Points > Again.

To duplicate an item when transforming it:

Hold down Alt (Windows) or Option (Mac OS) when selecting the Transform command.

To apply multiple types of transformations at the same time (ImageReady):

1 Select what you want to transform. (See "Specifying what to transform" on page 265.)

2 Choose Edit > Transform > Numeric.

3 Do one or more of the following, and click OK:

- Select Position and enter values for the new location in the X (horizontal position) and Y (vertical position) text boxes. Select Relative to specify the new position in relation to the current position.

- Select Scale. Enter the dimensions in the Width and Height text boxes, or enter a scaling percentage in the Scale text box. Select Constrain Proportions to maintain the aspect ratio.

- Select Skew and enter degrees in the Horizontal skew and Vertical skew text boxes.

- Select Rotate. Enter degrees of rotation in the Angle text box, or drag the in the circle to the right of the text box.

Using the Free Transform command

The Free Transform command lets you apply transformations (rotate, scale, skew, distort, and perspective) in one continuous operation. Instead of choosing different commands, you simply hold down a key on your keyboard to switch between transformation types.

Note: (Photoshop) If you are transforming a shape or entire path, the Transform command becomes the Transform Path command. If you are transforming multiple path segments (but not the entire path), the Transform command becomes the Transform Points command.

To freely transform:

1 Select what you want to transform. (See "Specifying what to transform" on page 265.)

2 Do one of the following:

• Choose Edit > Free Transform.

• If you are transforming a selection, pixel-based layer, or selection border, choose the Move tool ▸⊕. Then select Show Bounding Box (Photoshop) or Show Transform Box (ImageReady) in the options bar.

• If you are transforming a vector shape or path, select the Path Selection tool ▸. Then select Show Bounding Box in the options bar.

3 Do one or more of the following:

• To scale by dragging, drag a handle. Press Shift as you drag a corner handle to scale proportionately.

• To scale numerically, enter percentages in the Width and Height text boxes in the options bar. Click the Link button 🔗 to maintain the aspect ratio.

• To rotate by dragging, move the pointer outside of the bounding border (it becomes a curved, two-sided arrow ↰, and then drag. Press Shift to constrain the rotation to 15° increments.

• To rotate numerically, enter degrees in the rotation text box △ in the options bar.

• To distort relative to the center point of the bounding border, press Alt (Windows) or Option (Mac OS), and drag a handle ▚.

• To distort freely, press Ctrl (Windows) or Command (Mac OS), and drag a handle.

• To skew, press Ctrl+Shift (Windows) or Command+Shift (Mac OS), and drag a side handle. When positioned over a side handle, the pointer becomes a white arrowhead with a small double arrow ▸⇊.

• To skew numerically, enter degrees in the H (horizontal skew) and V (vertical skew) text boxes in the options bar.

• To apply perspective, press Ctrl+Alt+Shift (Windows) or Command+Option+Shift (Mac OS), and drag a corner handle. When positioned over a corner handle, the pointer becomes a gray arrowhead ▸.

• To change the reference point, click a square on the Reference point locator ▦ in the options bar. (See "Setting the reference point" on page 266.)

• To move an item, enter values for the new location of the reference in the X (horizontal position) and Y (vertical position) text boxes in the options bar. In Photoshop, click the Relative Positioning button △ to specify the new position in relation to the current position.

💡 To undo the last handle adjustment, choose Edit > Undo.

4 Do one of the following:

• Press Enter (Windows) or Return (Mac OS), click the Commit button ✔ in the options bar, or double-click inside the transformation marquee.

• To cancel the transformation, press Esc or click the Cancel button ⊘ in the options bar.

When transforming a bitmap image (versus a shape or path), it becomes slightly less sharp each time you commit a transformation; therefore, performing multiple commands before applying the cumulative transformation is preferable to applying each transformation separately.

Retouching and repairing images

You can use the Clone Stamp tool, Pattern Stamp tool, Healing Brush tool, and Patch tool to clone pixels and repair images.

Using the Clone Stamp tool

The Clone Stamp tool 🖋 takes a sample of an image, which you can then apply over another image or part of the same image. You can also clone part of one layer over another layer. Each stroke of the tool paints on more of the sample.

When you use the Clone Stamp tool, you set a sampling point on the area you want to apply over another area. By selecting Aligned in the options bar, you can reuse the most current sampling point, no matter how many times you stop and resume painting. When Aligned is deselected, you'll reuse the same sampled pixels each time you paint.

Because you can use any brush tip with the Clone Stamp tool, you have a lot of control over the size of the area you clone. You can also use opacity and flow settings in the options bar to finesse the way you apply the cloned area. You can also sample from one image and apply the clone in another image, as long as both images are in the same color mode.

Altering an image with the Clone Stamp tool

To use the Clone Stamp tool:

1 Select the Clone Stamp tool 🖋.

2 Choose a brush tip and set brush options for the blending mode, opacity, and flow in the options bar (see "Setting options for painting and editing tools" on page 331).

3 Next, determine how you want to align the sampled pixels. Select Aligned in the options bar to sample pixels continuously, without losing the current sampling point, even if you release the mouse button. Deselect Aligned to continue to use the sampled pixels from the initial sampling point each time you stop and resume painting.

4 Select Use All Layers in the options bar to sample data from all visible layers; deselect Use All Layers to sample only from the active layer.

5 Set the sampling point by positioning the pointer in any open image and Alt-clicking (Windows) or Option-clicking (Mac OS).

6 Drag over the area of the image you want to correct.

Using the Pattern Stamp tool

The Pattern Stamp tool lets you paint with a pattern. You can select a pattern from the pattern libraries or create your own patterns.

To use the Pattern Stamp tool:

1 Select the Pattern Stamp tool 🖫.

2 Choose a brush tip and set brush options (blending mode, opacity, and flow) in the options bar (see "Setting options for painting and editing tools" on page 331).

3 Select Aligned in the options bar to sample pixels continuously, without losing the current sampling point, even if you release the mouse button. Deselect Aligned to continue to use the sampled pixels from the initial sampling point each time you stop and resume painting.

4 Select a pattern from the Pattern pop-up palette in the options bar. (See "Creating and managing patterns" on page 346.)

5 If you'd like to apply the pattern with an impressionistic effect, select Impressionist.

6 Drag in the image to paint with the pattern.

Using the Healing Brush tool (Photoshop)

The Healing Brush tool lets you correct imperfections, causing them to disappear into the surrounding image. Like the cloning tools, you use the Healing Brush tool to paint with sampled pixels from an image or pattern. However, the Healing Brush tool also matches the texture, lighting, transparency, and shading of the sampled pixels to the source pixels. As a result, the repaired pixels blend seamlessly into the rest of the image.

Sampled pixels and healed image

To use the Healing Brush tool:

1 Select the Healing Brush tool 🖊.

2 Click the brush sample in the options bar and set brush options in the pop-up palette:

- For more information on the Diameter, Hardness, Spacing, Angle, and Roundness options, see "Customizing brush tips (Photoshop)" on page 319.

- If you're using a pressure-sensitive digitizing tablet, choose an option from the Size menu to vary the size of the healing brush over the course of a stroke. Choose Pen Pressure to base the variation on the pen pressure. Choose Stylus Wheel to base the variation on the position of the pen thumbwheel. Choose Off to not vary the size.

3 Choose a blending mode from the Mode pop-up menu in the options bar:

- Choose Replace to preserve noise, film grain, and texture at the edges of the brush stroke.

- For more information on the Normal, Multiply, Screen, Darken, Lighten, Color, and Luminosity modes, see "Selecting a blending mode" on page 331.

4 Choose a source to use for repairing pixels in the options bar: Sampled to use pixels from the current image, or Pattern to use pixels from a pattern. If you chose Pattern, select a pattern from the Pattern pop-up palette. (See "Creating and managing patterns" on page 346.)

5 Select Aligned in the options bar to sample pixels continuously, without losing the current sampling point, even if you release the mouse button. Deselect Aligned to continue to use the sampled pixels from the initial sampling point each time you stop and resume painting.

6 Select Use All Layers in the options bar to sample data from all visible layers. Deselect Use All Layers to sample only from the active layer.

7 For the Healing Brush tool in sampling mode, set the sampling point by positioning the pointer in any open image and Alt-clicking (Windows) or Option-clicking (Mac OS).

Note: *If you are sampling from one image and applying to another, both images must be in the same color mode unless one of the images is in Grayscale mode.*

8 Drag in the image.

The sampled pixels are melded with the existing pixels each time you release the mouse button. Look in the status bar to view the status of the melding process.

💡 If there is a strong contrast at the edges of the area you want to heal, make a selection before you use the Healing Brush tool. The selection should be bigger than the area you want to heal but should precisely follow the boundary of contrasting pixels. When you paint with the Healing Brush tool, the selection will prevent colors from bleeding in from the outside.

Using the Patch tool (Photoshop)

The Patch tool lets you repair a selected area with pixels from another area or a pattern. Like the Healing Brush tool, the Patch tool matches the texture, lighting, and shading of the sampled pixels to the source pixels. You can also use the Patch tool to clone isolated areas of an image.

When repairing with pixels from the image, select a small area to produce the best result.
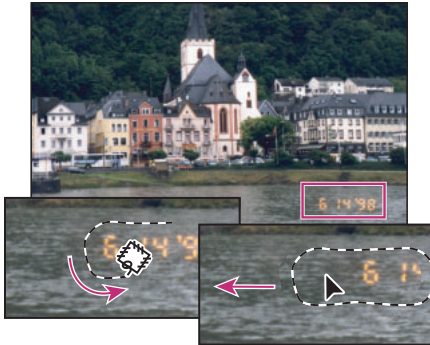
Using the Patch tool to replace pixels
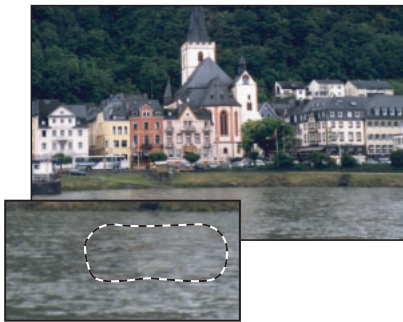
Patched image

To repair an area using sampled pixels:

1 Select the Patch tool ⊙.

2 Do one of the following:

• Drag in the image to select the area you want to repair, and select Source in the options bar.

• Drag in the image to select the area from which you want to sample, and select Destination in the options bar.

Note: *You can also make a selection prior to selecting the Patch tool.*

3 To adjust the selection, do one of the following:

• Shift-drag in the image to add to the existing selection.

• Alt-drag (Windows) or Option-drag (Mac OS) in the image to subtract from the existing selection.

- Alt-Shift-drag (Windows) or Option-Shift-drag (Mac OS) in the image to select an area intersected by the existing selection.

4 Position the pointer inside the selection, and do one of the following:

- If Source is selected in the options bar, drag the selection border to the area from which you want to sample. When you release the mouse button, the originally selected area is patched with the sampled pixels.

- If Destination is selected in the options bar, drag the selection border to the area you want to patch. When you release the mouse button, the newly selected area is patched with the sampled pixels.

To repair an area using a pattern:

1 Select the Patch tool ⟡.

2 Drag in the image to select the area you want to repair.

Note: You can also make a selection prior to selecting the Patch tool.

3 To adjust the selection, do one of the following:

- Shift-drag in the image to add to the existing selection.

- Alt-drag (Windows) or Option-drag (Mac OS) in the image to subtract from the existing selection.

- Alt-Shift-drag (Windows) or Option-Shift-drag (Mac OS) in the image to select an area intersected by the existing selection.

4 Select a pattern from the Pattern pop-up palette in the options bar, and click Use Pattern.

Using the Color Replacement tool

The Color Replacement tool simplifies replacing specific colors in your image. You can paint over a targeted color—for example, a person's red eyes in an image—with a corrective color.

Note: The Color Replacement tool doesn't work in images in Bitmap, Indexed, or Multi-channel color modes.

Red eyes repaired using the Color Replacement tool

To use the Color Replacement tool:

1 Select the Color Replacement tool ✎.

2 Choose a brush tip in the options bar. Generally, you'll want to keep the blending mode set to Color (see "Setting options for painting and editing tools" on page 331).

3 For the Sampling option, choose one of the following:

- Continuous to sample colors continuously as you drag

- Once to replace the targeted color only in areas containing the color that you first click

- Background Swatch to erase only areas containing the current background color

4 For the Limits option, select one of the following:

- Discontiguous to replace the sampled color wherever it occurs under the pointer

- Contiguous to replace colors that are contiguous with the color immediately under the pointer

- Find Edges to replace connected areas containing the sampled color while better preserving the sharpness of shape edges

5 For tolerance, enter a percentage value (ranging from 0 to 255) or drag the slider. Choose a low percentage to replace colors very similar to the pixel you click, or raise the percentage to replace a broader range of colors.

6 To define a smooth edge to the areas you correct, select Anti-aliased.

7 Choose a foreground color to use to replace the unwanted color.

8 Click the color you want to replace in the image.

9 Drag in the image to replace the targeted color.

Using the Smudge tool (Photoshop)

The Smudge tool simulates the actions of dragging a finger through wet paint. The tool picks up color where the stroke begins and pushes it in the direction you drag.

To use the Smudge tool:

1 Select the Smudge tool ✋.

2 Choose a brush tip and options for the blending mode in the options bar (see "Setting options for painting and editing tools" on page 331).

3 Select Use All Layers in the options bar to smudge using color data from all visible layers. If this is deselected, the Smudge tool uses colors from only the active layer.

4 Select Finger Painting in the options bar to smudge using the foreground color at the beginning of each stroke. If this is deselected, the Smudge tool uses the color under the pointer at the beginning of each stroke.

5 Drag in the image to smudge the pixels.

💡 In Photoshop, press Alt (Windows) or Option (Mac OS) as you drag with the Smudge tool to use the Finger Painting option.

Using the Blur tool (Photoshop)

The Blur tool softens hard edges or areas in an image to reduce detail. For information on other ways to adjust sharpness, see "Sharpening images" on page 224 and "Blur filters" on page 421.

To use the Blur tool:

1 Select the Blur tool .

2 Do the following in the options bar:

3 Choose a brush tip and set options for the blending mode and strength in the options bar (see "Setting options for painting and editing tools" on page 331).

4 Select Use All Layers in the options bar to blur using data from all visible layers. If this is deselected, the tool uses data from only the active layer.

5 Drag over the part of the image you want to blur.

Using the Sharpen tool (Photoshop)

The Sharpen tool focuses soft edges to increase clarity or focus. For information on other ways to adjust sharpness, see "Sharpening images" on page 224 and "Sharpen filters" on page 428.

To use the Sharpen tool:

1 Select the Sharpen tool .

2 Do the following in the options bar:

3 Choose a brush tip and set options for the blending mode and strength in the options bar (see "Setting options for painting and editing tools" on page 331).

4 Select Use All Layers in the options bar to sharpen using data from all visible layers. If this is deselected, the tool uses data from only the active layer.

5 Drag over the part of the image you want to sharpen.

Using the Dodge tool and the Burn tool (Photoshop)

Used to lighten or darken areas of the image, the Dodge tool and the Burn tools are based on a traditional photographer's technique for regulating exposure on specific areas of a print. Photographers hold back light to lighten an area on the print (dodging) or increase the exposure to darken areas on a print (burning).

To use the Dodge tool or the Burn tool:

1 Select the Dodge tool or the Burn tool .

2 Choose a brush tip and set brush options in the options bar (see "Working with brushes" on page 317).

3 In the options bar, select one of the following:

• Midtones to change the middle range of grays

• Shadows to change the dark areas

• Highlights to change the light areas

4 Specify the exposure for the Dodge tool or the Burn tool. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

5 (Photoshop) Click the airbrush button ✍ to use the brush as an airbrush. Alternately, select the Airbrush option in the Brushes palette. (See "Creating airbrush effects (Photoshop)" on page 328.)

6 Drag over the part of the image you want to lighten or darken.

Using the Sponge tool (Photoshop)

The Sponge tool subtly changes the color saturation of an area. In Grayscale mode, the tool increases or decreases contrast by moving gray levels away from or toward the middle gray.

To use the Sponge tool:

1 Select the Sponge tool ⬤.

2 Choose a brush tip and set brush options in the options bar (see "Working with brushes" on page 317).

3 In the options bar, select the way you want to change the color.

• Saturate to intensify the color's saturation

• Desaturate to dilute the color's saturation

4 Specify the flow for the Sponge tool. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

5 Drag over the part of the image you want to modify.

Using the Liquify filter

The Liquify filter lets you push, pull, rotate, reflect, pucker, and bloat any area of an image. The distortions you create can be subtle or drastic, which makes the Liquify command a powerful tool for retouching images as well as creating artistic effects.

Distorting an image using the Liquify filter

Using the Liquify dialog box

The Liquify dialog box provides tools and options for distorting an image.
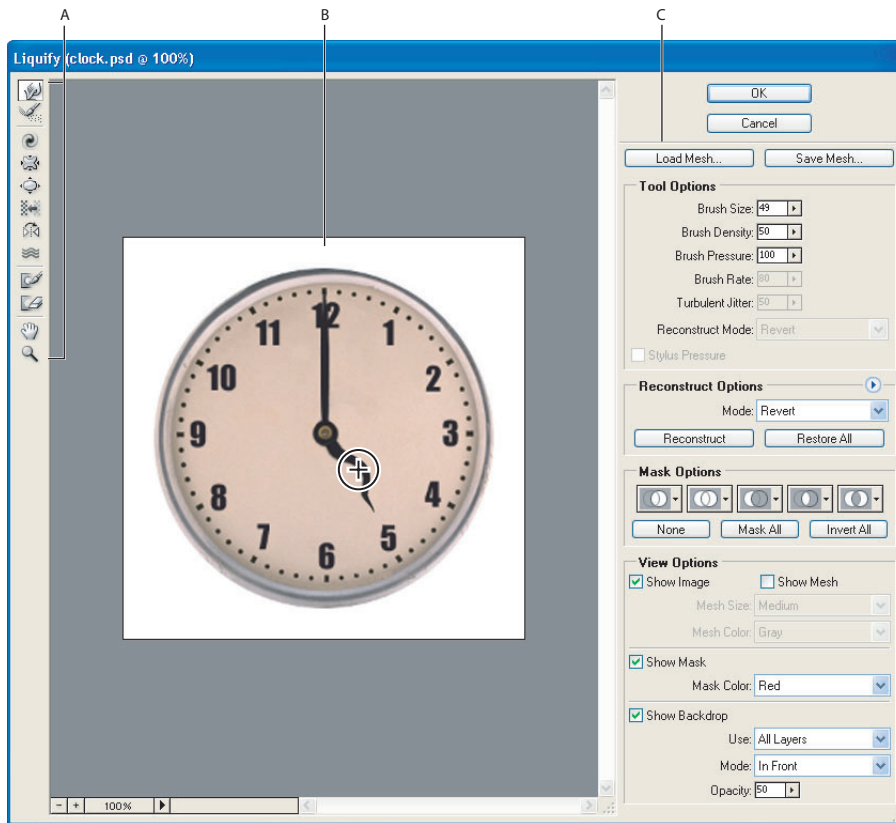
Liquify dialog box
A. Toolbox **B.** Preview image **C.** Options

Displaying the Liquify dialog box Choose Filter > Liquify.

Magnifying and reducing the preview image Select the Zoom tool 🔍 in the Liquify dialog box, and click or drag in the preview image to zoom in; hold down Alt (Windows) or Option (Mac OS), and click or drag in the preview image to zoom out. Alternately, you can specify a magnification level in the Zoom text box at the bottom of the dialog box.

Navigating in the preview image Select the Hand tool ✋ in the Liquify dialog box, and drag in the preview image. Alternately, hold down the spacebar with any tool selected, and drag in the preview image.

Using the distort tools

Several tools in the Liquify dialog box distort the brush area when you hold down the mouse button or drag. The distortion is concentrated at the center of the brush area, and the effect intensifies as you hold down the mouse button or repeatedly drag over an area.

Forward Warp Tool 〰 Pushes pixels forward as you drag.

💡　Shift-click with the Warp tool, the Push Left tool, or the Mirror tool to create the effect of dragging in a straight line from the previous point you clicked.

Twirl Clockwise tool ↻   Rotates pixels clockwise as you hold down the mouse button or drag. To twirl pixels counter-clockwise, hold down the Alt key (Windows) or Option (Mac OS) as you hold down the mouse button or drag.

Pucker Tool ▨   Moves pixels toward the center of the brush area as you hold down the mouse button or drag.

Bloat Tool ◈   Moves pixels away from the center of the brush area as you hold down the mouse button or drag.

Push Left tool ▦   Moves pixels to the left when you drag the tool straight up (pixels move to the right if you drag down). You can also drag clockwise around an object to increase its size, or drag counter-clockwise to decrease its size. To push pixels right when you drag straight up (or to move pixels left when you drag down), hold down the Alt key (Windows) or Option (Mac OS) as you drag.

Mirror tool ▧   Copies pixels to the brush area. Drag to reflect the area perpendicular to the direction of the stroke (to the left of the stroke). Alt-drag (Windows) or Option-drag (Mac OS) to reflect the area in the direction opposite to that of the stroke (for example, the area above a downward stroke). Usually, Alt-dragging or Option-dragging gives better results when you have frozen the area you want to reflect. Use overlapping strokes to create an effect similar to a reflection in water.

Turbulence tool ≋   Smoothly scrambles pixels. It is useful for creating fire, clouds, waves, and similar effects.

Setting liquify tool options

In the Tool Options area of the dialog box, set the following options:

Brush size   Sets the width of the brush you'll use to distort the image.

Brush Pressure   Sets the speed at which distortions are made when you drag a tool in the preview image. Using a low brush pressure makes changes occur more slowly, so it's easier to stop them at exactly the right moment.

Brush Rate   Sets the speed at which distortions are applied when you keep a tool (such as the Twirl tool) stationary in the preview image. A high setting applies distortions quickly; a lower setting provides a slower change.

Brush Density   Controls how a brush feathers at the edge. An effect is strongest in the center of the brush and lighter at the edge.

Turbulent Jitter   Control how tightly the Turbulence tool scrambles pixels.

Reconstruct Mode   Used for the Reconstruct tool, the mode you choose determines how the tool reconstructs an area of the preview image (see "Reconstructing distortions" on page 281).

(Photoshop) Select Stylus Pressure   Select to use pressure readings from a stylus tablet. (This option is available only when you are working with a stylus tablet.) When selected, the brush pressure for the tools is the stylus pressure multiplied by the Brush Pressure value.

Distorting images

Distorting an image is as easy as dragging a tool in the preview image.

Note: *If a type layer or a shape layer is selected, you must rasterize the layer before proceeding, making the type or shape editable. To distort type without rasterizing the type layer, use the Warp options for the Type tool (see "Warping type layers" on page 444).*

To distort an image:

1 Select the layer you want to distort. To change only part of the current layer, select that area.

2 Choose Filter > Liquify.

3 Freeze areas of the image that you don't want to alter. (See "Freezing areas" on page 280.)

4 Choose any of the liquify tools to distort the preview image (see "Using the distort tools" on page 278). Drag in the preview image to distort the image.

5 After distorting the preview image, you can use the Reconstruct tool 🖌 or other controls to fully or partially reverse the changes or to change the image in new ways. (See "Reconstructing distortions" on page 281.)

6 Do one of the following:

- Click OK to close the Liquify dialog box and apply the changes to the active layer.

- Click Cancel to close the Liquify dialog box without applying changes to the layer.

- Click Restore All to revert all distortions to the preview image, leaving all options in their current settings.

- Hold down Alt (Windows) or Option (Mac OS) and click Reset to revert all distortions to the preview image and reset all options to their defaults.

   💡 You can use the Edit > Fade command to create additional effects. (See "Blending filter effects (Photoshop)" on page 418.)

Freezing areas

By freezing areas of the preview image, you protect those areas from changes. Frozen areas are covered by a mask that you paint using the Freeze tool 🖌. You can also use an existing mask, selection, or transparency to freeze areas. You can view the mask in the preview image to help you with your distortions.

You can use the icons' pop-up menus in the Mask Options area of the Liquify dialog box to choose how the frozen, or masked, areas of the preview image work (see "Using mask options" on page 281).

Using the Freeze tool Select the Freeze tool 🖌 and drag over the area you want to protect. Shift-click to freeze in a straight line between the current point and the previous point that you clicked or Shift-clicked.

Using a selection, mask, or transparency channel   Choose Selection, Layer Mask, Transparency, or Quick Mask from the pop-up menu from one of the five options in the Mask Options area of the dialog box (see "Using mask options" on page 281).

Freezing all thawed areas   Click the Mask All button in the Mask Options area of the dialog box.

Inverting thawed and frozen areas   Click Invert All in the Mask Options area of the dialog box.

Showing or hiding frozen areas   Select or deselect Show Mask in the View Options area of the dialog box.

Changing the color of frozen areas   Choose a color from the Mask Color pop-up menu in the View Options area of the dialog box.

Using mask options

When you have an existing selection or mask in an image, that information is retained when the Liquify dialog box opens. You can choose one of the following mask options:

Replace selection   Shows the selection, mask, or transparency in the original image.

Add to selection   Shows the mask in the original image, so you can then add to the selection using the Freeze tool. Adds selected pixels in channel to the current freeze.

Subtract from selection   Subtracts pixels in channel from current freeze.

Intersect with selection   Uses only pixels that are selected and currently frozen.

Invert selection   Uses selected pixels to invert current freeze.

Thawing areas

To thaw areas, do any of the following:

Using the Thaw tool   Select the Thaw tool, and drag over the area. Shift-click to thaw in a straight line between the current point and the previous point that you clicked or Shift-clicked.

Thawing all frozen areas   Click the None button in the Mask Options area of the dialog box.

Inverting frozen and thawed areas   Click Invert All in the Mask Options area of the dialog box. If you used a selection, transparency, or alpha channel to define the frozen area, the alpha channel name in the Channel pop-up menu changes to Custom.

Reconstructing distortions

After you distort the preview image, you can use a variety of controls and reconstruction modes to reverse changes or redo the changes in new ways. Reconstructions can be applied two ways. You can apply a reconstruction to the entire image, smoothing out the distortion in unfrozen areas, or you can use the reconstruction tool to reconstruct in specific areas. You can use the Freeze tool to protect distorted areas from being recon-structed.
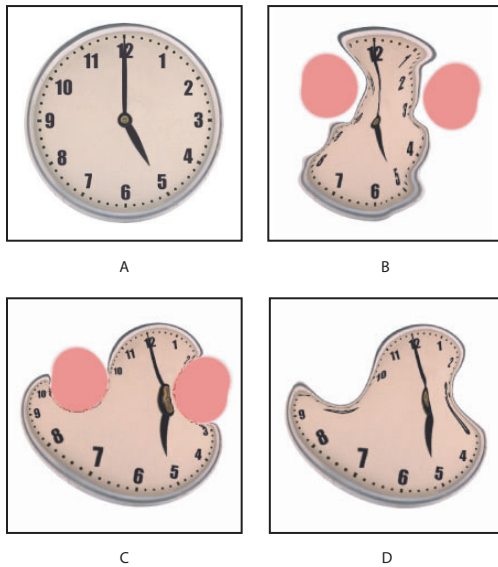
Reconstruction based on distortions in frozen areas
A. Original image **B.** Distorted with frozen areas **C.** Reconstructed in Rigid mode (using button)
D. Thawed, edges reconstructed in Smooth mode (using tool)

To reconstruct an entire image:

1 Select a reconstruction mode from the Reconstruct Options area of the dialog box (see "About reconstruction modes" on page 283).

2 Press the Reconstruct button in the Reconstruction Options area to apply the effect once. You can apply the reconstruction more than once to return the image to a less distorted appearance.

To remove all distortions:

Click the Restore All button in the Reconstruct Option area of the dialog box. This removes distortions even in frozen areas.

To reconstruct part of a distorted image:

1 Freeze areas you want to keep distorted.

2 Select the Reconstruct tool ✎. Choose one of these Reconstruct tool modes from the Brush Options area of the dialog box (see "About Reconstruct tool modes" on page 283).

3 Hold down the mouse button or drag over the area. Pixels move more quickly at the brush center. Shift-click to reconstruct in a straight line between the current point and the previous point that you clicked or Shift-clicked.

To repeat distortions sampled from a starting point:

1 After distorting the preview image, choose one of these reconstruction modes from the Mode menu in the Tool Options area of the dialog box (see "About Reconstruct tool modes" on page 283).

2 Select the Reconstruct tool ✎, and in the preview image, hold down the mouse button or drag from a starting point.

This creates a copy of the distortion sampled at the starting point, similar to the way you can paint a copy of an area using the Clone tool. If there is no distortion, the effect is the same as using Revert mode. You can set new starting points and use the Reconstruct tool repeatedly to create a variety of effects.

About reconstruction modes

You can choose one of the following reconstruct modes:

Rigid Maintains right angles in the pixel grid (as shown by the mesh) at the edges between frozen and unfrozen areas, sometimes producing near-discontinuities at the edges. This restores the unfrozen areas to something close to their original appearance. (To restore their original appearance, use Revert reconstruction mode.)

Stiff Acts like a weak magnetic field. At the edges between frozen and unfrozen areas, the unfrozen areas continue the distortions in the frozen areas. As the distance from frozen areas increases, the distortions lessen.

Smooth Propagates the distortions in frozen areas throughout unfrozen areas, with smoothly continuous distortions.

Loose Produces effects similar to Smooth, with even greater continuity between distortions in frozen and unfrozen areas.

Revert Scales back distortions uniformly without any kind of smoothing.

About Reconstruct tool modes

The Reconstruct tool has three modes that use the distortion where the tool was first clicked (start point) to reconstruct the area the tool is brushed over. Every time the mouse is clicked it sets a new start point, so if you want to extend an effect from one start point, don't release the mouse button until you're done using the Reconstruct tool.

Displace Reconstructs unfrozen areas to match the displacement at the start point for the reconstruction. You can use Displace to move all or part of the preview image to a different location. If you click and gradually spiral out from the start point, you'll displace or move a portion of the image to the area you've brushed over.

Amplitwist Reconstructs unfrozen areas to match the displacement, rotation, and overall scaling that exist at the start point.

Affine Reconstructs unfrozen areas to match all distortions that exist at the start point, including displacement, rotation, horizontal and vertical scaling, and skew.

Working with meshes

Using a mesh helps you see and keep track of distortions. You can choose the size and color of a mesh. You can save the mesh from one image and apply it to other images.

Using a mesh To add a mesh, select Show Mesh in the View Options area of the dialog box, and choose a mesh size, mesh color, and freeze color.

Viewing a mesh To show a mesh, select Show Mesh. When Show Mesh is selected, you can show or hide the preview image. Select Show Image in the View Options area of the dialog box to show the preview image; deselect Show Image to view only the mesh.

Saving a distortion mesh After distorting the preview image, click Save Mesh. Specify a name and location for the mesh file, and click Save.

Applying a distortion mesh Click Load Mesh, select the mesh file you want to apply, and click Open. If the image and distortion mesh aren't the same size, the mesh is scaled to fit the image.

Working with backdrops

You can choose to show only the active layer in the preview image, or you can show additional layers in the preview image as a backdrop. Using the Mode options, you can position the backdrop in front of or behind the active layer to help you keep track of the changes you're making, or to line up a distortion with another distortion made in a different layer.

Note: Only the active layer is distorted, even if other layers are displayed.

Showing the backdrop Select Show Backdrop, and then choose an option from the Use pop-up menu. If you use All Layers, changes to the current target layer are not reflected in the backdrop layer. Specify an overlay opacity to change the blending between the target layer and the backdrop. The mode selects how the backdrop and the target layer are combined for the preview. Choose an option from the Mode pop-up menu.

Hiding the backdrop Deselect Show Backdrop in the View Options area of the dialog box.

Creating panoramic images using Photomerge (Photoshop)

The Photomerge™ command combines several photographs into one continuous image. For example, you can take five overlapping photographs of a city skyline, and then assemble them into a panorama. The Photomerge command is capable of assembling photos that are tiled horizontally as well as vertically.

Source images (top), and completed Photomerge composition (bottom)

Opening Photomerge compositions Choose File > Automate > Photomerge, and then click the Open Composition button. Choose the composition you want to open.

Taking pictures for use with Photomerge

Your source photographs play a large role in panoramic compositions. To avoid problems, follow these guidelines when taking pictures for use with Photomerge:

Overlap images sufficiently Images should have an overlap of approximately 15% to 40% of the image area. If the overlap is less, Photomerge may not be able to automatically assemble the panorama. However, keep in mind that the images shouldn't overlap too much. If images overlap by 70% or more, it can be difficult to work with them, and blending may not be as effective. Try to keep the individual photos at least somewhat distinct from each other.

Use a consistent focal length Avoid using the zoom feature of your camera while taking your pictures.

Keep the camera level Although Photomerge can process slight rotations between pictures, a tilt of more than a few degrees can result in errors when automatically assembling the panorama. Using a tripod with a rotating head helps maintain camera alignment and viewpoint.

When photographing a panoramic scene from a high place, the natural inclination is to keep the horizon level in the viewfinder. However, this actually produces a noticeable rotation between images. Try using a tripod to keep the camera level when taking photographs in this situation.

Stay in the same position Try not to change your position as you take a series of photographs, so that the pictures are from the same viewpoint. If you walk to a new position while taking photographs, you'll likely disrupt the continuity of your images. Using the optical viewfinder with the camera held close to the eye helps keep the viewpoint consistent. Or try using a tripod to keep the camera in the same place.

Avoid using distortion lenses Lenses, such as fish-eye lenses, that cause noticeable distortion to the image can interfere with Photomerge.

Maintain the same exposure Avoid using the flash in some pictures and not in others. The advanced blending feature in Photomerge helps smooth out different exposures, but extreme differences make alignment difficult. Some digital cameras change exposure settings automatically as you take pictures, so you may need to check your camera settings to be sure that all the images have the same exposure.

Using the Photomerge dialog box

The Photomerge dialog box contains tools for manipulating the composition, a lightbox for storing source images that are not in use, a work area for assembling the composition, and options for viewing and editing the composition. You can also zoom in and out to better see the alignment of each file.
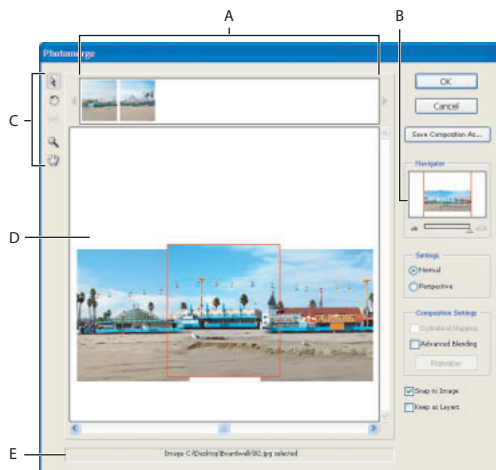
Photomerge dialog box
A. Lightbox **B.** Navigator view box **C.** Toolbox **D.** Work area **E.** Status bar

Navigating in the Photomerge dialog box Do one or more of the following in the Photomerge dialog box:

• Select the Hand tool ✋ and drag in the work area to move the view.

• Drag the view box or the scroll bars in the Navigator thumbnail. The view box represents the boundaries of the work area.

Zooming in the Photomerge dialog box Do one of the following:

• Click the zoom in icon ⬘ below the Navigator.

• Use the Zoom tool 🔍 to zoom in.

• Click the zoom out icon ⬏ below the Navigator.

Using the lightbox You can use the lightbox to rearrange images in the Photomerge composition. To use the lightbox, select the Select Image tool ⬀, and then do one or more of the following:

• Drag an image from the lightbox to the work area to add it to the composition.

• Drag an image from the work area to the lightbox to remove it from the composition.

• Double-click an image in the lightbox to add it to the composition.

💡 Make sure Snap to Image is selected to automatically snap overlapping images into place when a commonality is detected.

Rotating images Select the Select Image tool ⬀, and click the image you want to rotate. Select the Rotate tool ↻, and then click near the edge of the image and drag in a circular motion around the center of the image.

Creating a Photomerge composition

When you set up a Photomerge composition, you identify your source files, and then the assembly of the panorama is automatically done for you. Once the panorama is complete, you can still make changes to the placement of the individual photos, if necessary.

To set up a new Photomerge composition:

1 Do one of the following:

- Choose File > Automate > Photomerge.

- In the File Browser, select the images you want to use and then choose Automate > Photomerge from the File Browser menu bar (see "Running automated tasks from the File Browser" on page 96).

2 In the dialog box, choose an option from the Use pop-up menu:

- Files to generate the Photomerge composition using individual files.

- Folders to use all the images stored in a folder to create the Photomerge composition. The files in the folder appear in the dialog box.

- Open Files to use the image files you have open in Photoshop.

3 Click the Browse button to navigate to the source files or folder you want to use to create the Photomerge composition. Select Attempt to Automatically Arrange Source Images if you want Photoshop to try to line the images up in their proper order. Deselect this option if you want to arrange the images in the lightbox yourself.

💡 You can add more files by clicking the Browse button again and navigating to the source files. You can always remove a file from the Source Files list by selecting the file and clicking the Remove button.

4 When you've added all the source files, click OK to create the Photomerge composition. The source files will open automatically and will be processed.

💡 If the composition can't be automatically assembled, a message appears on-screen. You can assemble the composition manually in the Photomerge dialog box using the lightbox. (See "Using the Photomerge dialog box" on page 285.)

5 Once the new panorama image appears in the Photomerge dialog box, you can work with individual source files and change your view of the work area. If you need to rearrange the order of the images, drag an image in the work area to reposition it, or rearrange the images in the light box (see "Using the Photomerge dialog box" on page 285).

6 If necessary, adjust the vanishing point or blending settings of your composition (see "Changing Photomerge composition settings" on page 288.)

7 If you'd like to save each image in the composition as individual layers, which is useful if you need to correct the color of each image separately, select Keep as Layers.

8 Do one of the following:

• Click the OK button to generate the panorama as a new Photoshop file. The composition then opens in Photoshop.

• Click the Save Composition As button to save the composition so you can open it again at a later time.

Changing Photomerge composition settings

How source images appear in the Photomerge dialog box depends on the settings you choose. Adobe Photoshop lets you adjust the perspective and blend exposure differences to produce the best possible effect.

The Vanishing Point tool selects the vanishing point image, which changes the perspective of the composition. The middle image is the default vanishing point image (it has a blue border around it when selected). There can only be one vanishing point image in a composition.

The Cylindrical Mapping and Advanced Blending options are used to process the final image. The results of applying these options are visible only in Preview mode or in the final, generated image.

To change the vanishing point of a composition:

1 Select Perspective in the Settings area of the Photomerge dialog box.

2 Select the Vanishing Point tool ✳ , and click on an image in the work area to make it the vanishing point image.

3 If necessary, use the Select Image tool ▸ to adjust the position of the non-vanishing point images. A non-vanishing point image has a red border around it when selected.

When you apply perspective correction to a composition, the non-vanishing point images are linked to the vanishing point image. You can break this link by clicking the Normal button, by separating the images in the work area, or by dragging the vanishing point image back to the lightbox. Once the link is broken, images return to their original shapes.

The perspective correction only works up to an approximately 120° angle of view. For a wider angle of view, deselect the Perspective option.

💡 To change the perspective of a composition, select the Vanishing Point tool, and click a non-vanishing point image in the work area. Notice how the perspective of the composition changes depending on which image is the vanishing point image.

To apply Advanced Blending or Cylindrical Mapping:

1 Select Composition options as desired:

• Cylindrical Mapping to reduce the "bow tie" distortion that can occur when you apply perspective correction. You must select the Perspective option in order to apply cylindrical mapping.
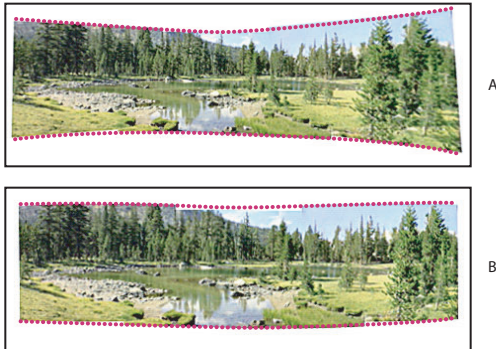
Adding Cylindrical Mapping
A. Original **B.** Cylindrical Mapping applied

• Advanced Blending to minimize color inconsistencies that result from blending images with exposure differences. When this option is selected, broad colors and tones are blended over a large area, while detailed colors and tones are blended over a smaller area.

2 Click Preview. To return to edit mode, click Exit Preview.

Drawing

About shapes and paths

When you draw in Photoshop, you create vector shapes—mathematically defined lines and curves. You use the drawing tools to create shape layers and work paths. Shapes are resolution-independent—they maintain crisp edges when resized, printed to a PostScript printer, saved in a PDF file, or imported into a vector-based graphics application. You can use shapes to make selections and create libraries of custom shapes with the Preset Manager.

In Photoshop, paths are used for making selections and defining areas of an image. The outline of a shape is a path. Paths are made up of one or more straight or curved segments. Each segment is marked by anchor points, which work like pins holding wire in place. You can easily change the shape of a path by editing its anchor points. The Paths palette helps you manage paths. You can't use paths in ImageReady.
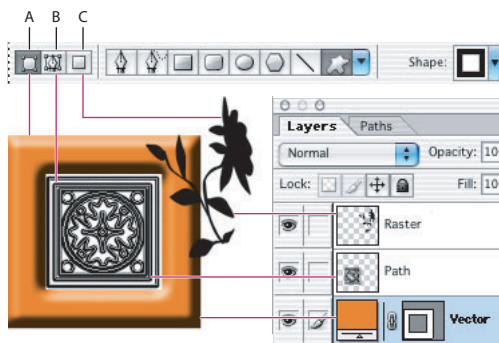
Drawing options
A. Shape layers **B.** Paths **C.** Fill pixels

Using the shape tools

In Photoshop, you can quickly select, resize, and move a shape, and you can edit a shape's attributes (such as stroke, fill color, and style).

ImageReady shapes are object-oriented, meaning that you can resize and move the shapes (see "Using the Free Transform command" on page 268) but not the outline of the shape. In ImageReady, you can easily align shapes as you draw them using smart guides (see "Using guides and the grid" on page 43).

Note: *The Polygon tool ⬮, Custom Shape tool 🐾, Add Anchor Point tool ⬮⁺, Delete Anchor Point tool ⬮⁻, and Convert Point tool ⌐ are available only in Photoshop.*

Creating shapes

Shapes are drawn on *shape layers*. In Photoshop, you can draw more than one shape in a shape layer, and specify how overlapping shapes interact. In ImageReady, you can draw only one shape in a layer.

Shapes are automatically filled with the current foreground color; however, you can easily change the fill to a different color, a gradient, or a pattern. The shape's outline is stored in a vector mask that is linked to the layer.

💡 Hold down Shift to constrain a rectangle or rounded rectangle to a square, to constrain an ellipse to a circle, or to constrain the line angle to a multiple of 45°.
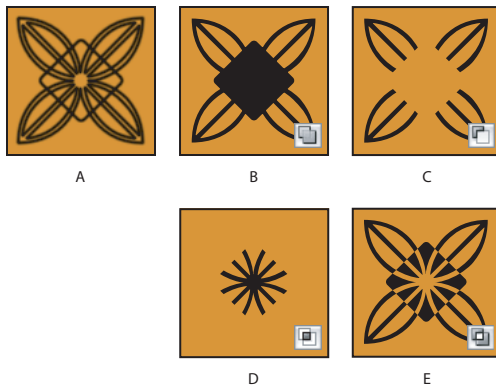
Drawing multiple shapes in a layer
A. Original shape plus additional shape   **B.** Result with Add to Shape Area selected   **C.** Result with Subtract from Shape Area selected   **D.** Result with Intersect Shape Areas selected   **E.** Result with Exclude Overlapping Shape Areas selected

To create a new shape:

1 Select a shape tool or a Pen tool. Make sure that the Shape Layers button 🔲 is selected in the options bar.

2 To choose the color of the shape, click the color swatch in the options bar, and then choose a color from the Color Picker.

3 If you want to apply a style to the shape, select a preset style from the Style pop-up menu. (See "Applying preset styles" on page 392.)

4 Set additional tool-specific options (see "Using the shape tools" on page 290).

5 Drag in your image to draw a shape. You can then resize or edit the shape (see "Editing shapes (Photoshop)" on page 294).

💡 Hold down the spacebar while you're dragging the mouse to move the shape without changing its size or proportions.

To draw multiple shapes in a layer (Photoshop):

1 Select the layer to which you want to add shapes.

2 Select a drawing tool and set tool-specific options (see "Setting shape tool options" on page 293).

3 Choose one of the following in the options bar:

• Add to Shape Area 🔲 to add the new area to the existing shapes or path.

- Subtract from Shape Area 🗀 to remove the overlapping area from the existing shapes or path.

- Intersect Shape Areas 🗇 to restrict the area to the intersection of the new area and the existing shapes or path.

- Exclude Overlapping Shape Areas 🗇 to exclude the overlap area in the consolidated new and existing areas.

4 Draw in the image. You can easily switch between drawing tools by clicking a tool button in the options bar.

Using custom shapes (Photoshop)

When you're using the Custom Shape tool, you can choose from a variety of preset shapes. You can also save shapes that you create as preset shapes.

To select a custom shape:

1 Select the Custom Shape tool 🖉.

2 Select a shape from the Shape pop-up palette. (See "Using pop-up palettes" on page 24.)

To save a shape or path as a custom shape:

1 In the Paths palette, select a path—either a vector mask for a shape layer, a work path, or a saved path.

2 Choose Edit > Define Custom Shape, and enter a name for the new custom shape in the Shape Name dialog box. The new shape appears in the Shape pop-up palette.

3 To save the new custom shape as part of a new library, select Save Shapes from the pop-up palette menu. You can also use the Preset Manager to manage libraries of custom shapes. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.

Creating rasterized shapes

You can create a rasterized (or bitmap) shape by making a selection and filling it with the foreground color. You cannot edit a rasterized shape as a vector object. Raster shapes are created using the current foreground color.

To create a rasterized shape (Photoshop):

1 Select a layer. You cannot create a rasterized shape on a vector-based layer (for example, a type layer).

2 Select a shape tool, and click the Fill Pixels button ▢ in the options bar.

3 Set the following options in the options bar:

- Mode to control how the shape will affect the existing pixels in the image. (See "Selecting a blending mode" on page 331.)

- Opacity to determine to what degree the shape will obscure or reveal the pixels beneath it. A shape with 1% opacity appears nearly transparent, while one with 100% opacity appears completely opaque.

- Anti-Aliased to blend the shape's edge pixels with the surrounding pixels.

4 Set additional tool-specific options, and draw a shape. For more information, see "Using the shape tools" on page 290 and "Using the pen tools (Photoshop)" on page 295.

Note: In Photoshop, you can easily switch between drawing tools by clicking a tool button in the options bar.

To create a rasterized shape (ImageReady):

1 Select a layer that contains the shape you want to rasterize.

2 Choose Layer > Rasterize > Shape.

Setting shape tool options

Each shape tool provides specific options; for example, you can set options that allow you to draw a rectangle with fixed dimensions or a line with arrowheads. The available options vary by tool. In Photoshop, options are shown in a pop-up menu. In ImageReady, available options are displayed in the options bar.
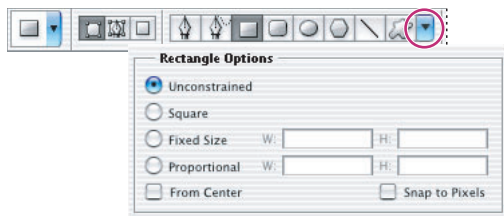
(Photoshop) Click the inverted arrow to display options for the selected shape.

To set tool-specific options:

1 Select the Rectangle tool ▢, Rounded Rectangle tool ▢, Ellipse tool ◯, Polygon tool ◯ (Photoshop), Line tool ╲, or Custom Shape tool 🔌 (Photoshop).

2 Set tool options in the options bar. In Photoshop, click the inverted arrow ▾ next to the shape buttons to view the options:

Arrowheads Start and End Adds arrowheads to a line. Select the Line tool and then select Start to add an arrow to the beginning of the line; select End to add an arrow to the end of the line. Select both options to add arrows on both ends. In ImageReady, click Shape to define the shape of the arrowhead; in Photoshop, the shape options appear in the pop-up dialog box. Enter values for Width and Length to specify the proportions of the arrowhead as a percentage of the line width (10% to 1000% for Width, and 10% to 5000% for Length). Enter a value for the concavity of the arrowhead (from –50% to +50%). The concavity value defines the amount of curvature on the widest part of the arrowhead, where the arrowhead meets the line.

Note: In Photoshop, you can also edit an arrowhead directly using the vector selection and drawing tools.

Circle (Photoshop) Constrains an ellipse to a circle.

Corner Radius (ImageReady) Specifies the corner radius for rendering a rounded rectangle or tab rectangle.

Defined Proportions (Photoshop) Renders a custom shape based on the proportions with which it was created.

Defined Size (Photoshop) Renders a custom shape based on the size at which it was created.

Fixed Size Renders a rectangle, rounded rectangle, ellipse, or custom shape as a fixed shape based on the values you enter in the Width and Height text boxes.

From Center (Photoshop) Renders a rectangle, rounded rectangle, ellipse, or custom shape from the center.

Indent Sides By (Photoshop) Renders a polygon as a star. Enter a percentage in the text box to specify the portion of the star's radius taken up by the points. A 50% setting creates points that are half the total radius of the star; a larger value creates sharper, thinner points; a smaller value creates fuller points.

Proportional (Photoshop) Renders a rectangle, rounded rectangle, or ellipse as a proportional shape based on the values you enter in the Width and Height text boxes.

Radius (Photoshop) For rounded rectangles, specifies the corner radius. For polygons, specifies the distance from the center of a polygon to the outer points.

Sides (Photoshop) Specifies the number of sides in a polygon.

Smooth Corners or Smooth Indents (Photoshop) Renders a polygon with smooth corners or indents.

Snap to Pixels (Photoshop) Snaps edges of a rectangle or rounded rectangle to the pixel boundaries.

Square (Photoshop) Constrains a rectangle or rounded rectangle to a square.

Unconstrained (Photoshop) Lets you set the width and height of a rectangle, rounded rectangle, ellipse, or custom shape by dragging.

Weight Determines the width of a line in pixels.

Editing shapes (Photoshop)

A shape is a fill layer linked to a vector mask. You can easily change the fill to a different color, a gradient, or a pattern by editing the shape's fill layer. You can also edit the shape's vector mask to modify the shape outline, and apply a style to the layer.

For information on transforming shapes in ImageReady, see "Using the Free Transform command" on page 268.

To change the color of a shape:

Double-click the shape layer's thumbnail in the Layers palette, and choose a different color using the color picker.

To fill a shape with a pattern or gradient:

1 Select a shape layer in the Layers palette.

2 Do one of the following:

• Choose Layer > Change Layer Content > Gradient, and set gradient options.

• Choose Layer > Change Layer Content > Pattern, and set pattern options.

For more information, see "Using adjustment layers and fill layers (Photoshop)" on page 402.

To modify the outline of a shape:

Click the shape layer's vector mask thumbnail in the Layers palette or Paths palette. Then change the shape using the shape and pen tools.

For more information, see "Moving, reshaping, copying, and deleting path components" on page 305.

Using the pen tools (Photoshop)

You can create or edit straight lines, curves, or freeform lines and shapes using the pen tools. The pen tools can be used in conjunction with the shape tools to create complex shapes.

Drawing with the Pen tool

The Pen tool lets you create straight lines and smooth flowing curves with greater precision than is possible with the Freeform Pen tool. For most users, the Pen tool provides the best control and greatest accuracy for drawing.

To draw with the Pen tool:

1 Select the Pen tool ✒.

2 Set the following tool-specific options:

• To add an anchor point when you click a line segment and delete an anchor point when you click it, select Auto Add/Delete in the options bar. (See "Adding, deleting, and converting anchor points" on page 307.)

• To preview path segments as you draw, click the inverted arrow ▾ next to the shape buttons in the options bar, and select Rubber Band.

3 Position the pen pointer where you want to begin to draw, and click to define the first anchor point.

4 Click or drag to set anchor points for additional segments.

5 Complete the path:

• To end an open path, Ctrl-click (Windows) or Command-click (Mac OS) away from the path.

• To close a path, position the pen pointer over the first anchor point. A small loop appears next to the pen tip when it is positioned correctly. Click to close the path.

For more information on closed and open paths, see "About anchor points, direction lines, direction points, and components" on page 301.

Drawing straight segments with the pen tool

The simplest segment you can draw with the Pen tool is a straight segment, made by clicking to create anchor points.

To draw straight segments:

1 Position the pen pointer where you want the straight segment to begin, and click to define the first anchor point.

2 Click again where you want the first segment of the straight line to end, or Shift-click to constrain the angle of the segment to a multiple of 45°.

3 Continue clicking to set anchor points for additional segments. The last anchor point is always a solid square, indicating it is selected. Previously defined anchor points become hollow squares as you add further anchor points.

💡 If the Auto Add/Delete option is selected in the options bar, you can click an existing point to delete it.

Drawing curves with the Pen tool

You create curves by dragging the Pen tool in the direction you want the curve to go. Keep these guidelines in mind when drawing curves:

- Always drag the first direction point in the direction of the bump of the curve, and drag the second direction point in the opposite direction to create a single curve. Dragging both direction points in the same direction creates an "S" curve.
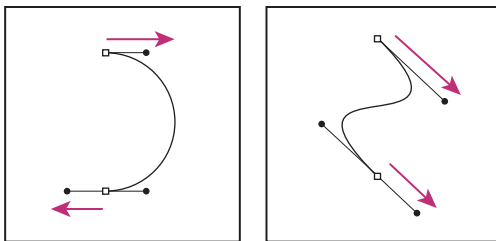
Drag in the opposite direction to create a smooth curve. Drag in the same direction to create an "S" curve.

- When drawing a series of smooth curves, draw one curve at a time, placing anchor points at the beginning and end of each curve, not at the tip of the curve.
- To decrease the file size and reduce the potential for printing errors, use as few anchor points as possible, and place them as far apart as possible.

For more information on how paths are constructed, see "About anchor points, direction lines, direction points, and components" on page 301.

To draw a curve:

1 Position the pointer where you want the curve to begin, and hold down the mouse button. The first anchor point appears, and the pointer changes to an arrowhead.

2 Drag in the direction you want the curve segment to be drawn. As you drag, the pointer leads one of two direction points. Hold down the Shift key to constrain the tool to multiples of 45°, and release the mouse button once you have positioned the first direction point.

The length and slope of the direction line determine the shape of the curve segment. You can adjust one or both sides of the direction line later.
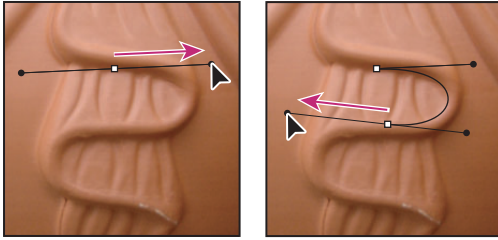
Drag in the direction of the curve to set the first anchor point. Drag in the opposite direction to complete the curve segment.

3 Position the pointer where you want the curve segment to end, and drag in the opposite direction to complete the segment.

4 Do one of the following:

- To draw the next segment of a smooth curve, position the pointer where you want the next segment to end, and drag away from the curve.
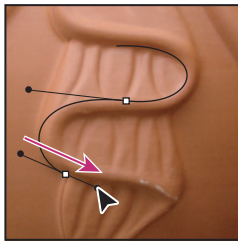
Drag away from the curve to create the next segment.

- To change the direction of the curve sharply, release the mouse button, and then Alt-drag (Windows) or Option-drag (Mac OS) the direction point in the direction of the curve. Release Alt (Windows) or Option (Mac OS) and the mouse button, reposition the pointer where you want the segment to end, and drag in the opposite direction to complete the curve segment.

- To break out the direction lines of an anchor point, Alt-drag (Windows) or Option-drag (Mac OS) the lines.
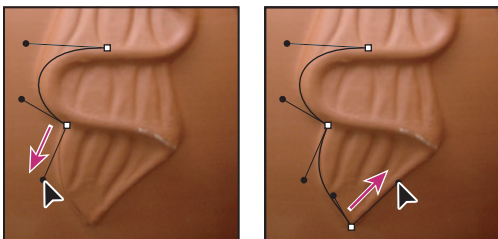
Alt-drag or Option-drag the direction point toward the curve. Release the key, and drag in the opposite direction.

Drawing with the Freeform Pen tool

The Freeform Pen tool lets you draw as if you were drawing with a pencil on paper. Anchor points are added automatically as you draw. You do not determine where the points are positioned, but you can adjust them once the path is complete.

The Magnetic Pen is an option of the Freeform Pen tool that lets you draw a path that snaps to the edges of defined areas in your image. You can define the range and sensitivity of the snapping behavior, as well as the complexity of the resulting path. The Magnetic Pen and Magnetic Lasso tools share many of the same options.

To draw with the Freeform Pen tool:

1 Select the Freeform Pen tool ✎.

2 To control how sensitive the final path is to the movement of your mouse or stylus, click the inverted arrow ▾ next to the shape buttons in the options bar, and enter a value between 0.5 and 10.0 pixels for Curve Fit. A higher value creates a simpler path with fewer anchor points.

3 Drag the pointer in the image. As you drag, a path trails behind the pointer. When you release the mouse, a work path is created.

4 To continue the existing freehand path, position the pen pointer on an endpoint of the path, and drag.

5 To complete the path, release the mouse. To create a closed path, drag the line to the initial point of the path (a circle appears next to the pointer when it is aligned). For more information on closed and open paths, see "About anchor points, direction lines, direction points, and components" on page 301.

To draw using the magnetic pen options:

1 To convert the Freeform Pen tool to the Magnetic Pen tool ✎, select Magnetic in the options bar, or click the inverted arrow next to the shape buttons in the options bar, select Magnetic, and set the following:

• For Width, enter a pixel value between 1 and 256. The Magnetic Pen detects edges only within the specified distance from the pointer.

• For Contrast, enter a percentage value between 1 and 100 to specify the contrast between pixels required to be considered an edge. Use a higher value for low contrast images.

• For Frequency, enter a value between 0 and 100 to specify the rate at which the Pen sets anchor points. A higher value anchors the path in place more quickly.

• If you are working with a stylus tablet, select or deselect Pen Pressure. When this option is selected, an increase in pen pressure causes the width to decrease.

2 Click in the image to set the first fastening point.

3 To draw a freehand segment, move the pointer or drag along the edge you want to trace.

The most recent segment of the border remains active. As you move the pointer, the active segment snaps to the strongest edge in the image, connecting the pointer to the last fastening point. Periodically, the Magnetic Pen adds fastening points to the border to anchor previous sections.
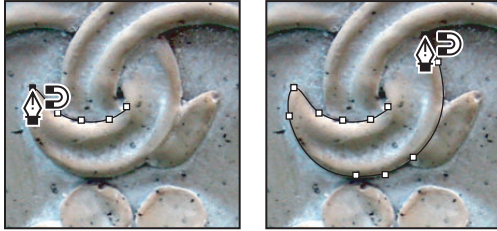
Click to add fastening points, and continue tracing.

4 If the border doesn't snap to the desired edge, click once to add a fastening point manually and to keep the border from moving. Continue to trace the edge and add fastening points as needed. If needed, press Delete to remove the last fastening point.

5 To dynamically modify the properties of the Magnetic Pen, do one of the following:

- Alt-drag (Windows) or Option-drag (Mac OS) to draw a freehand path.
- Alt-click (Windows) or Option-click (Mac OS) to draw straight segments.
- Press the [key to decrease the Magnetic Pen width by 1 pixel; press the] key to increase the pen width by 1 pixel.

6 Complete the path:

- Press Enter (Windows) or Return (Mac OS) to end an open path.
- Double-click to close the path with a magnetic segment.
- Hold down Alt (Windows) or Option (Mac OS), and double-click to close the path with a straight segment.

Working with paths (Photoshop)

A path is composed of one or more *path components*—collections of one or more anchor points joined by segments. Because they take up less disk space than pixel-based data, paths can be used for long-term storage of simple masks.

Paths can also be used to clip sections of your image for export to an illustration or page-layout application. (See "Using image clipping paths to create transparency" on page 601.)

Using the Paths palette (Photoshop)

The Paths palette lists the name and a thumbnail image of each saved path, the current work path, and the current vector mask. Decreasing the size of thumbnails or turning them off lets you list more paths in the palette, and turning thumbnails off can improve performance. To view a path, you must first select it in the Paths palette.

To display the Paths palette:

Choose Window > Paths.

To select or deselect a path in the palette:

Do one of the following:

- To select a path, click the path name in the Paths palette. Only one path can be selected at a time.

- To deselect a path, click in the blank area of the Paths palette or press Esc.

To change the size of path thumbnails:

1 Choose Palette Options from the Paths palette menu.

2 Select a size, or select None to turn off the display of thumbnails.

To change a path's stacking order:

1 Select the path in the Paths palette.

2 Drag the path up or down in the Paths palette. When the heavy black line appears in the desired location, release the mouse button.

Note: *You cannot change the order of vector masks or working paths in the Paths palette.*

Creating a work path (Photoshop)

A *work path* is a temporary path that appears in the Paths palette and defines the outline of a shape. You can use paths in several ways:

- You can use a path as a vector mask to hide areas of a layer. (See "Masking layers" on page 408.)

- You can convert a path to a selection. For more information, see "Converting between paths and selection borders (Photoshop)" on page 310.

- You can edit a path to change its shape. For more information, see "Managing paths (Photoshop)" on page 308.

- You can designate a saved path as a clipping path to make part of an image transparent when exporting the image to a page-layout or vector-editing application.

  Create a new path in the Paths palette before you begin drawing to automatically save the work path as a named path.

To create a new work path:

1 Select a shape tool or a pen tool, and click the Paths button 🔳 in the options bar.

2 Set tool-specific options, and draw the path. For more information, see "Using the shape tools" on page 290 and "Using the pen tools (Photoshop)" on page 295.

3 Draw additional path components if desired. You can easily switch between drawing tools by clicking a tool button in the options bar. Choose a path area option to determine how overlapping path components intersect:

- Add to Path Area 🔳 to add the new area to overlapping path areas.

- Subtract from Path Area 🔳 to remove the new area from the overlapping path area.

- Intersect Path Areas 🔲 to restrict the path to the intersection of the new area and the existing area.

- Exclude Overlapping Path Areas 🔲 to exclude the overlap area in the consolidated path.

💡 Use the following keyboard shortcuts while drawing with a shape tool: Hold down Shift to temporarily select the Add to Path Area option; hold down Alt (Windows) or Option (Mac OS) to temporarily select the Subtract from Path Area option.

About anchor points, direction lines, direction points, and components

A path consists of one or more straight or curved segments. *Anchor points* mark the endpoints of the path segments. On curved segments, each selected anchor point displays one or two *direction lines*, ending in *direction points*. The positions of direction lines and points determine the size and shape of a curved segment. Moving these elements reshapes the curves in a path.
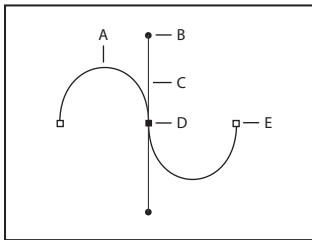
A path
A. Curved line segment **B.** Direction point **C.** Direction line **D.** Selected anchor point
E. Unselected anchor point

A path can be *closed*, with no beginning or end (for example, a circle), or *open*, with distinct *endpoints* (for example, a wavy line).

Smooth curves are connected by anchor points called *smooth points.* Sharply curved paths are connected by *corner points.*
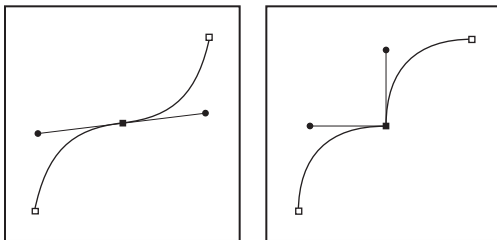
Smooth point, and corner point

When you move a direction line on a smooth point, the curved segments on both sides of the point adjust simultaneously. By comparison, when you move a direction line on a corner point, only the curve on the same side of the point as the direction line is adjusted.
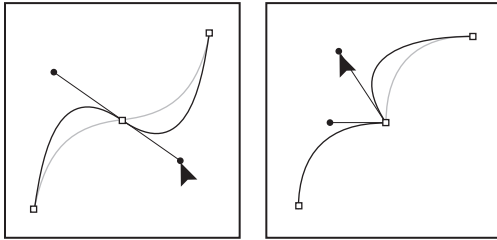
Adjusting a smooth point, and a corner point

A path does not have to be all one connected series of segments. It can contain more than one distinct and separate *path components*. Each shape in a shape layer is a path component, as described by the layer's clipping path.

Separate path components selected

Selecting paths (Photoshop)

Selecting a path component or path segment displays all of the anchor points on the selected portion, including any direction lines and direction points if the selected segment is curved. Direction points appear as filled circles, selected anchor points as filled squares, and unselected anchor points as hollow squares.

To select a path:

1 Do one of the following:

• To select a path component (including a shape in a shape layer), select the Path Selection tool ▶, and click anywhere inside the path component. If a path consists of several path components, only the path component under the pointer is selected.

 To display the bounding box along with the selected path, select Show Bounding Box in the options bar.

- To select a path segment, select the Direct Selection tool ▶, and click one of the segment's anchor points or drag a marquee over part of the segment.

Drag a marquee to select segments.

2 To select additional path components or segments, select the Path Selection tool or the Direct Selection tool, and then hold down Shift while selecting additional paths or segments.

💡 When the Direct Selection tool is selected, you can select the entire path or path component by Alt-clicking (Windows) or Option-clicking (Mac OS) inside the path. To activate the Direct Selection tool when any other tool is selected, position the pointer over an anchor point, and press Ctrl (Windows) or Command (Mac OS).

To change the overlap mode for the selected path component:

Using the Path Selection tool ▶, drag a marquee to select existing path areas, and then choose a shape area option in the options bar:

- Add to Shape Area ⬛ to add the path area to overlapping path areas
- Subtract from Shape Area ⬛ to remove the path area from overlapping path areas
- Intersect Shape Areas ⬛ to restrict the area to the intersection of the selected path area and overlapping path areas
- Exclude Overlapping Shape Areas ⬛ to exclude the overlap area

To show or hide the selected path component:

Do one of the following:

- Choose View > Show > Target Path.
- Choose View > Extras. This command also shows or hides a grid, guides, selection edges, annotations, and slices.

Moving, reshaping, and deleting path segments

You can move, reshape, or delete individual segments in a path, and you can add or delete anchor points to change the configuration of segments.

Note: *You can also apply a transformation, such as scaling, rotating, flipping, or distorting, to a segment or anchor point. See "Applying transformations" on page 266.*

To move a straight segment:

1 Select the Direct Selection tool ▶, and select the segment you want to adjust. To adjust the angle or length of the segment, select an anchor point.

2 Drag the selected segment to its new position.

To move a curved segment:

1 Select the Direct Selection tool ▶, and select the points or segments you want to move. Be sure to select both points anchoring the segment.

2 Drag the selected anchor points or segments to new positions. Hold down Shift as you drag to constrain the movement to multiples of 45°.
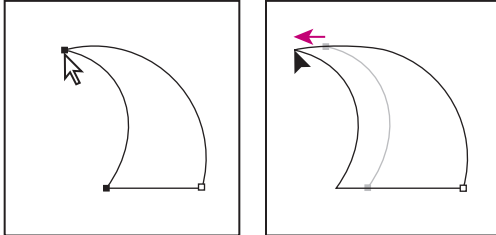
Select points anchoring a curve. Then drag to move the curve.

To reshape a curved segment:

1 Select the Direct Selection tool ▶, and select the curved segment you want to adjust. Direction lines appear for that segment.

2 Adjust the curve:

• To adjust the position of the segment, drag the segment.
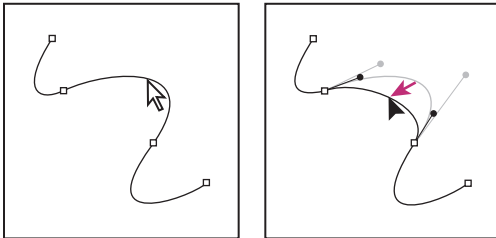
Click to select the curve segment. Then drag to adjust.

• To adjust the shape of the segment on either side of a selected anchor point, drag the anchor point or the direction point. Hold down Shift as you drag to constrain movement to multiples of 45°.
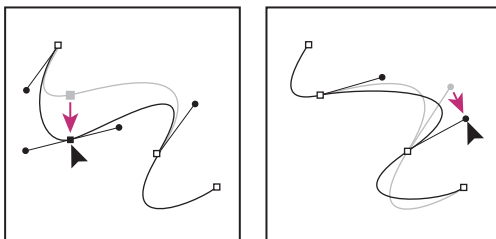
Drag the anchor point, or drag the direction point.

To delete a segment:

1 Select the Direct Selection tool ▸, and select the segment you want to delete.

2 Press Backspace (Windows) or Delete (Mac OS) to delete the selected segment. Pressing Backspace or Delete again erases the rest of the path component.

Moving, reshaping, copying, and deleting path components

You can reposition a path component (including a shape in a shape layer) anywhere within an image. You can copy components within an image or between two Photoshop images. Using the Path Selection tool, you can merge overlapping components into a single component. All vector objects, whether they are described by a saved path, a work path, or a vector mask, can be moved, reshaped, copied, or deleted.

You can also use the Copy and Paste commands to duplicate vector objects between a Photoshop image and an image in another application, such as Adobe Illustrator.

To move a path or path component:

1 Select the path name in the Paths palette, and use the Path Selection tool ▸ to select the path in the image. To select multiple path components, Shift-click each additional path component to add it to the selection.

2 Drag the path to its new location. If you move any part of a path beyond the canvas boundaries, the hidden part of the path is still available.
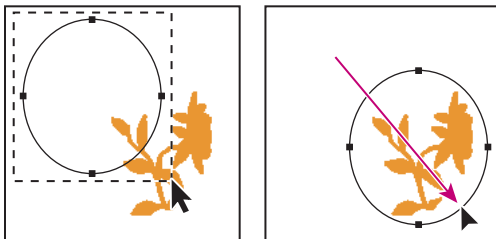
Dragging a path to a new location

Note: If you drag a path so that the move pointer is over another open image, the path will be copied to that image.

To reshape a path component:

1 Select the path name in the Paths palette, and use the Direct Selection tool ▸ to select an anchor point in the path.

2 Drag the point or its handles to a new location. (See "Adding, deleting, and converting anchor points" on page 307.)

To merge overlapping path components:

1 Select the path name in the Paths palette, and select the Path Selection tool ▸.

2 Click Combine in the options bar to create a single component from all overlapping components.

To copy a path component or path:

Do any of the following:

* To copy a path component as you move it, select the path name in the Paths palette, and click a path component with the Path Selection tool ▸. Then Alt-drag (Windows) or Option-drag (Mac OS) the selected path.

* To copy a path without renaming it, drag the path name in the Paths palette to the New Path button ▱ at the bottom of the palette.

* To copy and rename a path, Alt-drag (Windows) or Option-drag (Mac OS) the path in the Paths palette to the New Path button at the bottom of the palette. Or select the path to copy, and choose Duplicate Path from the Paths palette menu. Enter a new name for the path in the Duplicate Path dialog box, and click OK.

* To copy a path or path component into another path, select the path or path component you want to copy, and choose Edit > Copy. Then select the destination path, and choose Edit > Paste.

To copy path components between two Adobe Photoshop files:

1 Open both images.

2 Use the Path Selection tool ▸ to select the entire path or the path components in the source image you want to copy.

3 To copy the path component, do any of the following:

* Drag the path component from the source image to the destination image. The path component is copied to the active path in the Paths palette.

* In the source image, select the path's name in the Paths palette and choose Edit > Copy to copy the path. In the destination image, choose Edit > Paste. You can also use this method to combine paths in the same image.

* To paste the path component into the destination image, select the path component in the source image, and choose Edit > Copy. In the destination image, choose Edit > Paste.

To delete a path component:

1 Select the path name in the Paths palette, and click a path component with the Path Selection tool ▸.

2 Press backspace (Windows) or Delete (Mac OS) to delete the selected path component.

Aligning and distributing path components

You can both align and distribute path components that are described in a single path. For example, you can align the left edges of several shapes contained in a single layer or distribute several components in a work path along their horizontal centers.

Note: *To align shapes that are on separate layers, use the move tool. (See "Moving selections and layers within an image" on page 241.)*

To align components:

Use the Path Selection tool ▶ to select the components you want to align, and select one of the alignment options from the options bar: Top ⬚, Vertical Center ⬚, Bottom ⬚, Left ⬚, Horizontal Center ⬚, or Right ⬚.

To distribute components:

Select at least three components you want to distribute, and then select one of the distribute options from the options bar: Top ⬚, Vertical Center ⬚, Bottom ⬚, Left ⬚, Horizontal Center ⬚, or Right ⬚.

Adding, deleting, and converting anchor points

The Add Anchor Point and Delete Anchor Point tools let you add and delete anchor points on a shape. The convert direction point tool lets you convert a smooth curve to a sharp curve or to a straight segment, and vice versa. If you have selected Auto Add/Delete in the options bar for the Pen tool or Freeform Pen tool, when you click a line segment, a point is added, and when you click an existing point, it is deleted.

To add an anchor point:

1 Select the Add Anchor Point tool ⬚, and position the pointer on the path where you want the anchor point added (a plus sign appears next to the pointer).

2 Do one of the following:

• To add an anchor point without changing the shape of the segment, click the path.

• To add an anchor point and change the shape of the segment, drag to define direction lines for the anchor point.

To delete an anchor point:

1 Select the Delete Anchor Point tool ⬚, and position the pointer on the anchor point you want deleted (a minus sign appears next to the pointer).

2 Delete the anchor point:

• Click the anchor point to delete it and to reshape the path to fit the remaining anchor points.

• Drag the anchor point to delete it and to change the shape of the segment.

To convert between a smooth point and a corner point:

1 Select the Convert Point tool ⬚, and position the pointer over the anchor point you want changed.

💡 To activate the Convert Point tool while the Direct Selection tool is selected, position the pointer over an anchor point, and press Ctrl+Alt (Windows) or Command+Option (Mac OS).

2 Convert the point:

• To convert a smooth point to a corner point without direction lines, click the smooth anchor point.

- To convert a smooth point to a corner point with direction lines, make sure the direction lines are visible. Then drag a direction point to break the pair of direction lines.
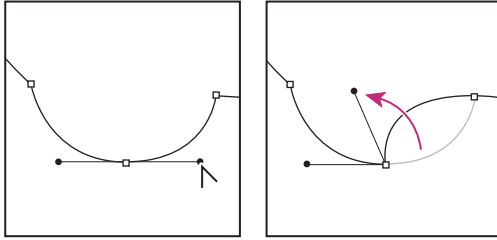
Drag direction point to break direction lines.

- To convert a corner point to a smooth point, drag away from the corner point to make direction lines appear.
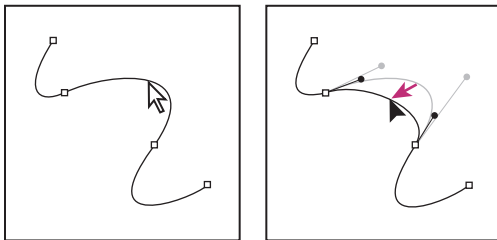
Click to create a corner point. Drag to create a smooth point.

Managing paths (Photoshop)

When you use a pen or shape tool to create a work path, the new path appears as the Work Path in the Paths palette. The Work Path is temporary; you must save it to avoid losing its contents. If you deselect the Work Path without saving it and start drawing again, a new path will replace the existing one.

When you use a pen or shape tool to create a new shape layer, the new path appears as a vector mask in the Paths palette. Vector masks are linked to their parent layer; you must select the parent layer in the Layers palette in order to list the clipping path in the Paths palette. You can remove a clipping path from a layer and convert a clipping path to a rasterized mask. For more information, see "Creating and editing vector masks" on page 411.

Paths saved with an image appear when you open it again. In Windows, the Photoshop, JPEG, JPEG 2000, DCS, EPS, PDF, and TIFF formats support paths. In Mac OS, all available file formats support paths.
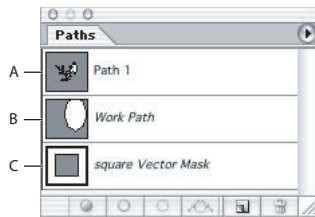
Paths palette
A. Saved path **B.** Temporary Work Path **C.** Vector mask path (appears only when shape layer is selected)

Note: *Paths in formats other than those listed here generally don't survive a transition from Mac OS to Windows and back to Mac OS.*

To create a new path in the Paths palette:

Do one of the following:

- To create a path without naming it, click the New Path button ▣ at the bottom of the Paths palette.

- To create and name a path, make sure no work path is selected. Choose New Path from the Paths palette menu, or Alt-click (Windows) or Option-click (Mac OS) the New Path button at the bottom of the palette. Enter a name for the path in the New Path dialog box, and click OK.

To save a work path:

Do one of the following:

- To save without renaming, drag the *Work Path* name to the New Path button ▣ at the bottom of the Paths palette.

- To save and rename, choose Save Path from the Paths palette menu, enter a new path name in the Save Path dialog box, and click OK.

To rename a saved path:

Double-click the path's name in the Paths palette, type a new name, and press Enter (Windows) or Return (Mac OS).

To delete a path:

1 Click the path name in the Paths palette.

2 Do one of the following:

- Drag the path to the Trash button 🗑 at the bottom of the Paths palette.

- Choose Delete Path from the Paths palette menu.

- Click the Trash button at the bottom of the Paths palette, and click Yes.

💡 To delete a path without being asked to confirm, Alt-click (Windows) or Option-click (Mac OS) the Trash button at the bottom of the Paths palette.

Converting between paths and selection borders (Photoshop)

Because of their smooth outlines, you can convert paths into precise selection borders. You also can convert selection borders into paths, using the Direct Selection tool ▹ for fine-tuning.

Converting paths to selection borders

You can define any closed path as a selection border. A closed path can be added to, subtracted from, or combined with the current selection.

To convert a path to a selection border using the current Make Selection settings:

1 Select the path in the Paths palette.

2 To convert the path, do one of the following:

• Click the Load Path as a Selection button ◌ at the bottom of the Paths palette.

• Ctrl-click (Windows) or Command-click (Mac OS) the path thumbnail in the Paths palette.

To convert a path to a selection border and specify settings:

1 Select the path in the Paths palette.

2 Do one of the following:

• Alt-click (Windows) or Option-click (Mac OS) the Load Path as a Selection button ◌ at the bottom of the Paths palette.

• Alt-drag (Windows) or Option-drag (Mac OS) the path to the Load Path as a Selection button.

• Choose Make Selection from the Paths palette menu.

3 In the Make Selection dialog box, select a Rendering option:

• Feather Radius to define how far inside and outside the selection border the feather edge extends. Enter a value in pixels.

• Anti-aliased to create a finer transition between the pixels in the selection and the surrounding pixels. Make sure the Feather Radius is set to 0.

For more information on these options, see <u>"Softening the edges of a selection" on page 239</u>.

4 Select an Operation option:

• New Selection to select only the area defined by the path.

• Add to Selection to add the area defined by the path to the original selection.

• Subtract from Selection to remove the area defined by the path from the current selection.

• Intersect with Selection to select the area common to both the path and the original selection. If the path and selection do not overlap, nothing is selected.

5 Click OK.

Converting selection borders to paths

Any selection made with a selection tool can be defined as a path.

The Make Work Path command eliminates any feathering applied to the selection. It can also alter the shape of the selection, depending on the complexity of the path and the tolerance value you choose in the Make Work Path dialog box.

To convert a selection to a path using the Make Work Path settings:

Make the selection, and click the Make Work Path button ⟨icon⟩ at the bottom of the Paths palette.

To convert a selection to a path and specify settings:

1 Make the selection, and do one of the following:

• Alt-click (Windows) or Option-click (Mac OS) the Make Work Path button ⟨icon⟩ at the bottom of the Paths palette.

• Choose Make Work Path from the Paths palette menu.

2 Enter a Tolerance value or use the default value in the Make Work Path dialog box.

Tolerance values can range from 0.5 to 10 pixels and determine how sensitive the Make Work Path command is to slight changes in the selection shape. The higher the tolerance value, the fewer the anchor points used to draw the path and the smoother the path. If the path is used as a clipping path and you have problems printing the image, use a higher tolerance value. (See .)

3 Click OK. The path appears at the bottom of the Paths palette.

Adding color to paths (Photoshop)

You can add color values to a path by filling or stroking it. Filling a path is the same as creating a rasterized shape using the shape tools. (See .)

Filling paths with color

The Fill Path command lets you fill a path with pixels using a specified color, a state of the image, a pattern, or a fill layer.
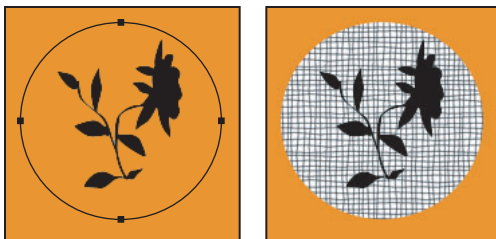
Path selected (left), and filled (right)

Important: *When you fill a path, the color values appear on the active layer. Make sure the layer you want is active before beginning. You cannot fill a path when a layer mask or text layer is active.*

To fill a path using the current Fill Path settings:

1 Select the path in the Paths palette.

2 Click the Fill Path button ◔ at the bottom of the Paths palette.

To fill a path and specify options:

1 Select the path in the Paths palette.

2 Fill the path:

• Alt-click (Windows) or Option-click (Mac OS) the Fill Path button at the bottom of the Paths palette.

• Alt-drag (Windows) or Option-drag (Mac OS) the path to the Fill Path button.

• Choose Fill Path from the Paths palette menu. If the selected path is a path component, this command changes to Fill Subpath.

3 For Use, choose the contents for the fill. (See "Filling and stroking selections and layers" on page 344.)

4 Specify an opacity for the fill. To make the fill more transparent, use a low percentage. A setting of 100% makes the fill opaque.

5 Choose a blending mode for the fill. (See "Selecting a blending mode" on page 331.)

The Mode list includes a Clear mode that lets you erase to transparency. You must be working in a layer other than the background to use this option.

6 Choose Preserve Transparency to limit the fill to layer areas that contain pixels. (See "Locking layers" on page 380.)

7 Select a Rendering option:

• Feather Radius to define how far inside and outside the selection border the feather edge extends. Enter a value in pixels.

• Anti-aliased to create a finer transition between the pixels in the selection and the surrounding pixels by partially filling the edge pixels of the selection.

For more information on these options, see "Softening the edges of a selection" on page 239.

8 Click OK.

Stroking to paint path borders

The Stroke Path command lets you paint the border of a path. The Stroke Path command allows you to create a paint stroke (using the current settings for your painting tools) that follows any path. This is completely different than the Stroke layer effect, which doesn't mimic the effect of any of the painting tools.

Path selected (left), and stroked (right)

Important: *When you stroke a path, the color values appear on the active layer. Make sure the layer you want is active before beginning. You cannot stroke a path when a layer clipping mask or text layer is active.*

To stroke a path using the current Stroke Path settings:

1 Select the path in the Paths palette.

2 Click the Stroke Path button ⊙ at the bottom of the Paths palette. Each click of the Stroke Path button builds up the opacity of the stroke and in some cases makes it look thicker.

To stroke a path and specify options:

1 Select the path in the Paths palette.

2 Select the painting or editing tool you want to use to stroke the path. Set the tool options, and specify a brush from the options bar. You must specify the tool's settings before opening the Stroke Path dialog box. For information on specific tool settings, see "Using the Smudge tool (Photoshop)" on page 275 and "Using the painting tools (Photoshop)" on page 314.

3 To stroke the path, do one of the following:

• Alt-click (Windows) or Option-click (Mac OS) the Stroke Path button ⊙ at the bottom of the Paths palette.

• Alt-drag (Windows) or Option-drag (Mac OS) the path to the Stroke Path button.

• Choose Stroke Path from the Paths palette menu. If the selected path is a path component, this command changes to Stroke Subpath.

4 If you did not select a tool in step 2, choose a tool from the Stroke Path dialog box.

5 Click OK.

Painting

Using the painting tools (Photoshop)

Painting involves changing the colors of pixels using a painting tool. You can apply colors gradually, with soft edges and transitions, and manipulate individual pixels using powerful filter effects.

Photoshop provides the Brush tool and the Pencil tool to let you paint with the current foreground color. By default, the Brush tool creates soft strokes of color and the Pencil tool creates hard-edged, freehand lines. However, you can change these default characteristics by resetting the tool's brush options. You can also use the Brush tool as an airbrush to apply sprays of color to an image.

To use the Brush tool or Pencil tool:

1 Specify a foreground color. (See "Choosing foreground and background colors" on page 351.)

2 Select the Brush tool ✏ or Pencil tool ✏.

3 Do the following in the options bar:

• Choose a brush and set brush options. (See "Working with brushes" on page 317.)

• Choose a bending mode from the Mode menu. (See "Selecting a blending mode" on page 331.)

• Specify an opacity by dragging the Opacity slider. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

• For the Brush tool, specify a flow rate by dragging the Flow slider. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

• (Photoshop) Click the Airbrush button ✍ to use the brush as an airbrush. (See "Creating airbrush effects (Photoshop)" on page 328.)

• For the Pencil tool, select Auto Erase to paint the background color over areas containing the foreground color. (See "Using the Auto Erase option" on page 337.)

4 Do one or more of the following:

• Drag in the image to paint.

• To draw a straight line, click a starting point in the image. Then hold down Shift, and click an ending point.

• When using the Brush tool as an airbrush, hold down the mouse button without dragging to build up color.

Using the painting tools

The Paintbrush tool and the Pencil tool let you paint the current foreground color on an image. The tools create different effects:

- The Paintbrush tool creates soft strokes of color.

- The Pencil tool creates hard-edged freehand lines.

To use the Paintbrush tool, Pencil tool:

1 Specify a foreground color. (See "Choosing foreground and background colors" on page 351.)

2 Select the Paintbrush tool ✎ or Pencil tool ✎.

3 Do the following in the options bar:

- Choose a preset brush. (See "Working with brushes" on page 317.)

- Specify a blending mode. (See "Selecting a blending mode" on page 331.)

- Specify an opacity. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

- For the Pencil tool, select Auto Erase to paint the background color over areas containing the foreground color. (See "Using the Auto Erase option" on page 337.)

4 Do one or more of the following:

- Drag in the image to paint.

- To draw a straight line, click a starting point in the image. Then hold down Shift, and click an ending point.

Using the Art History Brush tool (Photoshop)

The Art History Brush tool lets you paint with stylized strokes, using the source data from a specified history state or snapshot. By experimenting with different paint style, size, and tolerance options, you can simulate the texture of painting with different colors and artistic styles.

Like the History Brush tool, the Art History Brush tool uses a specified history state or snapshot as the source data. The History Brush tool, however, paints by recreating the specified source data, while the Art History Brush tool uses that data along with the options you set to create different colors and artistic styles.

💡 For a variety of visual effects, experiment with applying filters or filling an image with a solid color before painting with the Art History Brush tool. Also try increasing the size of the image by a factor of 4 to soften the details.
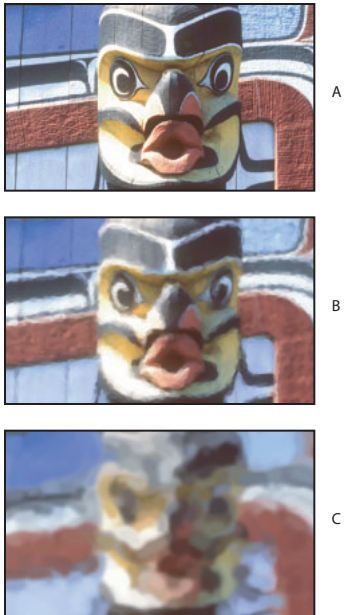
Example of using the Art History Brush tool
A. Original **B.** Using a small brush **C.** Using a large brush

To use the Art History Brush tool:

1 In the History palette, click the left column of the state or snapshot to use as the source for the Art History Brush tool. A brush icon appears next to the source history state.

2 Select the Art History Brush tool 🖌.

3 Do the following in the options bar:

• Choose a brush and set brush options. (See "Working with brushes" on page 317.)

• Specify a blending mode and opacity for the paint. (See "Setting options for painting and editing tools" on page 331.)

• Choose an option from the Style menu to control the shape of the paint stroke.

• For Area, enter a value to specify the area covered by the paint strokes. The greater the size, the larger the covered area and the more numerous the strokes.

• For Tolerance, enter a value or drag the slider to limit the regions where paint strokes can be applied. A low tolerance lets you paint unlimited strokes anywhere in the image. A high tolerance limits paint strokes to areas that differ considerably from the color in the source state or snapshot.

4 Drag in the image to paint.

Working with brushes

Working with brushes is an important part of using the painting and editing tools. The brush you select determines many characteristics of the resulting stroke. Photoshop and ImageReady provide a variety of preset brushes to fill a wide range of uses. In Photoshop, you can also create custom brushes using the Brushes palette.

Using the Brushes palette (Photoshop)

The Brushes palette lets you select preset brushes and design custom brushes.
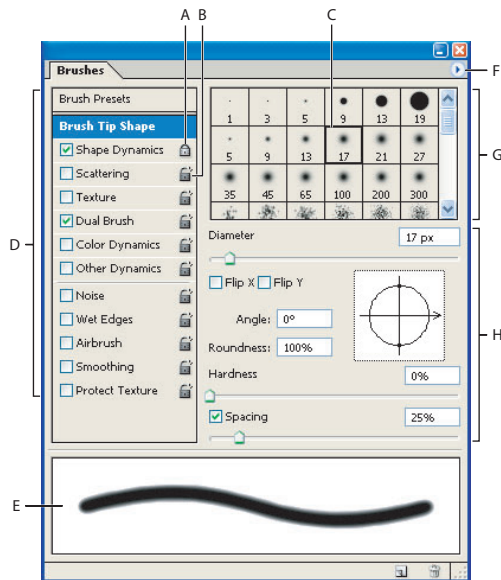
Brushes palette with Brush Tip Shape options displayed
A. Locked **B.** Unlocked **C.** Selected brush tip **D.** Brush settings **E.** Brush stroke preview **F.** Pop-up menu **G.** Brush tip shapes (available when Brush Tip Shape option is selected) **H.** Brush options

Displaying the Brushes palette Choose Window > Brushes, or click the palette button ▤ on the right side of the options bar if you have a painting tool, erasing tool, toning tool, or focus tool selected.

Displaying options in the Brushes palette Select an item name on the left side of the palette. The available options for the selected item appear on the right side of the palette.

   Click the check box to the left of the item name to enable or disable the item without viewing its options.

Selecting preset brushes

The Brush pop-up palette in the options bar for the painting and editing tools lets you view, select, and load preset brushes. In Photoshop, you can also use the Brushes palette to view, select, and load preset brushes.

To display the Brush pop-up palette:

1 Select a painting tool or editing tool.

2 Click the brush sample in the options bar.

To select a preset brush:

1 Click a brush in the Brush pop-up palette or Brushes palette.

Note: If you are using the Brushes palette, be sure that Brush Presets on the left side of the palette is selected to view the loaded presets.

2 (Photoshop) Specify a diameter for the brush by dragging the slider or entering a value. If the brush has a dual tip, both the primary and dual brush tips are scaled. (See "Creating dual brushes (Photoshop)" on page 325.)

3 (Photoshop) Click Use Sample Size to use the original diameter of the brush tip. This option is available only if the brush tip shape is based on a sample.

To change how preset brushes are displayed (Photoshop):

Choose a display option from the Brush pop-up palette menu or Brushes palette menu:

• Text Only to view the brushes as a list.

• Small or Large Thumbnail to view the brushes as thumbnails.

• Small or Large List to view the brushes as a list with thumbnails.

• Stroke Thumbnail to view a sample brush stroke with each brush thumbnail.

To dynamically preview brush strokes in the Brushes palette, make sure that Brush Preset is selected, and then position the pointer over a brush until the tool tip appears. Move the pointer over different brushes. The preview area at the bottom of the palette will display sample brush strokes.

To load a library of preset brushes:

Choose one of the following from the Brush pop-up palette menu or Brushes palette menu:

• Load Brushes to add a library to the current list. Select the library file you want to use, and click Load.

• Replace Brushes to replace the current list with a different library. Select the library file you want to use, and click Load.

• A library file (displayed at the bottom of the palette menu). Click OK to replace the current list, or click Append to append the current list.

Note: You can also use the Preset Manager to load and reset brush libraries. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.

To return to the default library of preset brushes:

Choose Reset Brushes from the Brush pop-up palette menu or Brushes palette menu. You can either replace the current list or append the default library to the current list.

Customizing brush tips (Photoshop)

You can customize brush tips by editing their options and create new brush tip shapes by sampling pixels in an image. The brush tip you select determines the shape, diameter, and other characteristics of a brush mark.

Selection sampled to create a custom brush (left), and brush stroke using the custom brush (right)

To create a new brush tip shape:

1 Use any selection tool to select a part of an image to use as a custom brush. Feather should be set to 0 pixels if you want to create a brush with a sharp edge. The brush shape can be up to 2500 pixels by 2500 pixels in size.

💡 If you want to define a brush with soft edges, select pixels with gray values. (Colored brush shapes appear as gray values.)

2 Choose Edit > Define Brush Preset.

3 Name the brush, and click OK.

To lock brush tip shape attributes:

To lock a brush tip, click the unlock icon . To unlock the tip, click the lock icon .

Setting brush tip shape options:

You can customize the tip shape of a brush. After selecting a brush tool, select Brush Tip Shape on the left side of the Brushes palette, and then select the brush tip you want to customize using one or more of the following options:

Diameter Controls the size of the brush. Enter a value in pixels or drag the slider.
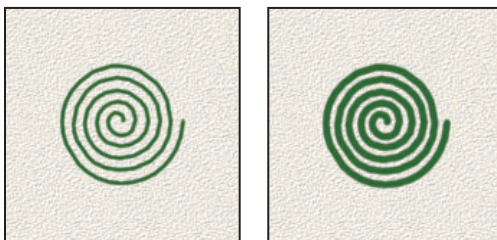
Brush strokes with different diameter values

Use Sample Size Resets the brush to its original diameter. This option is available only if the brush tip shape was created by sampling pixels in an image.

Flip X   Changes the direction of a brush tip on its X-axis.
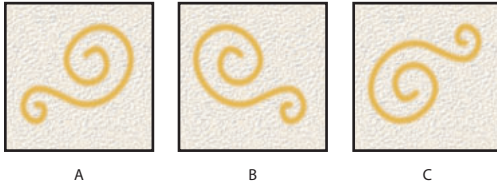
Flipping a brush tip on its X axis
A. Brush tip in its default position   **B.** Flip X selected   **C.** Flip X and Flip Y selected

Flip Y   Changes the direction of a brush tip on its Y-axis.
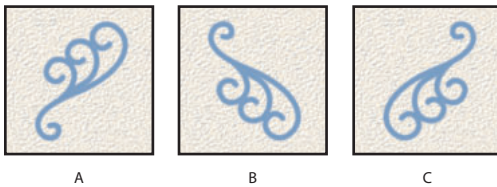
Flipping a brush tip on its Y axis
A. Brush tip in its default position   **B.** Flip Y selected   **C.** Flip Y and Flip X selected

Angle   Specifies the angle by which an elliptical or sampled brush's long axis is rotated from horizontal. Type a value in degrees, or drag the horizontal axis in the preview box.
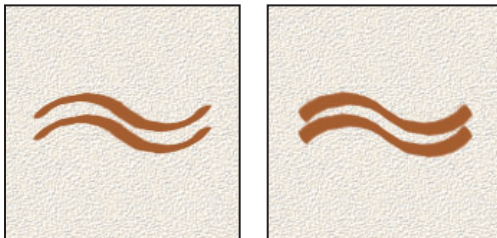
Angled brushes create a chiseled stroke

Roundness   Specifies the ratio between the brush's short and long axes. Enter a percentage value, or drag the points in the preview box. A value of 100% indicates a circular brush, a value of 0% indicates a linear brush, and intermediate values indicate elliptical brushes.
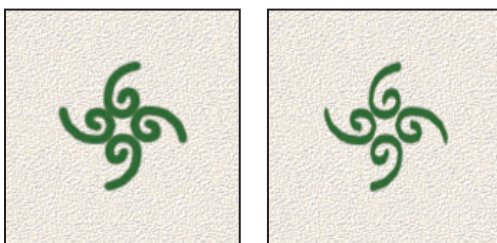
Adjusting roundness to compress a brush tip shape

Hardness Controls the size of the brush's hard center. Type a number, or use the slider to enter a value that is a percentage of the brush diameter. You can't change the hardness of sampled brushes.
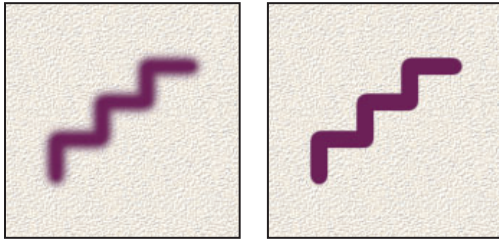
Brush strokes with different hardness values

Spacing Controls the distance between the brush marks in a stroke. To change the spacing, type a number, or use the slider to enter a value that is a percentage of the brush diameter. When this option is deselected, the speed of the cursor determines the spacing.
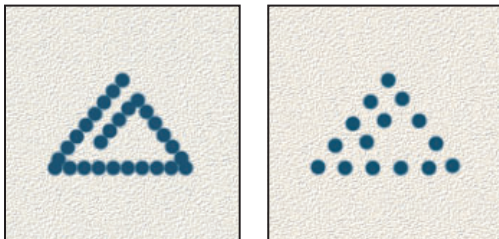
Increasing the spacing makes the brush skip

💡 While using a preset brush, press the [key to decrease the brush width; press the] key to increase the width. For hard round, soft round, and calligraphic brushes, press Shift+ the [key to decrease the brush hardness; press Shift+ the] key to increase the brush hardness.

About brush dynamics (Photoshop)

The Brushes palette provides many options for adding dynamic (or changing) elements to preset brush tips. For example, you can set options that vary the size, color, and opacity of brush marks over the course of a stroke.

You work with two components when adding dynamics elements to a brush:

* Jitter percentages specify the randomness of dynamic elements. At 0%, an element does not change over the course of a stroke; at 100%, an element has the maximum amount of randomness.

* Options in the Control pop-up menus specify how you want to control the variance of dynamic elements. You can choose to not control the variance of an element, to fade an element over the specified number of steps, or to vary an element based of pen pressure, pen tilt, or position of the pen thumbwheel.

Note: Pen controls are available only when you're using a pressure-sensitive digitizing tablet such as the Wacom® tablet. A warning icon appears if you select a pen control but have not installed a tablet.

Specifying brush shape dynamics (Photoshop)

Shape dynamics determine the variance of brush marks in a stroke.

Brush stokes without shape dynamics and with shape dynamics

To edit shape dynamics for a brush:

1 In the Brushes palette, select Shape Dynamics on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Set one or more of the following options:

Size Jitter and Control Specifies how the size of brush marks vary in a stroke. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify the maximum percentage of jittering, type a number or use the slider to enter a value. To specify how you want to control the size variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the size variance of brush marks.

- Fade to fade the size of brush marks between the initial diameter and the minimum diameter in the specified number of steps. Each step is equal to one mark of the brush tip. The value can range from 1 to 9999. For example, entering 10 steps produces a fade in 10 increments.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the size of brush marks between the initial diameter and the minimum diameter based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Minimum Diameter Specifies the minimum percentage by which brush marks can scale when Size Jitter or Size Control is enabled. Type a number, or use the slider to enter a value that is a percentage of the brush tip diameter.

Tilt Scale Specifies the scale factor applied to the height of the brush prior to rotation when Size Control is set to Pen Tilt. Type a number, or use the slider to enter a value that is a percentage of the brush diameter.

Angle Jitter and Control Specifies how the angle of brush marks varies in a stroke. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify the maximum percentage of jittering, type a number or use the slider to enter a value that is a percentage of 360 degrees. To specify how you want to control the angle variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the angle variance of brush marks.

- Fade to fade the angle of brush marks between 0 and 360 degrees in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the angle of brush marks between 0 and 360 degrees based on the pen pressure, pen tilt, or position of the pen thumbwheel.

- Initial Direction to base the angle of brush marks on the initial direction of the brush stroke.

- Direction to base the angle of brush marks on the direction of the brush stroke.

Roundness Jitter and Control Specifies how the roundness of brush marks varies in a stroke. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify the maximum percentage of jittering, type a number or use the slider to enter a percentage indicating the ratio between the brush's short and long axes. To specify how you want to control the roundness variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the roundness variance of brush marks.

- Fade to fade the roundness of brush marks between 100% and the Minimum Roundness value in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the roundness of brush marks between 100% and the Minimum Roundness value based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Minimum Roundness Specifies the minimum roundness for brush marks when Roundness Jitter or Roundness Control is enabled. Type a number, or use the slider to enter a percentage indicating the ratio between the brush's short and long axes.

Specifying brush scattering (Photoshop)

Brush scattering determines the number and placement of marks in a stroke.
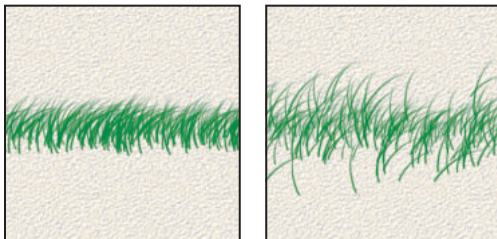
Brush strokes without scattering (left) and with scattering (right)

To edit scattering options for a brush:

1 In the Brushes palette, select Scattering on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Set one or more of the following options:

Scatter and Control Specifies how brush marks are distributed in a stroke. When Both Axes is selected, brush marks are distributed in a radial direction. When Both Axes is deselected, brush marks are distributed perpendicular to the stroke path.

To specify the maximum percentage of scattering, type a number or use the slider to enter a value. To specify how you want to control the scattering variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the scattering variance of brush marks.

- Fade to fade the scattering of brush marks from the maximum scattering to no scattering in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the scattering of brush marks based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Count Specifies the number of brush marks applied at each spacing interval. Type a number, or use the slider to enter a value.

Note: *If you increase the count without increasing the spacing or scattering values, painting performance may decrease.*

Count Jitter and Control Specifies how the number of brush marks varies for each spacing interval. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify the maximum percentage of brush marks applied at each spacing interval, type a number or use the slider to enter a value. To specify how you want to control the count variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the count variance of brush marks.

- Fade to fade the number of brush marks from the Count value to 1 in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the number of brush marks based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Creating textured brushes (Photoshop)

A textured brush uses a pattern to make strokes look as if they are painted on textured canvas.
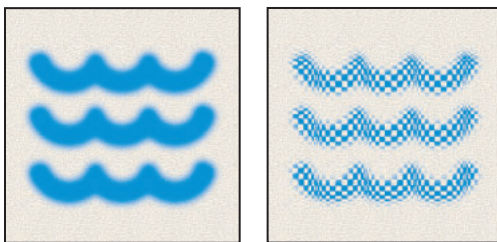
Brush strokes without texture (left) and with texture (right)

To edit texture options for a brush:

1 In the Brushes palette, select Texture on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Click the pattern sample, and select a pattern from the pop-up palette.

3 Set one or more of the following options:

Invert Inverts the high and low points in the texture based on the tones in the pattern. When Invert is selected, the lightest areas in the pattern are the low points in the texture and therefore receive the least paint; the darkest areas in the pattern are the high points in the texture and therefore receive the most paint. When Invert is deselected, the lightest areas in the pattern receive the most paint; the darkest areas in the pattern receive the least paint.

Scale Specifies the scale of the pattern. Type a number, or use the slider to enter a value that is a percentage of the pattern size.

Texture Each Tip Specifies whether or not to render each tip individually as it is painted. When this option is not selected, the Depth variance options are not available.

Mode Specifies the blending mode used to combine the brush and the pattern. (See "Selecting a blending mode" on page 331.)

Depth Specifies how deep the paint penetrates into the texture. Type a number, or use the slider to enter a value. At 100%, the low points in the texture do not receive any paint. At 0%, all points in the texture receive the same amount of paint, therefore hiding the pattern.

Minimum Depth Specifies the minimum depth paint can penetrate when Depth Control is set to Fade, Pen Pressure, Pen Tilt, or Stylus Wheel and Texture Each Tip is selected.

Depth Jitter and Control Specifies how the depth varies when Texture Each Tip is selected. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify the maximum percentage of jitter, type a number or use the slider to enter a value. To specify how you want to control the depth variance of brush marks, choose an option from the Control pop-up menu:

* Off to not control the depth variance of brush marks.

* Fade to fade from the Depth Jitter percentage to the Minimum Depth percentage in the specified number of steps.

* Pen Pressure, Pen Tilt, or Stylus Wheel to vary the depth based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Creating dual brushes (Photoshop)

A dual brush uses two tips to create brush marks. You set options for the primary tip in the Brush Tip Shape section of the Brushes palette. You set options for the secondary tip in the Dual Brush section of the Brushes palette.
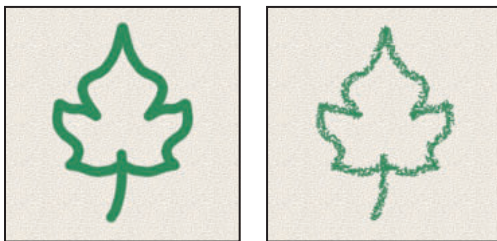
Brush strokes created with a single tip (left) and with dual tips (right)

To edit dual tip options for a brush:

1 In the Brushes palette, select Dual Brush on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Select a blending mode to use when combining brush marks from the primary tip and the dual tip. (See "Selecting a blending mode" on page 331.)

3 Select a tip for the dual brush from the list below the Mode pop-up menu.

4 Set one or more of the following options:

Diameter Controls the size of the dual tip. Enter a value in pixels, drag the slider, or click Use Sample Size to use the original diameter of the brush tip. (The Use Sample Size option is available only if the brush tip shape was created by sampling pixels in an image.)

Spacing Controls the distance between the dual tip brush marks in a stroke. To change the spacing, type a number or use the slider to enter a percentage of the tip diameter.

Scatter Specifies how dual tip brush marks are distributed in a stroke. When Both Axes is selected, dual tip brush marks are distributed in a radial direction. When Both Axes is deselected, dual tip brush marks are distributed perpendicular to the stroke path. To specify the maximum percentage of scattering, type a number or use the slider to enter a value.

Count Specifies the number of dual tip brush marks applied at each spacing interval. Type a number, or use the slider to enter a value.

Specifying color dynamics (Photoshop)

Color dynamics determine how the color of paint changes over the course of a stroke.
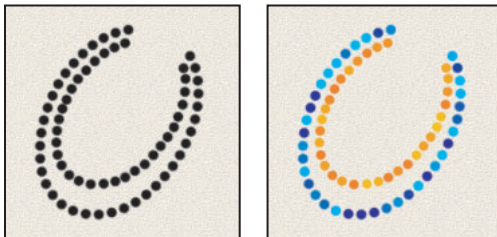
Brush strokes without color dynamics (left) and with color dynamics (right)

To edit color dynamics for a brush:

1 In the Brushes palette, select Color Dynamics on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Set one or more of the following options:

Foreground/Background Jitter and Control Specifies how paint varies between the foreground color and background color. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify a percentage by which the color of the paint can vary, type a number or use the slider to enter a value. To specify how you want to control the color variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the color variance of brush marks.

- Fade to vary the color of paint between the foreground color and the background color in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the color of paint between the foreground color and the background color based on the pen pressure, pen tilt, or position of the pen thumbwheel.

Hue Jitter Specifies a percentage by which the hue of the paint can vary in a stroke. Type a number, or use the slider to enter a value. A lower value changes the hue while maintaining a close proximity to the hue of the foreground color. A higher value increases the difference between hues.

Saturation Jitter Specifies a percentage by which the saturation of the paint can vary in a stroke. Type a number, or use the slider to enter a value. A lower value changes the saturation while maintaining a close proximity to the saturation of the foreground color. A higher value increases the difference between saturation levels.

Brightness Jitter Specifies a percentage by which the brightness of the paint can vary in a stroke. Type a number, or use the slider to enter a value. A lower value changes the brightness while maintaining a close proximity to the brightness of the foreground color. A higher value increases the difference between brightness levels.

Purity Increases or decreases the saturation of the color. Type a number, or use the slider to enter a percentage between –100 and 100. At –100, the color is fully desaturated; at 100, the color is fully saturated.

Specifying paint dynamics (Photoshop)

Paint dynamics determine how paint changes over the course of a stroke.
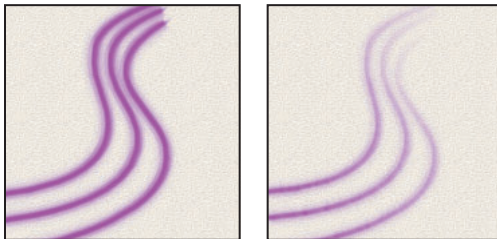
Brush strokes without paint dynamics (left) and with paint dynamics (right)

To edit paint dynamics for a brush:

1 In the Brushes palette, select Other Dynamics on the left side of the palette. Be sure to click the name, rather than the check box, to select the item.

2 Set one or more of the following options:

Opacity Jitter and Control Specifies how the opacity of paint varies in a brush stroke, up to (but not exceeding) the opacity value specified in the options bar. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify a percentage by which the opacity of the paint can vary, type a number or use the slider to enter a value. To specify how you want to control the opacity variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the opacity variance of brush marks.

- Fade to fade the opacity of paint from the opacity value in the options bar to 0 in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the opacity of paint based on the pen pressure, pen tilt, or the position of the pen thumbwheel.

Flow Jitter and Control Specifies how the flow of paint varies in a brush stroke, up to (but not exceeding) the flow value specified in the options bar. For more information, see "About brush dynamics (Photoshop)" on page 321.

To specify a percentage by which the flow of the paint can vary, type a number or use the slider to enter a value. To specify how you want to control the flow variance of brush marks, choose an option from the Control pop-up menu:

- Off to not control the flow variance of brush marks.

- Fade to fade the flow of paint from the flow value in the options bar to 0 in the specified number of steps.

- Pen Pressure, Pen Tilt, or Stylus Wheel to vary the flow of paint based on the pen pressure, pen tilt, or the position of the pen thumbwheel.

Adding noise to brush strokes (Photoshop)

The Noise option adds additional randomness to individual brush tips. This option is most effective when applied to soft brush tips (brush tips that contain gray values).

To enable or disable noise in brush strokes:

In the Brushes palette, select Noise on the left side of the palette. A check mark indicates that the option is enabled.

Using wet brush edges (Photoshop)

The Wet Edges option causes paint to build up along the edges of the brush stroke, creating a watercolor effect.

To enable or disable wet brush edges:

In the Brushes palette, select Wet Edges on the left side of the palette. A check mark indicates that the option is enabled.

Creating airbrush effects (Photoshop)

The Airbrush option in the Brushes palette lets you apply gradual tones to an image, simulating traditional airbrush techniques.

Note: The Airbrush option in the Brushes palette corresponds to the Airbrush option in the options bar.

To enable or disable the Airbrush option:

In the Brushes palette, select Airbrush on the left side of the palette. A check mark indicates that the option is enabled.

Smoothing brush strokes (Photoshop)

The Smoothing option produces smoother curves in brush strokes. This option is most effective when you are painting quickly with a stylus; however, it may produce a slight lag time in stroke rendering.

To enable or disable smoothing in brush strokes:

In the Brushes palette, select Smoothing on the left side of the palette. A check mark indicates that the option is enabled.

Protecting texture in brush strokes (Photoshop)

The Protect Texture option applies the same pattern and scale to all brush presets that have a texture. Select this option to simulate a consistent canvas texture when painting with multiple, textured brush tips.

To enable or disable the Protect Texture option:

In the Brushes palette, select Protect Texture on the left side of the palette. A check mark indicates that the option is enabled.

Copying textures between tools (Photoshop)

When you specify a texture for the current tool, you can copy the texture's pattern and scale to all tools that support textures. For example, you can copy the current texture pattern and scale for the Brush tool to the Pencil, Clone Stamp, Pattern Stamp, History Brush, Art History Brush, Eraser, Dodge, Burn, and Sponge tools.

To copy a texture pattern and scale to other painting and editing tools:

Choose Copy Texture to Other Tools from the Brushes palette menu.

Clearing brush options (Photoshop)

You can easily clear all brush options for a tool using the Clear Brush Controls command.

To clear brush options:

Choose Clear Brush Controls from the Brushes palette menu.

Creating and managing preset brushes (Photoshop)

After you customize a brush, you can save it as a preset brush. Preset brushes appear in the Brushes palette, Brush pop-up palette in the options bar, and Preset Manager. You can create libraries of preset brushes, rename preset brushes, and delete preset brushes.
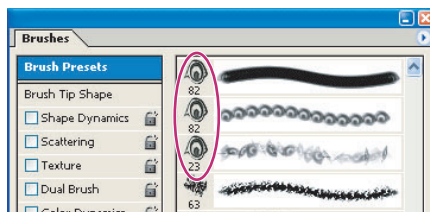
Three preset brushes created from one custom brush

Note: *New preset brushes are saved in a Preferences file so that they persist between editing sessions. If this file is deleted or damaged, or if you reset brushes to the default library, the new presets will be lost. To permanently save new preset brushes, save them in a library.*

To create a new preset brush:

1 Customize a brush.

2 Do one of the following in the Brushes palette or Brush pop-up palette:

• Choose New Brush Preset from the palette menu, enter a name for the preset brush, and click OK.

• Click the Create New Brush button 🔲.

To rename a preset brush:

Do one of the following:

• Select a brush in the Brush pop-up palette or Brushes palette, and choose Rename Brush from the palette menu. Enter a new name for the brush, and click OK.

• If the Brushes palette is set to display brushes as thumbnails, double-click a brush, enter a new name, and click OK.

• If the Brushes palette is set to display brushes as a list or text only, double-click a brush, enter a new name inline, and press Enter (Windows) or Return (Mac OS).

To delete a preset brush:

Do one of the following:

• In the Brush pop-up palette or Brushes palette, select a brush, and choose Delete Brush from the palette menu.

• In the Brush pop-up palette or Brushes palette, Alt-click (Windows) or Option-click (Mac OS) the brush you want to delete.

• In the Brushes palette, select a brush and click the Trash button 🗑, or drag a brush to the Trash button.

To save a set of preset brushes as a library:

1 Choose Save Brushes from the Brush pop-up palette menu or Brushes palette menu.

2 Choose a location for the brush library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the Presets/Brushes folder inside the Photoshop program folder, the library name will appear at the bottom of the Brush pop-up palette menu and Brushes palette menu after you restart Photoshop.

Note: *You can also use the Preset Manager to rename, delete, and save libraries of preset brushes. For more information, see* *"Managing libraries with the Preset Manager (Photoshop)" on page 52*.

Setting options for painting and editing tools

You set options for a painting or editing tool in the options bar.

Selecting a blending mode

The blending mode specified in the options bar controls how pixels in the image are affected by a painting or editing tool. It's helpful to think in terms of the following colors when visualizing a blending mode's effect:

- The *base color* is the original color in the image.
- The *blend color* is the color being applied with the painting or editing tool.
- The *result color* is the color resulting from the blend.

Original Image	Normal, 100% opacity	Normal, 50% opacity	Dissolve, 50% opacity
Behind	Clear	Darken	Multiply
Color Burn	Linear Burn	Lighten	Screen
Color Dodge	Linear Dodge	Overlay	Soft Light
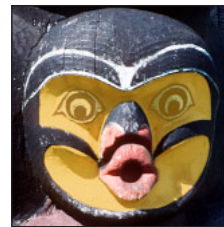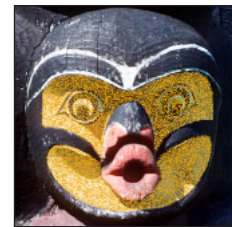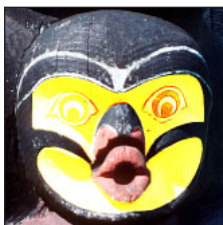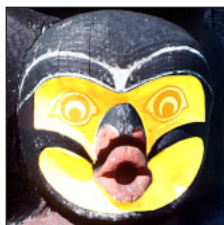
Hard Light
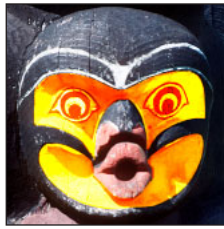
Vivid Light
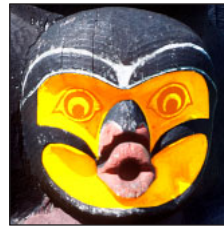
Linear Light

Pin Light

Hard Mix
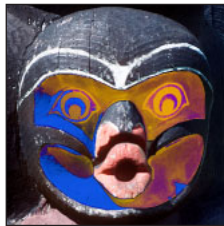
Difference
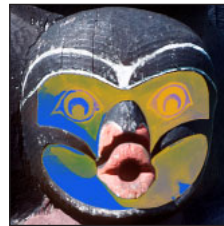
Exclusion

Hue
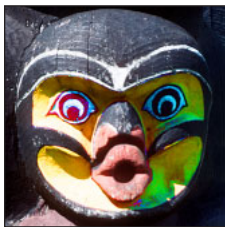
Saturation

Color

Luminosity, 80% opacity

To select a blending mode for a tool:

Choose from the Mode pop-up menu in the options bar.

Normal Edits or paints each pixel to make it the result color. This is the default mode. (Normal mode is called *Threshold* when you're working with a bitmapped or indexed-color image.)

Dissolve Edits or paints each pixel to make it the result color. However, the result color is a random replacement of the pixels with the base color or the blend color, depending on the opacity at any pixel location.

Behind Edits or paints only on the transparent part of a layer. This mode works only in layers with Lock Transparency deselected and is analogous to painting on the back of transparent areas in a sheet of acetate.

Clear Edits or paints each pixel and makes it transparent. This mode is available for the Line tool ╲ (when fill region ▢ is selected), the Paint Bucket tool ◊, the Brush tool ✎, the Pencil tool ✎, the Fill command, and the Stroke command. You must be in a layer with Lock Transparency deselected to use this mode.

Darken Looks at the color information in each channel and selects the base or blend color—whichever is darker—as the result color. Pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change.

Multiply Looks at the color information in each channel and multiplies the base color by the blend color. The result color is always a darker color. Multiplying any color with black produces black. Multiplying any color with white leaves the color unchanged. When you're painting with a color other than black or white, successive strokes with a painting tool produce progressively darker colors. The effect is similar to drawing on the image with multiple magic markers.

Color Burn Looks at the color information in each channel and darkens the base color to reflect the blend color by increasing the contrast. Blending with white produces no change.

Linear Burn Looks at the color information in each channel and darkens the base color to reflect the blend color by decreasing the brightness. Blending with white produces no change.

Lighten Looks at the color information in each channel and selects the base or blend color—whichever is lighter—as the result color. Pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change.

Screen Looks at each channel's color information and multiplies the inverse of the blend and base colors. The result color is always a lighter color. Screening with black leaves the color unchanged. Screening with white produces white. The effect is similar to projecting multiple photographic slides on top of each other.

Color Dodge Looks at the color information in each channel and brightens the base color to reflect the blend color by decreasing the contrast. Blending with black produces no change.

Linear Dodge Looks at the color information in each channel and brightens the base color to reflect the blend color by increasing the brightness. Blending with black produces no change.

Overlay Multiplies or screens the colors, depending on the base color. Patterns or colors overlay the existing pixels while preserving the highlights and shadows of the base color. The base color is not replaced but is mixed with the blend color to reflect the lightness or darkness of the original color.

Soft Light Darkens or lightens the colors, depending on the blend color. The effect is similar to shining a diffused spotlight on the image.

If the blend color (light source) is lighter than 50% gray, the image is lightened as if it were dodged. If the blend color is darker than 50% gray, the image is darkened as if it were burned in. Painting with pure black or white produces a distinctly darker or lighter area but does not result in pure black or white.

Hard Light Multiplies or screens the colors, depending on the blend color. The effect is similar to shining a harsh spotlight on the image.

If the blend color (light source) is lighter than 50% gray, the image is lightened, as if it were screened. This is useful for adding highlights to an image. If the blend color is darker than 50% gray, the image is darkened, as if it were multiplied. This is useful for adding shadows to an image. Painting with pure black or white results in pure black or white.

Vivid Light Burns or dodges the colors by increasing or decreasing the contrast, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by decreasing the contrast. If the blend color is darker than 50% gray, the image is darkened by increasing the contrast.

Linear Light Burns or dodges the colors by decreasing or increasing the brightness, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by increasing the brightness. If the blend color is darker than 50% gray, the image is darkened by decreasing the brightness.

Pin Light Replaces the colors, depending on the blend color. If the blend color (light source) is lighter than 50% gray, pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change. If the blend color is darker than 50% gray, pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change. This is useful for adding special effects to an image.

Difference Looks at the color information in each channel and subtracts either the blend color from the base color or the base color from the blend color, depending on which has the greater brightness value. Blending with white inverts the base color values; blending with black produces no change.

Exclusion Creates an effect similar to but lower in contrast than the Difference mode. Blending with white inverts the base color values. Blending with black produces no change.

Hue Creates a result color with the luminance and saturation of the base color and the hue of the blend color.

Saturation Creates a result color with the luminance and hue of the base color and the saturation of the blend color. Painting with this mode in an area with no (0) saturation (gray) causes no change.

Color Creates a result color with the luminance of the base color and the hue and saturation of the blend color. This preserves the gray levels in the image and is useful for coloring monochrome images and for tinting color images.

Luminosity Creates a result color with the hue and saturation of the base color and the luminance of the blend color. This mode creates an inverse effect from that of the Color mode.

Specifying opacity, flow, strength, or exposure

You can specify opacity, flow, strength, or exposure for the following tools:

- Opacity specifies the maximum amount of paint coverage applied by the Brush, Paint-Brush, Pencil, Clone Stamp, Pattern Stamp, History Brush, Art History Brush, Gradient, and Paint Bucket tools.

- Flow specifies how quickly paint is applied by the Brush tool. A low setting produces a lighter stroke.

- Strength specifies the strength of strokes applied by the Smudge, Blur, Sharpen, and Sponge tools.

- Exposure specifies the amount of exposure used by the Dodge and Burn tools.

To specify opacity, flow, strength, or exposure:

Enter a value, or drag the slider for Opacity, Flow, Strength, or Exposure in the options bar.

Opacity, flow, strength, or exposure can range from 1% to 100%. For transparent paint or a weak effect, specify a low percentage value; for more opaque paint or a strong effect, specify a high value.

💡 Press a number key to set a tool's opacity, flow, strength, or exposure in multiples of 10% (pressing 1 sets to 10%; pressing 0 sets to 100%).

Erasing

The Eraser and Magic Eraser tools let you erase areas of an image to transparency or to the background color. The Background Eraser tool (Photoshop) lets you erase to transparency on a layer. You can also use the Auto Erase option with the Pencil tool to erase the foreground color to the background color as you paint.

💡 If you want to erase the background of an object with intricate or wispy edges, use the Extract command. (See "Using the Extract filter (Photoshop)" on page 248.)

Using the Eraser tool

The Eraser tool changes pixels in the image as you drag through them. If you're working in the background or in a layer with transparency locked, the pixels change to the background color; otherwise, the pixels are erased to transparency. You can also use the eraser to return the affected area to a state selected in the History palette.

To use the Eraser tool:

1 Select the Eraser tool ⬛.

2 Do the following in the options bar:

• Choose a brush and set brush options (Photoshop), or choose a preset brush (ImageReady). (See "Working with brushes" on page 317.) This option is not available for Block mode.

• Choose a mode for the eraser—Brush (Photoshop), Paintbrush (ImageReady), Airbrush (ImageReady), Pencil, or Block.

• Specify an opacity to define the strength of the erasure. An opacity of 100% erases pixels completely. A lower opacity erases pixels partially. (This option is not available for Block mode in Photoshop.)

• (Photoshop) In Brush mode, specify a flow rate. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

• (Photoshop) In Brush mode, click the airbrush button ✐ to use the brush as an airbrush. Alternately, select the Airbrush option in the Brushes palette. (See "Creating airbrush effects (Photoshop)" on page 328.)

• (Photoshop) To erase to a saved state or snapshot of the image, click the left column of the state or snapshot in the History palette, and then select Erase to History in the options bar. (See "Painting with a state or snapshot of an image (Photoshop)" on page 38.)

💡 (Photoshop) To temporarily use the Eraser tool in Erase to History mode, hold down Alt (Windows) or Option (Mac OS) as you drag in the image.

3 Drag through the area you want to erase.

Using the Magic Eraser tool

When you click in a layer with the Magic Eraser tool, the tool automatically changes all similar pixels. If you're working in the background, or in a layer with locked transparency, the pixels change to the background color; otherwise, the pixels are erased to transparency. You can choose to erase contiguous pixels only or all similar pixels on the current layer.
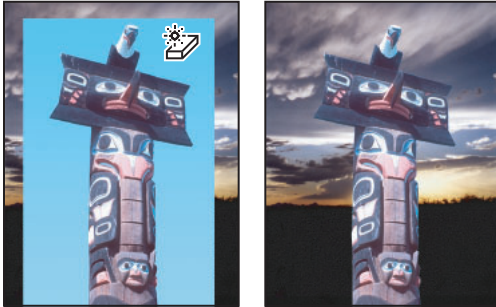
Example of erasing similar pixels

To use the Magic Eraser tool:

1 Select the Magic Eraser tool ✐ .

2 Do the following in the options bar:

• Enter a tolerance value to define the range of colors that can be erased. A low tolerance erases pixels within a range of color values very similar to the pixel you click. A high tolerance erases pixels within a broader range.

• Select Anti-aliased to smooth the edges of the area you erase.

• Select Contiguous to erase only pixels contiguous to the one you click, or deselect to erase all similar pixels in the image.

• Select Use All Layers to sample the erased color using combined data from all visible layers.

• Specify an opacity to define the strength of the erasure. An opacity of 100% erases pixels completely. A lower opacity erases pixels partially.

3 Click in the part of the layer you want to erase.

Using the Background Eraser tool (Photoshop)

The Background Eraser tool lets you erase pixels on a layer to transparency as you drag; this allows you to erase the background while maintaining the edges of an object in the foreground. By specifying different sampling and tolerance options, you can control the range of the transparency and the sharpness of the boundaries.

The background eraser samples the color in the center of the brush, also called the hot spot, and deletes that color wherever it appears inside the brush. It also performs color extraction at the edges of any foreground objects, so that color halos are not visible if the foreground object is later pasted into another image.

Note: The background eraser overrides the lock transparency setting of a layer.

To use the Background Eraser tool:

1 In the Layers palette, select the layer containing the areas you want to erase.

2 Select the Background Eraser tool 🖉.

3 Click the brush sample in the options bar and set brush options in the pop-up palette:

• Choose settings for the Diameter, Hardness, Spacing, Angle, and Roundness options (see "Customizing brush tips (Photoshop)" on page 319).

• If you're using a pressure-sensitive digitizing tablet, choose options from the Size and Tolerance menus to vary the size and tolerance of the background eraser over the course of a stroke. Choose Pen Pressure to base the variation on the pen pressure. Choose Stylus Wheel to base the variation on the position of the pen thumbwheel. Choose Off to not vary the size or tolerance.

4 Do the following in the options bar:

• Choose a Limits mode for erasing: Discontiguous to erase the sampled color wherever it occurs under the brush, Contiguous to erase areas that contain the sampled color and are connected to one another, and Find Edges to erase connected areas containing the sampled color while better preserving the sharpness of shape edges.

• For Tolerance, enter a value or drag the slider. A low tolerance limits erasure to areas that are very similar to the sampled color. A high tolerance erases a broader range of colors.

• Select Protect Foreground Color to prevent the erasure of areas that match the foreground color in the toolbox.

• Choose a Sampling option: Continuous to sample colors continuously as you drag, Once to erase only areas containing the color that you first click, and Background Swatch to erase only areas containing the current background color.

5 Drag through the area you want to erase. The Background Eraser tool pointer appears as a brush shape with a cross hair indicating the tool's hot spot ⊕.

Using the Auto Erase option

The Auto Erase option for the Pencil tool lets you paint the background color over areas containing the foreground color.

To use the Auto Erase option:

1 Specify foreground and background colors. (See "Choosing foreground and background colors" on page 351.)

2 Select the Pencil tool 🖉.

3 Select Auto Erase in the options bar.

4 Drag over the image.

If the center of the cursor is over the foreground color when you begin dragging, the area is erased to the background color. If the center of the cursor is over an area that doesn't contain the foreground color when you begin dragging, the area is painted with the foreground color.

Using the Gradient tool (Photoshop)

The Gradient tool creates a gradual blend between multiple colors. You can choose from preset gradient fills or create your own.

Note: The Gradient tool cannot be used with images in Bitmap, indexed-color, or 16-bit-per-channel mode.

Applying a gradient fill

You fill an area with a gradient by dragging in the image. The starting point (where the mouse is pressed) and ending point (where the mouse is released) affect the gradient appearance, depending on the Gradient tool used.

To apply a gradient fill:

1 To fill part of the image, select the desired area. Otherwise, the gradient fill is applied to the entire active layer.

2 Select the Gradient tool ▭.

3 Choose a gradient fill in the options bar:

• Click the triangle next to the gradient sample to pick a preset gradient fill.

• Click inside the gradient sample to view the Gradient Editor. Select a preset gradient fill, or create a new gradient fill. Then click OK. (See "Creating smooth gradient fills" on page 339.)

4 Select an option for applying the gradient fill in the options bar:

• Linear gradient ▭ to shade from the starting point to the ending point in a straight line.

• Radial gradient ▭ to shade from the starting point to the ending point in a circular pattern.

• Angle gradient ▭ to shade in a counterclockwise sweep around the starting point.

• Reflected gradient ▭ to shade using symmetric linear gradients on either side of the starting point.

• Diamond gradient ▭ to shade from the starting point outward in a diamond pattern. The ending point defines one corner of the diamond.

5 Do the following in the options bar:

• Specify a blending mode and opacity for the paint. (See "Setting options for painting and editing tools" on page 331.)

• To reverse the order of colors in the gradient fill, select Reverse.

• To create a smoother blend with less banding, select Dither.

• To use a transparency mask for the gradient fill, select Transparency. (See "Specifying the gradient transparency" on page 340.)

6 Position the pointer in the image where you want to set the starting point of the gradient, and drag to define the ending point. To constrain the line angle to a multiple of 45°, hold down Shift as you drag.

Creating smooth gradient fills

The Gradient Editor dialog box lets you define a new gradient by modifying a copy of an existing gradient. You can also add intermediate colors to a gradient, creating a blend between more than two colors.
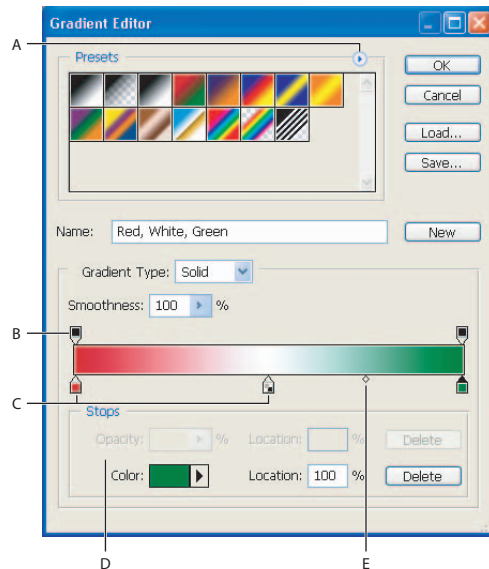
Gradient Editor dialog box
A. Palette menu **B.** Opacity stop **C.** Color stops **D.** Adjust values or delete the selected opacity or color stop **E.** Midpoint

To create a smooth gradient:

1 Select the Gradient tool ▭.

2 Click inside the gradient sample in the options bar to display the Gradient Editor dialog box.

3 To base the new gradient on an existing gradient, select a gradient in the Presets section of the dialog box.

4 Choose Solid from the Gradient Type pop-up menu.

5 To define the starting color of the gradient, click the left color stop ⬈ under the gradient bar. The triangle above the stop turns black ⬈ indicating that the starting color is being edited.

6 To choose a color, do one of the following:

• Double-click the color stop, or click the color swatch in the Stops section of the dialog box. Choose a color, and click OK. For information on choosing a color, see "Choosing foreground and background colors" on page 351.

• Choose an option from the Color pop-up menu in the Stops section of the dialog box.

• Position the pointer over the gradient bar (the pointer turns into the eyedropper), and click to sample a color, or click anywhere in the image to sample a color from the image.

7 To define the ending color, click the right color stop under the gradient bar. Then choose a color as described in step 5.

8 To adjust the location of the starting point or ending point, do one of the following:

• Drag the corresponding color stop left or right to the location you want.

• Click the corresponding color stop, and enter a value for Location in the Stops section of the dialog box. A value of 0% places the point at the far left end of the gradient bar, a value of 100% at the far right end.

9 To adjust the location of the midpoint (where the gradient displays an even mix of the starting and ending colors), drag the diamond ◇ below the gradient bar to the left or right, or click the diamond and enter a value for Location.

10 To delete the color stop you are editing, click Delete.

11 To set the smoothness for the entire gradient, enter a value in the Smoothness text box, or drag the Smoothness pop-up slider.

12 If desired, set transparency values for the gradient. (See "Specifying the gradient transparency" on page 340.)

13 Enter a name for the new gradient.

14 To save the gradient as a preset, click New after you have finished creating the gradient.

Note: New presets are saved in a Preferences file so that they persist between editing sessions. If this file is deleted or damaged, or if you reset presets to the default library, the new presets will be lost. To permanently save new presets, save them in a library. (See "Managing gradients" on page 342.)

To add intermediate colors to a gradient:

In the Gradient Editor dialog box, click below the gradient bar to define another color stop. Specify the color and adjust the location and midpoint for the intermediate point as you would for a starting or ending point. To remove an intermediate color, drag the color stop down and off the gradient bar, or select the color stop and click the Delete button.

Specifying the gradient transparency

Each gradient fill contains settings that control the opacity of the fill at different locations on the gradient. For example, you can set the starting color to 100% opacity and have the fill gradually blend into an ending color with 50% opacity. The checkerboard pattern indicates the amount of transparency in the gradient preview.

To specify the gradient transparency:

1 Create a gradient as described in steps 1 through 10 of "Creating smooth gradient fills" on page 339.

2 To adjust the starting opacity, click the left opacity stop above the gradient bar. The triangle below the stop turns black, indicating that the starting transparency is being edited.

3 In the Stops section of the dialog box, enter a value in the Opacity text box, or drag the Opacity pop-up slider.

4 To adjust the opacity of the endpoint, click the right transparency stop above the gradient bar. Then set the opacity as described in step 3.

5 To adjust the location of the starting or ending opacity, do one of the following:

- Drag the corresponding opacity stop to the left or right.

- Select the corresponding opacity stop, and enter a value for Location.

6 To adjust the location of the midpoint opacity (the point midway between the starting and ending opacities), do one of the following:

- Drag the diamond above the gradient bar to the left or right.

- Select the diamond and enter a value for Location.

7 To delete the opacity stop you are editing, click Delete.

8 To add an intermediate opacity to the mask, click above the gradient bar to define a new opacity stop. You can then adjust and move this opacity as you would for a starting or ending opacity. To remove an intermediate opacity, drag its transparency stop up and off the gradient bar.

9 To create a preset gradient, enter a name in the Name text box and click New. This creates a new gradient preset with the transparency setting you specified.

Creating noise gradient fills

In addition to creating smooth gradients, the Gradient Editor dialog box lets you define a new noise gradient. A noise gradient is a gradient that contains randomly distributed colors within the range of colors that you specify.

Gradient with different Noise values
A. 10% noise **B.** 50% noise **C.** 90% noise

To create a noise gradient:

1 Select the Gradient tool �.

2 Click in the gradient sample in the options bar to display the Gradient Editor dialog box.

3 To base the new gradient on an existing gradient, select a gradient in the Presets section of the dialog box.

4 Choose Noise from the Gradient Type pop-up menu.

5 To set the roughness for the entire gradient, enter a value in the Roughness text box, or drag the Roughness pop-up slider.

6 To define the color model, choose a color model from the Color Model list.

7 To adjust the range of colors, drag the sliders. For each color component of the color model you've selected, you can drag the sliders to define the range of acceptable values. For example, if you choose the HSB model, you can restrict the gradient to blue-green hues, high saturation, and medium brightness.

8 Set the options to restrict colors or to add transparency.

9   To randomize a gradient that conforms to the settings, click the Randomize button until you find a setting you like.

10   To create a preset gradient, enter a name in the Name text box and click New. This creates a new preset gradient with the settings you specified.

Managing gradients

By saving and loading libraries of gradients, you can customize the gradient list that appears in the options bar and the Gradient Editor dialog box. You can also rename presets, delete presets, and change the display of the gradient list.

Note: You can use the Preset Manager to manage gradient libraries. For more information, see *"Managing libraries with the Preset Manager (Photoshop)" on page 52*.

To save a set of preset gradients as a library:

1   Click Save in the Gradient Editor dialog box.

2   Choose a location for the gradient library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the Presets/ Gradients folder inside the Photoshop program folder, the library name will appear at the bottom of the palette menu after you restart Photoshop.

To load a library of preset gradients:

Do one of the following:

- Click Load to add a library to the current list. Select the library file you want to use, and click Load.

- Choose Replace Gradients from the palette menu to replace the current list with a different library. Select the library file you want to use, and click Load.

- Choose a library file from the bottom of the palette menu. Click OK to replace the current list, or click Append to append the current list.

To return to the default library of preset gradients:

Choose Reset Gradients from the palette menu. You can either replace the current list or append the default library to the current list.

To change how preset gradients are displayed:

Choose a display option from the palette menu:

- Text Only to view the gradients as a list.

- Small or Large Thumbnail to view the gradients as thumbnails.

- Small or Large List to view the gradients as a list with thumbnails.

To rename a preset gradient:

Do one of the following:

- If the palette is set to display gradients as thumbnails, double-click a gradient, enter a new name, and click OK.

- If the palette is set to display gradients as a list or text only, double-click a gradient, enter a new name inline, and press Enter (Windows) or Return (Mac OS).

Using the Paint Bucket tool

The Paint Bucket tool fills adjacent pixels that are similar in color value to the pixels you click.

Note: *The Paint Bucket tool cannot be used with images in Bitmap mode.*

Using the Paint Bucket tool to fill pixels similar in color value with the foreground color

To use the Paint Bucket tool:

1 Specify a foreground color. (See "Choosing foreground and background colors" on page 351.)

2 Select the Paint Bucket tool ⬧.

3 (Photoshop) Specify whether to fill the selection with the foreground color or with a pattern. (See "Filling and stroking selections and layers" on page 344.)

4 Specify a blending mode and opacity for the paint. (See "Setting options for painting and editing tools" on page 331.)

5 Enter the tolerance for the fill.

The tolerance defines how similar in color a pixel must be to be filled. Values can range from 0 to 255. A low tolerance fills pixels within a range of color values very similar to the pixel you click. A high tolerance fills pixels within a broader range.

6 To smooth the edges of the filled selection, select Anti-aliased. (See "Softening the edges of a selection" on page 239.)

7 To fill only pixels contiguous to the one you click, select Contiguous; leave unselected to fill all similar pixels in the image.

8 To fill pixels based on the merged color data from all visible layers, select All Layers. (See "Sampling from layers" on page 381.)

9 Click the part of the image you want to fill. All specified pixels within the specified tolerance are filled with the foreground color or pattern.

If you're working on a layer and don't want to fill transparent areas, make sure that the layer's transparency is locked in the Layers palette. (See "Locking layers" on page 380.)

Filling and stroking selections and layers

Photoshop and ImageReady provide a variety of ways to fill a selection or a layer with colors and patterns. You can also paint a border around a selection or a layer. Layer styles allow you to fill or stroke a selection or layer to create a live editable effect, while you can also paint a fill or border to create a softer effect. (See "Managing Layers" on page 382.)

To increase the contrast between your image and the surrounding work canvas, you can fill the canvas with a color.

Filling a selection or layer with colors or patterns

You can fill a selection or layer with the foreground color, the background color, or a pattern. In Photoshop, you can use patterns from the pattern libraries provided or create your own patterns. You can also fill a shape using the Color, Gradient, or Pattern Overlay effects or the Solid Color, Gradient, or Pattern fill layers on the Layers palette. When you use fill layers to fill a selection, you can easily change the type of layer being used. For more information, see "Using adjustment layers and fill layers (Photoshop)" on page 402.

To fill a selection or a layer with a foreground or background color:

1 Specify a foreground or background color. (See "Choosing foreground and background colors" on page 351.)

2 Select the area you want to fill. To fill an entire layer, select the layer in the Layers palette.

3 Choose Edit > Fill to fill the selection or layer. Or to fill a path, select the path and choose Fill Path from the Paths palette menu.

4 In the Fill dialog box, for Use, choose one of the following options or select a Custom Pattern:

• Foreground Color, Background Color, Black, 50% Gray, or White to fill the selection with the specified color.

• Color to fill with a color you select from the Color Picker.

• Pattern to fill the selection with a pattern. Click the inverted arrow ▼ next to the pattern sample and select a pattern from the pop-up palette. You can load additional patterns using the pop-up palette menu. Select the name of a library of patterns or choose Load Patterns and navigate to the folder containing the patterns you want to use.

• History to restore the selected area to a state or snapshot of the image. (See "Making a snapshot of an image (Photoshop)" on page 37.)

Note: *If you fill a CMYK image using the Black option, Photoshop fills all the channels with 100% black. This may result in more ink than is allowable by the printer. For best results when filling a CMYK image, use the Foreground option with the foreground color set to an appropriate black.*

5 Specify the blending mode and opacity for the paint. (See "Selecting a blending mode" on page 331 and "Setting options for painting and editing tools" on page 331.)

6 If you're working in a layer and want to fill only areas containing pixels, choose Preserve Transparency.

7 Click the OK button to apply the fill.

💡 To apply a foreground color fill only to the areas that contain pixels, press Alt+Shift+Backspace (Windows) or Option+Shift+Delete (Mac OS). This preserves the transparency of the layer. To apply a background color fill only to the areas that contain pixels, press Ctrl+Shift+Backspace (Windows) or Command+Shift+Delete (Mac OS).

To fill the work canvas:

1 Set the foreground color you want to use for the canvas.

2 Select the Paint Bucket tool ⬧.

3 In the options bar, set Fill to Foreground.

4 Hold down Shift, and click in the work canvas.

Note: You need to be in full screen mode and viewing the menus to fill the work canvas.

To fill a selection with a pattern:

1 Select the part of the image you want to fill.

2 Do one of the following:

• Choose Edit > Fill. In the Fill dialog box, for Use, choose Pattern, select a pattern from the pop-up palette, and click OK.

If Pattern is dimmed, you need to load a pattern library before you can select this option. (See "Managing libraries with the Preset Manager (Photoshop)" on page 52.)

• Select the Paint Bucket tool ⬧. In the options bar, choose Pattern from the Fill pop-up menu and select a pattern from the Pattern pop-up palette. Then click to fill the selected area with the pattern.

Note: You can load additional pattern libraries into the pop-up palette prior to making a selection. (See "Creating and managing patterns" on page 346.)

Stroking a selection or layer with color

You can use the Stroke command to paint a colored border around a selection, layer, or path. This allows you to create a softer border than one created using the Stroke layer style. The Stroke layer style provides a resolution-independent method to stroke a shape. (See "Managing Layers" on page 382.) You can use the Stroke layer effect when you want to stroke the entire layer. If you want a quick way to create a stroke on the current layer— without necessarily following the edge of the layer—use the Stroke command.

To stroke a selection or layer:

1 Specify a foreground color. (See "Choosing foreground and background colors" on page 351.)

2 Select the area or layer you want to stroke.

3 Choose Edit > Stroke.

4 In the Stroke dialog box, specify the width of the hard-edged border.

5 For Location, specify whether to place the border inside, outside, or centered over the selection or layer boundaries.

6 Specify an opacity and a blending mode. (See "Setting options for painting and editing tools" on page 331.)

7 If you're working in a layer and want to stroke only areas containing pixels, select the Preserve Transparency option. (See "Locking layers" on page 380.)

To stroke a path:

1 Select the path in the Paths palette.

2 Choose Stroke Path from the palette menu.

3 In the Stroke Path dialog box, choose a tool to stroke the path.

Creating and managing patterns

A pattern is an image that is repeated, or *tiled*, during application. Photoshop and ImageReady come with a variety of preset patterns. In Photoshop, you can create new patterns and save them in libraries for use with different tools and commands. In ImageReady, you can define a single pattern, called the User Defined Pattern, which you can use to fill selections and layers.

Defining patterns

You use the Edit > Define Pattern command to create new patterns based on a selection.

To define a preset pattern:

1 Use the Rectangle Marquee tool ⬚ on any open image to select an area to use as a pattern. Feather must be set to 0 pixels. Note that large images may become unwieldy.

2 Choose Edit > Define Pattern.

3 (Photoshop) Enter a name for the pattern in the Pattern Name dialog box.

Note: *If you are using a pattern from one image and applying it to another, Photoshop converts the color mode.*

To use a preset pattern from the PostScript Patterns folder:

1 Choose File > Open. Each preset file in the PostScript Patterns folder (which comes with Photoshop) contains a single pattern in the Adobe Illustrator format. You can scale and render these patterns at any resolution.

2 Select the pattern file you want to use, and click Open.

3 Select any rasterizing options. (See "Opening and importing images" on page 101.)

4 Make a rectangular selection around the pattern, or make no selection to use the whole image.

5 Choose Edit > Define Pattern.

6 (Photoshop) Enter a name for the pattern in the Pattern Name dialog box.

Managing patterns (Photoshop)

Preset patterns are displayed in pop-up palettes in the options bar for the Paint Bucket, Pattern Stamp, Healing Brush, and Patch tools, as well as in the Layer Style dialog box. You can load, reset, and save libraries of preset patterns, and rename and delete individual preset patterns.

Note: *You can also use the Preset Manager to load, reset, and save libraries of preset patterns, and rename and delete individual preset patterns. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.*

To change how patterns are displayed:

Choose a display option from a Pattern pop-up palette menu.

To load a library of patterns:

Choose one of the following from a Pattern pop-up palette menu:

- Load Patterns to add a library to the current list. Select the library file you want to use, and click Load.

- Replace Patterns to replace the current list with a different library. Select the library file you want to use, and click Load.

- A library file (displayed at the bottom of the palette menu). Click OK to replace the current list, or click Append to append the current list.

To rename a preset pattern:

1 Select the pattern you want to rename, and choose Rename Pattern from the palette menu.

2 Enter a new name for the pattern, and click OK.

To delete a preset pattern:

Do one of the following:

- Select the pattern you want to delete, and choose Delete Pattern from the palette menu.

- Hold down Alt (Windows) or Option (Mac OS), position the pointer over a pattern (the pointer turns into scissors), and click.

To save a set of preset patterns as a library:

1 Choose Save Patterns from a Pattern pop-up palette menu.

2 Choose a location for the pattern library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the Presets/ Patterns folder inside the Photoshop program folder, the library name will appear at the bottom of the Pattern pop-up palette menus after you restart Photoshop.

To return to the default library of patterns:

Choose Reset Patterns from a Pattern pop-up palette menu. You can either replace the current list or append the default library to the current list.

If you receive a Pattern Stamp tool preset that uses an undefined pattern, or if you erase the preset you're using by resetting or replacing the pattern library, choose New Pattern from the Pattern pop-up palette menu to redefine the pattern.

Using the Pattern Maker

The Pattern Maker lets you create an infinite variety of patterns based on a selection or the contents of the Clipboard. Because the pattern is based on the pixels in a sample, it shares visual characteristics with the sample. For example, if you sample an image of grass, the Pattern Maker generates a tileable pattern that is different from the sample but still appears to be grass. You can generate multiple patterns from the same sample, and save pattern tiles as Photoshop, Illustrator, or GIF files for future use as presets in Photoshop.

Note: *The Pattern Maker command is available only for 8-bit images in RGB Color, CMYK Color, Lab Color, and Grayscale image modes.*

Generating patterns

The Pattern Maker generates patterns by rearranging the pixels in a sampled area to create a tile. The size of a tile can vary, from 1 pixel by 1 pixel to the dimensions of the active layer. If the tile is smaller than the active layer, the pattern is made up of multiple tiles that are laid out in a grid to fill the layer. If the tile is the same size as the active layer, it comprises the entire pattern.
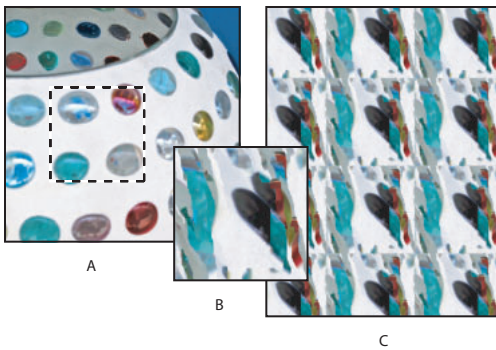
Creating a pattern using the Pattern Maker
A. Original image with pixels selected to create a tile **B.** Generated single pattern tile **C.** Image filled with tiled pattern

Note: *If the transparency of the active layer is locked, the Pattern Maker does not change the transparency of the layer when it tiles with a generated pattern.*

To generate a pattern:

1 Do one of the following:

* Select the layer that contains the area from which you want to generate the pattern. The layer you select will be replaced by the generated pattern, so it's a good idea to make a copy of the layer first.

* To generate a pattern in a new layer or file, select the pixels from which you want to generate the pattern, and choose Edit > Copy. Then add a layer to the image, or create a new file with the dimensions you want the final image to have.

Note: *You cannot generate a pattern from a nonrectangular sample. If you make a nonrectangular selection, Photoshop uses the bounding box of the selected area to create a rectangular sample.*

2 Choose Filter > Pattern Maker.

3 Do one of the following:

- If you are generating a pattern in the same layer that contains the sample, select the Rectangular Marquee tool ⬚ in the Pattern Maker dialog box, and select the area from which you want to generate the pattern. To move the selection marquee, drag it to a different location.

- If you are generating a pattern in a new layer or file, select Use Clipboard as Sample in the Pattern Maker dialog box.

4 Specify the dimensions of tiles in the generated pattern by doing one of the following:

- Enter pixel values in the Width and Height text boxes, or drag the pop-up sliders.

- Click Use Image Size to use the image size as the tile size. Selecting this option produces a pattern with a single tile.

5 To offset the tiles in the generated pattern, choose a direction from the Offset pop-up menu and specify an offset amount by entering a value in the Amount text box or dragging the Amount pop-up slider. The offset amount is a percentage of the tile dimension in the specified direction.

6 Click Generate. The preview area is tiled with the generated pattern. (See "Previewing patterns" on page 349.)

You can view the status of the current generation in the Photoshop status bar. Press Esc to cancel the generation.

7 Click Generate Again to generate additional patterns using the same options, or adjust the options and then click Generate Again.

You can navigate through the generated tiles using the Tile History panel. (See "Reviewing tiles and pattern previews" on page 350.)

8 When you are satisfied with a pattern preview and you have saved the tiles that you might want to use in the future, click OK. (See "Reviewing tiles and pattern previews" on page 350.)

Previewing patterns

The Pattern Maker dialog box provides tools and options for previewing generated patterns. You can magnify and navigate in the preview image just as you do in the Photoshop document window. You can also show or hide tile boundaries and switch between previewing the original image and the generated pattern.

To magnify and reduce the preview image:

1 Select the Zoom tool 🔍 in the Pattern Maker dialog box.

2 Click in the preview image to zoom in, or hold down Alt (Windows) or Option (Mac OS), and click in the preview image to zoom out.

The magnification level appears at the bottom of the dialog box.

To navigate in the preview image:

Select the Hand tool ✋ in the Pattern Maker dialog box, and drag in the preview image. Alternately, hold down the spacebar, and drag in the preview image.

To display tile boundaries in the preview image:

Select Tile Boundaries in the Preview section of the Pattern Maker dialog box. To choose a different color for tile boundaries, click the color swatch.

To switch between the generated pattern and the original image:

Choose an option from the Show pop-up menu in the Preview section of the Pattern Maker dialog box.

> When previewing the original image, you change the sample area using the Rectangular Marquee tool. The new sample will be used for the next generation.

Reviewing tiles and pattern previews

The Tile History section of the Pattern Maker dialog box lets you review all the pattern previews you have generated. You can navigate through pattern previews, delete pattern previews, and save tiles as preset patterns.

Important: When you save a tile as a preset pattern, only a single tile is saved, not the full, generated pattern.

To navigate through tiles and pattern previews:

Do one of the following:

- Click the First Tile button ⏮, Previous Tile button ◀, Next Tile button ▶, or Last Tile button ⏭.

- Type the number of the pattern preview you want to view, and press Enter (Windows) or Return (Mac OS).

If the Update Pattern Preview option is selected, the full pattern is regenerated in the preview area. If the Update Pattern Preview option is deselected, only the tile thumbnail changes.

> Deselect Update Pattern Preview to quickly review tiles. When you find the desired tile, select Update Pattern Preview to regenerate the preview.

To delete a tile and pattern preview:

Navigate to the tile you want to delete, and click the Trash button 🗑.

To save a tile as a preset pattern:

1 Navigate to the tile you want to save, and click the Preset Pattern button 🗒.

2 Enter a preset name, and click OK.

You can create and manage libraries of presets using the Preset Manager. (See "Managing libraries with the Preset Manager (Photoshop)" on page 52.)

Specifying pattern smoothness and detail

The Smoothness and Sample Detail options in the Pattern Maker dialog box let you control the parameters that Photoshop uses to generate a pattern. The default settings work well for most samples, so don't change these settings unless you get a poor result.

Smoothness If the pixels in the sample lack contrast, the Pattern Maker may introduce unwanted edges into the generated pattern. Increasing the Smoothness value decreases the prominence of edges within a generated tile.
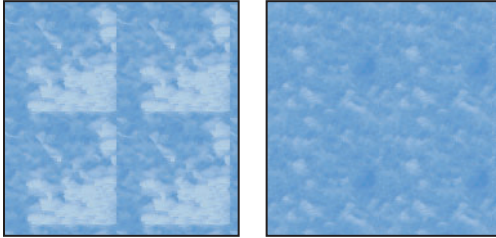
Generated pattern with Smoothness of 1 (left) and Smoothness of 3 (right)

Sample Detail If the sample contains details that are cut up in the generated pattern, increase the Sample Detail value.
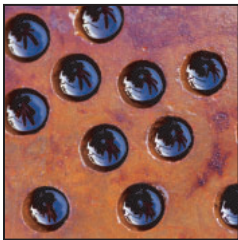
Example of sampled image
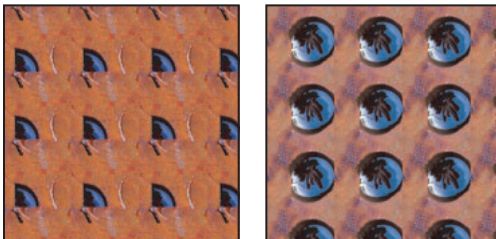
Generated pattern with Sample Detail of 5 (left) and Sample Detail of 15 (right)

Note: *Increasing the Smoothness and Sample Detail values results in slower pattern generation.*

Choosing foreground and background colors

Photoshop uses the *foreground* color to paint, fill, and stroke selections and the *background* color to make gradient fills and fill in the erased areas of an image. The foreground and background colors are also used by some special effects filters.

You can designate a new foreground or background color using the Eyedropper tool, the Color palette, the Swatches palette, or the Adobe Color Picker (see "Using the Adobe Color Picker" on page 164).

The default foreground color is black, and the default background color is white. (In an alpha channel, the default foreground is white, and the background is black.)
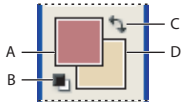
Foreground and background color boxes in toolbox
A. Foreground color box **B.** Default colors icon **C.** Switch colors icon **D.** Background color box

Using color settings in the toolbox

The current foreground color appears in the upper color selection box in the toolbox; the current background color appears in the lower box.

The Info palette, the Color palette, and the Adobe Color Picker let you display color values using a number of color models. (See "About the different color modes (Photoshop)" on page 150.)

To change the foreground or background color:

1 Do one of the following:

• To change the foreground color, click the upper color selection box in the toolbox.

• To change the background color, click the lower color selection box in the toolbox.

2 Choose a color in the Adobe Color Picker. (See "Using the Adobe Color Picker" on page 164.)

To reverse the foreground and background colors:

Click the Switch Colors icon ↱ in the toolbox.

To restore the default foreground and background colors:

Click the Default Colors icon ◼ in the toolbox.

Using the Eyedropper tool

The Eyedropper tool samples color to designate a new foreground or background color. You can sample from the active image or from anywhere else on the screen.

You can also specify the area sampled by the Eyedropper tool. For example, you can set the eyedropper to sample the color values of a 3-by-3-pixel area under the pointer. Modifying the sample size of the eyedropper affects the color readouts displayed in the Info palette.
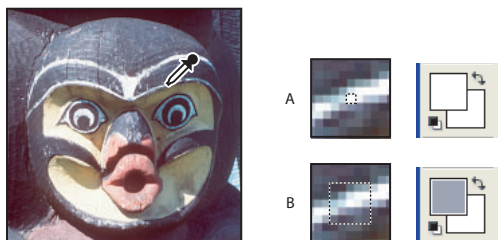
Selecting a foreground color with the Eyedropper tool
A. Point Sample **B.** 5 x 5 average sample

To select the foreground or background color:

1 Select the Eyedropper tool 🖋.

2 To change the sample size of the eyedropper, choose an option from the Sample Size menu:

- Point Sample to read the precise value of the pixel you click.

- 3 by 3 Average or 5 by 5 Average to read the average value of the specified number of pixels within the area you click.

3 Do one of the following:

- To select a new foreground color, click in the image. Alternately, position the pointer over the image, press the mouse button, and drag anywhere on the screen. The foreground color selection box changes dynamically as you drag. Release the mouse button to pick the new color.

- To select a new background color, Alt-click (Windows) or Option-click (Mac OS) in the image. Alternately, position the pointer over the image, press Alt (Windows) or Options (Mac OS), press the mouse button, and drag anywhere on the screen. The background color selection box changes dynamically as you drag. Release the mouse button to pick the new color.

💡 To use the Eyedropper tool temporarily while using any painting tool, hold down Alt (Windows) or Option (Mac OS).

Using the Color palette

The Color palette displays the color values for the current foreground and background colors. Using the sliders in the Color palette, you can edit the foreground and background colors according to several different color models. You can also choose a foreground or background color from the spectrum of colors displayed in the color ramp at the bottom of the palette.
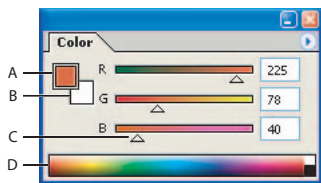
Color palette
A. Foreground color **B.** Background color **C.** Slider **D.** Color bar

The Color palette may display the following alerts when you select a color:

- In Photoshop, an exclamation point inside a triangle ⚠ appears above the left side of the color ramp when you choose a color that cannot be printed using CMYK inks. For more information, see "Identifying out-of-gamut colors (Photoshop)" on page 184.

- A cube ⬢ appears above the left side of the color ramp when you choose a color that is not Web-safe. (See "Using Web-safe colors" on page 168.)

To display the Color palette:

Choose Window > Color, or click the Color palette tab.

To change the color model of the color sliders:

Choose a Sliders option from the Color palette menu. For more information on the different color models, see "About the different color modes (Photoshop)" on page 150.

To change the spectrum displayed in the color ramp:

1 Choose an option from the Color palette menu:

- RGB Spectrum, CMYK Spectrum (Photoshop), or Grayscale Ramp to display the spectrum of the specified color model.

- Current Colors to display the spectrum of colors between the current foreground color and the current background color.

2 To display only Web-safe colors, choose Make Ramp Web Safe. (See "Using Web-safe colors" on page 168.)

To change the spectrum of the color ramp quickly, Shift-click in the color ramp until you see the spectrum you want.

To select the foreground or background color:

1 To edit the foreground or background color, make sure that its color selection box is active (outlined in black). To make the foreground or background color selection box active, click the box.

2 Do one of the following:

- Drag the color sliders. By default, the slider colors change as you drag. In Photoshop, you can turn off this feature to improve performance by deselecting Dynamic Color Sliders in the General section of the Preferences dialog box.

- Enter values next to the color sliders.

- Click the color selection box, choose a color using the color picker (see "Using the Adobe Color Picker" on page 164), and click OK.

- Position the pointer over the color ramp (the pointer becomes the eyedropper), and click to sample a color. Alt-click to apply the sample to the nonactive color selection box.

Using the Swatches palette

You can choose a foreground or background color from the Swatches palette, or you can add or delete colors to create a custom swatch library. Creating libraries of swatches can help you group related or special swatches and manage palette size.

Note: *You can also use the Preset Manager to manage libraries. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.*

To display the Swatches palette:

Choose Window > Swatches, or click the Swatches palette tab.

To change how swatches are displayed (Photoshop):

Choose a display option from the Swatches palette menu:

- Small Thumbnail to display a thumbnail of each swatch. This is the default view.

- Small List to display the name and thumbnail of each swatch.

To select a foreground or background color:

Do one of the following:

- To choose a foreground color, click a color in the Swatches palette.
- To choose a background color, Ctrl-click (Windows) or Command-click (Mac OS) a color in the Swatches palette.

To load a library of swatches:

Choose one of the following from the Swatches palette menu:

- Load Swatches to add a library to the current list. Select the library file you want to use, and click Load.
- Replace Swatches to replace the current list with a different library. Select the library file you want to use, and click Load.
- A library file (displayed at the bottom of the palette menu). Click OK to replace the current list, or click Append to append the current list.

To add a color to the Swatches palette:

Do one of the following:

- Make the color you want to add the foreground color, and click the New Swatch button ⬛ in the Swatches palette. Alternately, choose New Swatch from the Swatches palette menu.
- (Photoshop) Make the color you want to add the foreground color. Position the pointer over an empty space in the bottom row of the Swatches palette (the pointer turns into the Paint Bucket tool), and click to add the color. Enter a name for the new color and click OK.
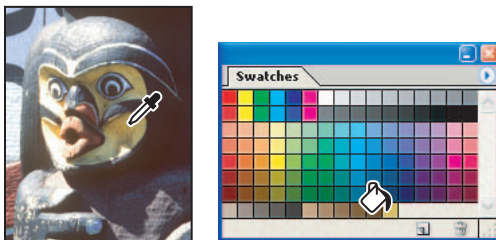
Color selected from image (left), and added to Swatches palette (right)

- (ImageReady) Drag the foreground color selection box or the background color selection box from the toolbox to the Swatches palette.
- (ImageReady) Drag a swatch from the Color Table palette to the Swatches palette.

Note: *New colors are saved in the Preferences file so that they persist between editing sessions. To permanently save a color, save it in a library.*

To duplicate a color in the Swatches palette (ImageReady):

Select the color you want to duplicate, and choose New Swatch from the Swatches palette menu.

To delete a color from the Swatches palette:

Do one of the following:

- Drag a swatch to the Trash button 🗑.

- (Photoshop) Hold down Alt (Windows) or Option (Mac OS), position the pointer over a swatch (the pointer turns into scissors), and click.

- (ImageReady) Select a swatch, and choose Delete Swatch from the Swatches palette menu.

To save a set of swatches as a library:

1 Choose Save Swatches from the Swatches palette menu.

2 Choose a location for the swatch library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the Presets/ Swatches folder inside the Photoshop program folder, the library name will appear at the bottom of the Swatches palette menu after you restart the application.

To return to the default library of swatches:

Choose Reset Swatches from the Swatches palette menu. You can either replace the current list or append the default library to the current list.

Using Channels

About channels

Channels are grayscale images that store different types of information:

- *Color information channels* are created automatically when you open a new image. The image's color mode determines the number of color channels created. For example, an RGB image has four default channels: one for each of the red, green, and blue colors plus a composite channel used for editing the image.

- You can create *alpha channels* to store selections as grayscale images. You use alpha channels to create and store masks, which let you manipulate, isolate, and protect specific parts of an image. In addition to supporting alpha channels from Photoshop, you can save, load, and delete selections as alpha channels in ImageReady.

- You can create *spot color channels* to specify additional plates for printing with spot color inks.

An image can have up to 56 channels. The file size required for a channel depends on the pixel information in the channel. Certain file formats, including TIFF and Photoshop formats, compress channel information and can save space. The uncompressed size of a file, including alpha channels and layers, appears as the rightmost value in the status bar at the bottom of the window when Document Sizes is chosen from the pop-up menu.

Note: *As long as you save a file in a format supporting the image's color mode, the color channels are preserved. Alpha channels are preserved only when you save a file in Adobe Photoshop, PDF, PICT, Pixar, TIFF, or Raw formats. DCS 2.0 format preserves only spot channels. Saving in other formats may cause channel information to be discarded. (See "About file formats" on page 582.)*

Using the Channels palette (Photoshop)

The Channels palette lets you create and manage channels and monitor the effects of editing. The palette lists all channels in the image—composite channel first (for RGB, CMYK, and Lab images), then individual color channels, spot color channels, and finally alpha channels. A thumbnail of the channel's contents appears to the left of the channel name; the thumbnail automatically updates as you edit the channel.
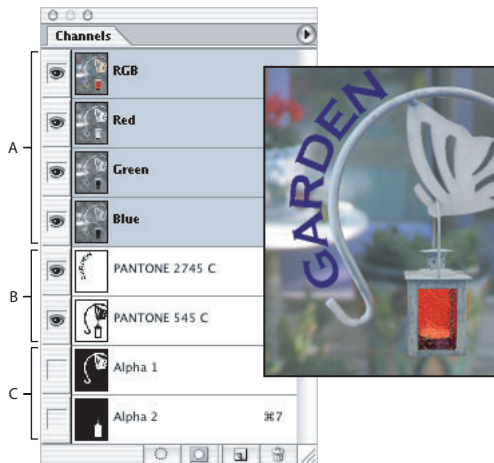
Channels types
A. Color channels **B.** Spot channels **C.** Alpha channels

Viewing channels

You can use the palette to view any combination of individual channels. For example, you can view an alpha channel and the composite channel together to see how changes made in the alpha channel relate to the entire image. By default, individual channels are displayed in grayscale.

To display the Channels palette:

1 Choose Windows > Channels, or click the Channels palette tab.

2 Use the scroll bars or resize the palette to see additional channels.

When a channel is visible in the image, an eye icon 👁 appears to its left in the palette.

To show or hide a channel:

Click in the eye column next to the channel to show or hide that channel. (Click the composite channel to view all default color channels. The composite channel is displayed whenever all the color channels are visible.)

💡 To show or hide multiple channels, drag through the eye column in the Channels palette.

These guidelines apply to channels you display:

• In RGB, CMYK, or Lab images, you can view the individual channels in color. (In Lab images, only the *a* and *b* channels appear in color.)

• If more than one channel is active, the channels always appear in color.

• In alpha channels, selected pixels appear as white; unselected pixels appear as black (partially transparent or selected pixels appear as gray). These are the channel default options.

• If you display an alpha channel at the same time as color channels, the alpha channel appears as a transparent color overlay, analogous to a printer's rubylith or a sheet of acetate. To change the color of this overlay or set other alpha channel options, see "Creating alpha channels (Photoshop)" on page 255.

Changing the display of the palette

You can show the individual color channels in color (rather than grayscale) in the Channels palette and specify the size of the thumbnails. Using thumbnails is the most convenient way of tracking channel contents; however, turning off the display of thumbnails can improve performance.

To show color channels in color:

1 Do one of the following:

- In Windows, choose Edit > Preferences > Display & Cursors.

- In Mac OS, choose Photoshop > Preferences > Display & Cursors.

2 Select Color Channels in Color, and click OK.

To resize or hide channel thumbnails:

1 Choose Palette Options from the Channels palette menu.

2 Select a display option:

- Click a thumbnail size. Smaller thumbnails reduce the space required by the palette— helpful when you're working on smaller monitors.

- Click None to turn off the display of thumbnails.

Selecting and editing channels

You can select one or more channels in the Channels palette. The names of all selected, or *active*, channels are highlighted. Any editing changes you make apply to the active channels.

Selecting multiple channels
A. Not visible or editable **B.** Visible but not selected for editing **C.** Selected for viewing and editing
D. Selected for editing but not viewing

To select a channel:

Click the channel name. Shift-click to select (or deselect) multiple channels.

To edit a channel:

Use a painting or editing tool to paint in the image. Paint with white to add the selected channel's color at 100% intensity. Paint with a value of gray to add the channel's color at a lower intensity. Paint with black to fully remove the channel's color. (See "Modifying alpha channels (Photoshop)" on page 256.)

Managing channels (Photoshop)

You can rearrange channels, duplicate a channel within or between images, split a channel into separate images, merge channels from separate images into one new image, and delete alpha and spot channels when you're finished with them.

Rearranging and renaming channels

The default color channels normally appear at the top of the Channels palette, followed by the spot color channels, and then the alpha channels. You cannot move or rename the default channels, but you can rearrange and rename spot and alpha channels to suit the way you work.

Spot colors are overprinted in the order they appear in the Channels palette.

To change the order of alpha or spot channels:

Drag the channel up or down. When a line appears in the position you want, release the mouse button.

Note: *You can move alpha or spot channels above the default color channels only if the image is in Multichannel mode.*

To rename an alpha or spot channel:

Double-click the channel's name in the Channels palette, and enter a new name.

Duplicating channels

You might duplicate an image's channel to make a backup before editing the channel. Or you might duplicate alpha channels to a new image to create a library of selections to load into the current image one by one—thus keeping the file smaller.

If you are duplicating alpha channels between images, the channels must have identical pixel dimensions. (See "Creating new images" on page 89.)

Note: *You cannot duplicate a channel to a Bitmap-mode image.*

To duplicate a channel using the Duplicate command:

1 In the Channels palette, select the channel to duplicate.

2 Choose Duplicate Channel from the Channels palette menu.

3 Type a name for the duplicate channel.

4 For Document, do one of the following:

• Choose a destination. Only open images with pixel dimensions identical to the current image are available. To duplicate the channel in the same file, select the channel's current file.

• Choose New to copy the channel to a new image, creating a multichannel image containing a single channel. Type a name for the new image.

5 To reverse the selected and masked areas in the duplicate channel, select Invert.

To duplicate a channel within an image by dragging:

1 In the Channels palette, select the channel you want to duplicate.

2 Drag the channel onto the New Channel button ▣ at the bottom of the palette.

To duplicate a channel to another image by dragging or pasting:

1 In the Channels palette, select the channel you want to duplicate.

2 Make sure that the destination image is open.

Note: *The destination image does not have to be the same pixel dimensions as the duplicated channel.*

3 Do one of the following:

- Drag the channel from the Channels palette into the destination image window. The duplicated channel appears at the bottom of the Channels palette.

- Choose Select > All, and then choose Edit > Copy. Select the channel in the destination image and choose Edit > Paste. The pasted channel overwrites the existing channel.

Splitting channels into separate images

You can split the channels of a flattened image into separate images. The original file is closed, and the individual channels appear in separate grayscale image windows. The title bars in the new windows show the original filename plus the channel abbreviation (Windows) or full name (Mac OS). Any changes since the last save are retained in the new images and lost in the original.

Splitting channels is useful when you want to retain individual channel information in a file format that doesn't preserve channels.

Note: *Only flattened images can be split. (See "Flattening all layers" on page 385.)*

To split channels into separate images:

Choose Split Channels from the Channels palette menu.

Merging channels

Multiple grayscale images can be combined into a single image. Some grayscale scanners let you scan a color image through a red filter, a green filter, and a blue filter to generate red, green, and blue images. Merging lets you combine the separate scans into a single, color image.

The images you want to merge must be in Grayscale mode, have the same pixel dimensions, and be open. (See "Changing the pixel dimensions of an image" on page 67.) The number of grayscale images you have open determines the color modes available when merging channels. For example, you can't merge the split channels from an RGB image into a CMYK image, because CMYK requires four channels and RGB requires only three.

Note: *If you are working with DCS files that have accidentally lost their links (and so cannot be opened, placed, or printed), open the channel files, and merge them into a CMYK image. Then resave the file as a DCS EPS file.*

To merge channels:

1 Open the grayscale images containing the channels you want to merge, and make one of the images active.

You must have more than one image opened for the Merge Channels option to be available.

2 Choose Merge Channels from the Channels palette menu.

3 For Mode, choose the color mode you want to create. If an image mode is unavailable, it is dimmed. The number of channels appropriate for the mode appears in the Channels text box.

4 If necessary, enter a number in the Channels text box.

If you enter a number that is incompatible with the selected mode, Multichannel mode is automatically selected. This creates a a multichannel image with two or more channels.

5 Click OK.

6 For each channel, make sure the image you want is open. If you change your mind about image type, click Mode to return to the Merge Channels dialog box.

7 If merging into a multichannel image, click Next, and repeat step 6 to select the remaining channels.

Note: All channels of a multichannel image are alpha channels or spot channels.

8 When you are finished selecting channels, click OK.

The selected channels are merged into a new image of the specified type, and the original images are closed without any changes. The new image appears in an untitled window.

Note: You cannot split and recombine (merge) an image with spot color channels. The spot color channel will be added as an alpha channel.

Deleting channels

You may want to delete spot or alpha channels you no longer need before saving an image. Complex alpha channels can substantially increase the disk space required for an image.

To delete a channel (Photoshop):

1 Select the channel in the Channels palette.

2 Do one of the following:

• Alt-click (Windows) or Option-click (Mac OS) the Trash button 🗑.

• Drag the channel name in the palette to the Trash button.

• Choose Delete Channel from the Channels palette menu.

• Click the Trash button at the bottom of the palette, and then click Yes.

Note: (Photoshop) When you delete a color channel from a file with layers, visible layers are flattened and hidden layers are discarded. This is done because removing a color channel converts the image to Multichannel mode, which does not support layers. An image isn't flattened when you delete an alpha channel, a spot channel, or a quick mask.

To delete a channel (ImageReady):

Choose Select > Delete Channel, and choose the channel from the submenu.

Adding spot colors (Photoshop)

Spot colors are special premixed inks used instead of, or in addition to, the process color (CMYK) inks. Each spot color requires its own plate on the press. (Because a varnish requires a separate plate, it is considered a spot color, too.) For information on printing spot color plates, see "Printing color separations" on page 620.

If you are planning to print an image with spot colors, you need to create spot channels to store the colors. To export spot channels, save the file in DCS 2.0 format or PDF. (See "Saving files in Photoshop EPS format (Photoshop)" on page 570.)

Note: *ImageReady supports Photoshop spot color channels as alpha channels.*

About spot colors

Note the following when working with spot colors:

- For spot color graphics that have crisp edges and knock out the underlying image, consider creating the additional artwork in a page-layout or illustration application.

- To apply spot color as a tint throughout an image, convert the image to Duotone mode and apply the spot color to one of the duotone plates. You can use up to four spot colors, one per plate. (See "Printing color separations" on page 620.)

- The names of the spot colors print on the separations.

- Spot colors are overprinted on top of the fully composited image. Each spot color is overprinted in the order it appears in the Channels palette.

- You cannot move spot colors above a default channel in the Channels palette except in Multi-channel mode.

- Spot colors cannot be applied to individual layers.

- Printing an image with a spot color channel to a composite color printer will print the spot color at an opacity indicated by the solidity setting.

- You can merge spot channels with color channels, splitting the spot color into its color channel components.

Creating spot channels

You can create a new spot channel or convert an existing alpha channel to a spot channel.

To create a new spot channel:

1 Choose Window > Channels to display the Channels palette.

2 To fill a selected area with a spot color, make or load a selection.

3 Do one of the following to create a channel:

- Ctrl-click (Windows) or Command-click (Mac OS) the New Channel button ▣ in the Channels palette.

- Choose New Spot Channel from the Channels palette menu.

If you made a selection, that area is filled with the currently specified spot color.

4 Click the color box, and choose a color.

If you select a custom color, your print service provider can more easily provide the proper ink to reproduce the image. (See "Choosing custom colors (Photoshop)" on page 169.)

5 For Solidity, enter a value between 0% and 100%.

This option lets you simulate on-screen the solidity of the printed spot color. A value of 100% simulates an ink that completely covers the inks beneath (such as a metallic ink); 0% simulates a transparent ink that completely reveals the inks beneath (such as a clear varnish). You can also use this option to see where an otherwise transparent spot color (such as a varnish) will appear.
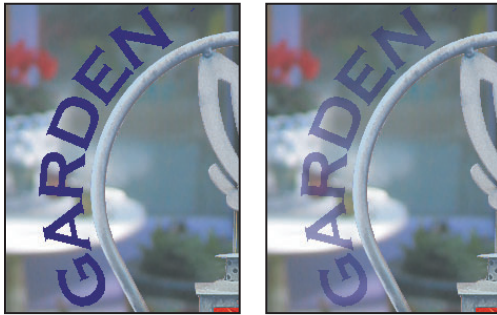
Solidity 100% and solidity 50%

Note: The Solidity and color choice options affect only the on-screen preview and the composite print. They have no effect on the printed separations.

6 To enter a name for the spot channel, choose a custom color in step 4, and the channel automatically takes the name of that color.

Be sure to name spot colors so they'll be recognized by other applications reading your file. Otherwise the file might not print.

To convert an alpha channel to a spot channel:

1 Do one of the following:

- Double-click the alpha channel thumbnail in the Channels palette.

- Select the alpha channel in the Channels palette, and choose Channel Options from the palette menu.

2 If needed, rename the channel.

3 Select Spot Color.

4 Click the color box, choose a color in the Color Picker dialog box, and click OK.

5 Click OK. The areas of the channel containing grayscale values are converted to spot color.

6 Choose Image > Adjustments > Invert to apply the color to the selected area of the channel.

Modifying spot channels

You can edit a spot channel to add or remove color in it, change a spot channel's color or on-screen color solidity, and merge a spot channel with the image's color channels.

For information on rearranging, duplicating, or deleting spot channels, see "Managing channels (Photoshop)" on page 360.

To edit a spot channel:

1 Select the spot channel in the Channels palette.

2 Use a painting or editing tool to paint in the image. Paint with black to add more spot color at 100% opacity; paint with gray to add spot color with lower opacity.

Note: Unlike the Solidity option in the Spot Channel Options dialog box, the Opacity option in the painting or editing tool's options determines the actual density of ink used in the printed output.

To change a spot channel's options:

1 Do one of the following:

• Double-click the spot channel thumbnail in the Channels palette.

• Select the spot channel in the Channels palette, and choose Channel Options from the palette menu.

2 Click the color box, and choose a color.

By selecting a custom color, your print service can more easily provide the proper ink to reproduce the image. (See "Choosing custom colors (Photoshop)" on page 169.)

3 For Solidity, enter a value between 0% and 100%.

This option lets you simulate on-screen the solidity of the printed spot color. A value of 100% simulates an ink that completely covers the inks beneath (such as a metallic ink); 0% simulates a transparent ink that completely reveals the inks beneath (such as a clear varnish). You can also use this option to see where an otherwise transparent spot color (such as a varnish) will appear.

Note: The Solidity and color choice options affect only the on-screen preview and the composite print. They have no effect on the printed separations.

To merge spot channels:

1 Select the spot channel in the Channels palette.

2 Choose Merge Spot Channel from the palette menu.

The spot color is converted to and merged with the color channels. The spot channel is deleted from the palette.

Merging spot channels flattens layered images. The merged composite reflects the preview spot color information, including the Solidity settings. For example, a spot channel with a solidity of 50% will produce different merged results than the same channel with a solidity of 100%.

In addition, the resulting merged spot channels usually don't reproduce the same colors as the original spot channels, because CMYK inks can't represent the range of colors available from spot color inks.

Adjusting overlapping spot colors

To prevent overlapping spot colors from either printing over or knocking out the underlying spot color, remove one of the spot colors where they overlap.

Use a printed sample of the overprinted inks to adjust your screen display to help you predict how colors will look when printed.

Note: In some cases, such as when you use varnish and bump plates, you may want colors to overprint.

To adjust overlapping spot colors:

1 In the Channels palette, select the spot channel with the color you want to print.

2 Choose Select > Load Selection.

   💡 To quickly select an image in a channel, hold down Ctrl (Windows) or Command (Mac OS), and click the channel in the Channels palette.

3 For Channel, choose the spot channel from step 1, and click OK.

4 To create a trap when knocking out the underlying color, choose Select > Modify > Expand or Contract, depending on whether the overlapping spot color is darker or lighter than the spot color beneath it. For more information on trapping, see "Creating color traps" on page 621.

5 In the Channels palette, select the underlying spot channel that contains areas you want to knock out. Press Backspace (Windows) or Delete (Mac OS).

   💡 This method can be used to knock out areas from any channels under a spot color, such as the CMYK channels.

6 If a spot color in one channel overlaps more than one other spot color, repeat this process for each channel that contains areas you want removed.

Using channel calculations to blend layers and channels (Photoshop)

You can use the blending effects associated with layers to combine channels within and between images into new images using the Apply Image command (on single and composite channels) and the Calculations command (on single channels). These commands offer two additional blending modes not available in the Layers palette—Add and Subtract. Although it's possible to create new combinations of channels by copying channels into layers in the Layers palette, you may find it quicker to use the calculation commands to blend channel information.

The calculation commands perform mathematical operations on the corresponding pixels of two channels (the pixels with identical locations on the image) and then combine the results in a single channel. Two concepts are fundamental to understanding how the calculation commands work.

• Each pixel in a channel has a brightness value. The Calculations and Apply Image commands manipulate these values to produce the resulting composite pixels.

• These commands overlay the pixels in two or more channels. Thus, the images used for calculations must have the same pixel dimensions. (See "Changing image size and resolution" on page 65 for information on adjusting an image's pixel dimensions.)

Using the Apply Image command

The Apply Image command lets you blend one image's layer and channel (the *source*) with a layer and channel of the active image (the *destination*).

To use the Apply Image command:

1 Open the source and destination images, and select the desired layer and channel in the destination image. The pixel dimensions of the images must match for image names to appear in the Apply Image dialog box.

Note: If the color modes of the two images differ (for example, one image is RGB and the other is CMYK), you can copy a single channel to another channel between images, but you cannot copy a composite channel to a composite channel in another image.

2 Choose Image > Apply Image.

3 Choose the source image, layer, and channel you want to combine with the destination. To use all layers in the source image, select Merged for Layer.

4 Select Preview to preview the results in the image window.

5 Select Invert to use the negative of the channel contents in the calculation.

6 For Blending, choose a blending option.

For information on the Add and Subtract options, see "About the Add and Subtract blending modes" on page 368. For information on other blending options, see "Selecting a blending mode" on page 331.

7 Enter an opacity to specify the effect's strength.

8 Select Preserve Transparency to apply the results only to opaque areas in the result layer.

9 Select Mask if you want to apply the blending through a mask. Then choose the image and layer containing the mask. For Channel, you can choose any color or alpha channel to use as the mask. You can also use a mask based on the active selection or the boundaries of the chosen layer (Transparency). Select Invert to reverse the masked and unmasked areas of the channel. (See "Using channel calculations to blend layers and channels (Photoshop)" on page 366.)

Using the Calculations command

The Calculations command lets you blend two individual channels from one or more source images. You can then apply the results to a new image or to a new channel or selection in the active image. You cannot apply the Calculations command to composite channels.

To use the Calculations command:

1 Open the source image or images.

Note: If you are using more than one source image, the images must have the same pixel dimensions.

2 Choose Image > Calculations.

3 Select Preview to preview the results in the image window.

4 Choose the first source image, layer, and channel. To use all the layers in the source image, choose Merged for Layer.

5 Select Invert to use the negative of the channel contents in the calculation. For Channel, choose Gray to get the same effect as would be obtained by converting the image to a grayscale image.

6 Choose the second source image, layer, and channel, specifying further options as described in step 5.

7 For Blending, choose a blending mode.

For information on the Add and Subtract modes, see "About the Add and Subtract blending modes" on page 368. For information on other blending modes, see "Selecting a blending mode" on page 331.

8 Enter an opacity to specify the effect's strength.

9 Select Mask if you want to apply the blending through a mask. Then choose the image and layer containing the mask. For Channel, you can choose any color or alpha channel to use as the mask. You can also use a mask based on the active selection or the boundaries of the chosen layer (Transparency). Select Invert to reverse the masked and unmasked areas of the channel.

10 For Result, specify whether to place the blending results in a new document or in a new channel or selection in the active image.

About the Add and Subtract blending modes

The Add and Subtract blending modes are available only for the Apply Image and Calculations commands.

Add Adds the pixel values in two channels. This is a good way to combine nonoverlapping images in two channels.

Because higher pixel values represent lighter colors, adding channels with overlapping pixels lightens the image. Black areas in both channels remain black ($0 + 0 = 0$). White in either channel results in white ($255 + $ any value $= 255$ or greater).

Add mode divides the sum of the pixel values by the Scale amount and then adds the Offset value to the sum. For example, if you wanted to find the average of the pixels in two channels, you would add them, divide by 2, and enter no Offset value.

The Scale factor may be any number between 1.000 and 2.000. Entering a higher Scale value darkens the image.

The Offset value lets you lighten or darken the pixels in the destination channel by any brightness value between +255 and –255. Negative values darken the image; positive values lighten the image.

Subtract Subtracts the pixel values in the source channel from the corresponding pixels in the target channel. As with Add mode, the result is then divided by the Scale factor and added to the Offset value.

The Scale factor may be any number between 1.000 and 2.000. The Offset value lets you lighten or darken the pixels in the destination channel by any brightness value between +255 and –255.

Using Layers

About layers

Layers allow you to work on one element of an image without disturbing the others. Think of layers as sheets of acetate stacked one on top of the other. Where there is no image on a layer, you can see through to the layers below. You can change the composition of an image by changing the order and attributes of layers. In addition, special features such as adjustment layers, fill layers, and layer styles let you create sophisticated effects.
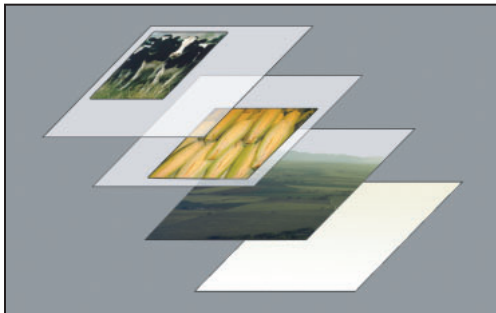
Illustration of how transparent areas on a layer let you see through to the layers below

You can put multiple layers together in different ways:

• Groups let you view and physically manipulate multiple layers as a single object. (See "Grouping layers (ImageReady)" on page 375.)

• Sets let you assign attributes to multiple layers as a single object. (See "Creating new layers and layer sets" on page 372.)

• Links let you link layers together to use them as a single object. (See "Linking layers" on page 378.) If you're using new files, use layer groups instead of linking layers (ImageReady).

Working with layers (ImageReady)

ImageReady layers have additional features that simplify Web design. For example, you can select multiple layers, either in the layers palette or directly in the document. Selected layers do not have to be contiguous. (See "Selecting layers" on page 374.) Once selected, layers can be aligned, distributed, moved, transformed, and grouped.

Using the Move tool with layers
In ImageReady, you can use the Move tool to select, align, distribute, and move multiple layers. Selecting the Move tool in the toolbox enables three additional move tools in the options bar:

• Layer Move tool ⌖ to move the entire layer.

- Layer Select tool ▸ to move an ungrouped layer or a grouped layer as a single object.
- Direct Select tool ▸ to select a specific layer or layers in a group to move separately.

Manipulating layer content

In ImageReady, the content on a layer displays selection handles so that you can easily see in the document which layers are selected. You can set an option for layer content to invoke transform mode when selected—this way you can immediately resize or rotate a button after you draw.
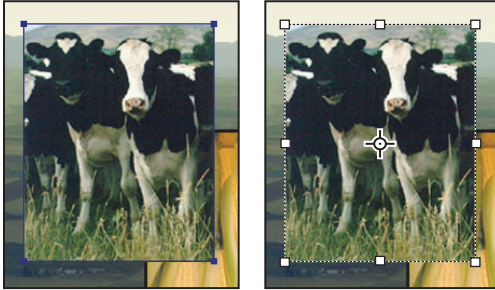
Layer content with selection handles (left) and with transform mode selected (right)

Using the Layers palette

The Layers palette lists all layers, layer sets, and layer effects in an image. You can accomplish many tasks—such as creating, hiding, displaying, copying, and deleting layers—using the buttons in the Layers palette. You can access additional commands and options in the Layers palette menu and the Layers menu.
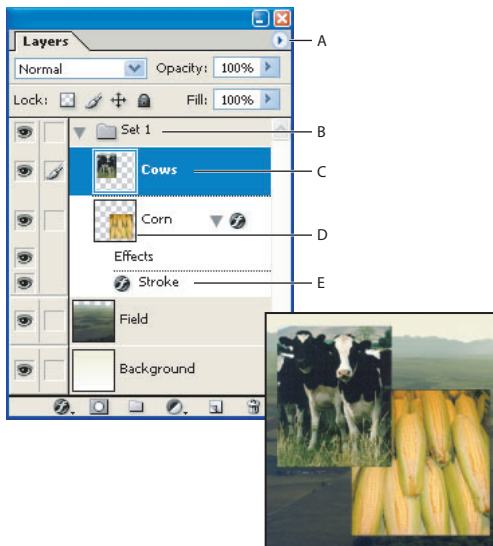
Photoshop Layers palette
A. Layers palette menu **B.** Layer set **C.** Layer **D.** Layer thumbnail **E.** Layer effect

Displaying the Layers palette Choose Window > Layers. Be sure to move the palette from the dock to enable the palette menu.

Using the Layers palette menu Click the triangle ⊙ in the upper right corner of the palette to access commands for working with layers.

Changing the size of layer thumbnails Choose Palette Options from the Layers palette menu, and select a thumbnail size.

Changing thumbnail contents (ImageReady) Choose Palette Options from the Layers palette menu, and select Entire Document to display the contents of the entire document. Select Layer Bounds to restrict the thumbnail to the object's pixels on the layer. This makes it easier to see in the Layers palette. Check the Show Layer Group Thumbnails box to show a composite image of the group rather than the group icon.

Turn off thumbnails to improve performance and save monitor space.

Expanding and collapsing layer sets Click the triangle to the left of a layer set folder. In Photoshop, press Alt (Windows) or Option (Mac OS) when clicking the triangle to expand or collapse all effects applied to layers contained within the set. Press Alt (Windows) or Option (Mac OS) when clicking the triangle to expand or collapse all sets, including nested layer sets. Press Ctrl (Windows) or Command (Mac OS) when clicking to see all sets at the same level as the selected one.

Creating layers and layer sets

A new image in Photoshop or ImageReady has a single layer. The number of additional layers, layer effects, and layer sets you can add to an image is limited only by your computer's memory.

Layer sets help you organize and manage layers. You can use layer sets to semantically arrange your layers to reduce clutter in the Layers palette. You can nest sets within other sets. You can also use layer sets to apply attributes and masks to multiple layers simultaneously.

In ImageReady, you may find that working with layer groups rather than layer sets is more efficient. See "Grouping layers (ImageReady)" on page 375.

About the background layer

When you create a new image with a white background or a colored background, the bottommost image in the Layers palette is *Background*. An image can have only one background. You cannot change the stacking order of a background, its blending mode, or its opacity. However, you can convert a background to a regular layer.

When you create a new image with transparent content, the image does not have a background layer. The bottommost layer is not constrained like the background layer; you can move it anywhere in the Layers palette, and change its opacity and blending mode.

To convert a background into a layer:

1 Double-click Background in the Layers palette, or choose Layer > New > Layer from Background.

2 Set layer options as desired. (See "Creating new layers and layer sets" on page 372.)

3 Click OK.

To convert a layer into a background:

1 Select a layer in the Layers palette.

2 Choose Layer > New > Background from Layer.

Note: *You cannot create a background by renaming a regular layer Background—you must use the Background from Layer command.*

Creating new layers and layer sets

You can create empty layers and add content to them, or you can create new layers from existing content. When you create a new layer, it appears either above the selected layer or within the selected layer set in the Layers palette.

To create a new layer or layer set using default options:

Click the New Layer button ▫ or New Layer Set button ▫ in the Layers palette.

To create a new layer or layer set and specify options:

1 Do one of the following:

• Choose Layer > New > Layer or choose Layer > New > Layer Set.

• Choose New Layer or New Layer Set from the Layers palette menu.

• Alt-click (Windows) or Option-click (Mac OS) the New Layer button or New Layer Set button in the Layers palette.

• Ctrl-click (Windows) or Command-click (Mac OS) the New Layer button or New Layer Set button in the Layers palette to add a layer below the currently selected layer.

2 Set layer options, and click OK:

• Name to specify a name for the layer or layer set. (See "Renaming layers" on page 382.)

• Use Layer Below to Create Clipping Mask. This option is not available for layer sets. (See "Creating clipping masks" on page 413.)

• Color to assign a color to the layer or layer set. (See "Color coding layers" on page 382.)

• Mode to specify a blending mode for the layer or layer set. (See "Choosing a blending mode" on page 386.)

• Opacity to specify an opacity level for the layer or layer set. (See "Setting layer opacity" on page 386.)

• (Photoshop) Fill with Mode-neutral color to fill the layer with a preset, neutral color. (See "Filling new layers with a neutral color" on page 387.)

⚲ To create a new layer that uses the style of an existing layer, see "Applying preset styles" on page 392.

To create a new layer with the same effects as an existing layer (ImageReady):

1 Select the existing layer in the Layers palette.

2 Drag the layer to the New Layer button at the bottom of the Layers palette. The newly created layer contains all the effects of the existing one.

To copy a layer set:

Drag an existing layer set to the New Layer button.

To convert a selection into a new layer:

1 Make a selection.

2 Do one of the following:

- Choose Layer > New > Layer Via Copy to copy the selection into a new layer.

- Choose Layer > New > Layer Via Cut to cut the selection and paste it into a new layer.

To create a new layer set from linked layers:

Choose Layer > New > Layer Set from Linked. (See "Linking layers" on page 378.)

To add new or existing layers to a layer set:

Do one of the following:

- Select the layer set in the Layers palette and click the New Layer button .

- Drag a layer to the layer set folder.

- Drag a layer set folder into another layer set folder. The layer set and all of its layers move.

To nest layer sets:

Drag an existing layer set to the New Layer Set button .

Working with layered images

There are many advantages to working with layered images. You can quickly select, hide, duplicate, lock, and change the appearance of images using layers.

Viewing layers and layer sets

Using the Layers palette, you can arrange your layers and layer sets in a way that makes the most sense to you. You can open sets when you want to work on the layers within them, and close sets to keep your palette manageable.

To view individual layers and layer sets:

Select Window > Layers palette to open the Layers palette. Each of your layers and layer sets will appear, unless they are in sets that are closed.

To view layers within a layer set:

1 Click the layer set in the Layers palette.

2 To open the set, do one of the following:

- Click the triangle to the left of the folder icon.

- Control-click (Windows) or Command-click (Mac OS) the triangle to the left of the folder icon and choose Open This Layer Set.

To view nested layer sets:

1 Open the parent layer set.

2 Do one of the following:

- Ctrl-click (Windows) or Command-click (Mac OS) the triangle to the left of the folder icon to open or close a set and its layers.

- Alt-click (Windows) or Option-click (Mac OS) the triangle to open or close a set and the sets nested within it.
- Ctrl + Alt-click (Windows) or Command + Option-click (Mac OS) to open or close all layers within the set, all sets nested within the set, and the set itself.

Selecting layers

If an image has multiple layers, you must select which layer you want to work on. Any changes you make to the image affect only the *active* layers. You select a layer to make it active. In Photoshop you can select only one layer. In ImageReady you can select multiple layers at a time. The name of the active layer appears in the title bar of the document window (Photoshop), and a paintbrush icon ✎ appears next to the layer in the Layers palette. You can select layers with the Layers palette or using the Move Tool.

💡 If you don't see the desired results when using a tool or applying a command, you may not have the correct layer selected. Check the Layers palette to make sure that you're working on the desired layer.

To select a layer in the Layers palette:

Do one of the following:

- Click a layer in the Layers palette.
- (ImageReady) To select multiple contiguous layers, shift-click. To select multiple separate layers, Ctrl-click (Windows) or Command-click (Mac OS) in the layers palette.
- (ImageReady) To select linked layers, choose Select Linked Layers from the Layers palette menu.

To select layers directly in the document window:

1 Select the Move tool ▸⊕.

2 Do one of the following:

- (ImageReady) In the options bar, select the Layer Select tool ▸. Click in the document on a single layer to select it, in a group to select the entire group, or in a layer in a layer set to select only that layer. Note that you can't select locked layers with this tool.
- (ImageReady) In the options bar, select the Direct Select tool ▸. Click in the document on a layer within a group to select the individual layer.
- (Photoshop) In the options bar, select Auto Select Layer and click in the document on the layer content you want to select. The topmost layer containing pixels under the cursor will be selected. (See "Moving selections and layers within an image" on page 241.)
- Right-click (Windows) or Control-click (Mac OS) in the image, and choose a layer from the context menu. The context menu lists all the layers that contain pixels under the current pointer location.

To select a layer from a set:

1 Click the layer set in the Layers palette.

2 To open the set, do one of the following:

- Click the triangle ▸ to the left of the folder icon ▭.

- Ctrl-click (Windows) or Command-click (Mac OS) the triangle to the left of the folder icon and choose Open This Layer Set from the popup menu. (You can choose Open Other Layer Sets to open those other than what you've selected.)

3　Click the individual layer in the set.

Displaying the contents of layers

You can use the Layers palette to selectively hide and display the contents of layers, layer sets, and layer effects. You can also specify how transparent areas are displayed in the image.

To change the visibility of a layer, layer set, or layer effect:

Do one of the following:

- In the Layers palette, click the eye icon 👁 next to a layer, layer set, or layer effect to hide its content in the document window. Click in the column again to redisplay the content.

- Alt-click (Windows) or Option-click (Mac OS) an eye icon to display only the content for that layer or layer set. Doing this will enable Photoshop to remember the visibility states of all layers before hiding them. Alt-click (Windows) or Option-click (Mac OS) in the eye column again to restore the original visibility settings.

- Drag through the eye column to change the visibility of multiple items in the Layers palette.

Note: *Only visible layers are printed.*

To change the way transparency is displayed:

1　Do one of the following:

- (Photoshop) In Windows, choose Edit > Preferences > Transparency & Gamut; in Mac OS, choose Photoshop > Preferences > Transparency & Gamut.

- (ImageReady) In Windows, choose Edit > Preference > Transparency; in Mac OS, choose ImageReady > Preferences > Transparency.

2　Choose a size and color for the transparency checkerboard, or choose None for Grid Size to hide the transparency checkerboard.

3　(Photoshop) Select Use Video Alpha to enable Photoshop to send transparency information to your computer's video board. This option requires hardware support—make sure that your computer's video board allows images to be overlaid on top of a live video signal.

4　Click OK.

Grouping layers (ImageReady)

Grouping layers in ImageReady simplifies working with and organizing multiple layers. Layer groups are similar to layer sets but allow for different kinds of quick manipulation. Layer groups let you move, drag, resize and physically manipulate multiple layers as one. This is very useful if you have, for example, a tab that consists of multiple layers. Rather than carefully selecting each layer associated with the tab every time you want to move it, you can group all the layers of your tab and move it as a single object.

When you create a layer group, the layers included in the group appear in the Layer palette indented under a heading of Group #, where "#" is the number of the group. With the Layer Select tool, you can click any layer in the group to move the entire group.
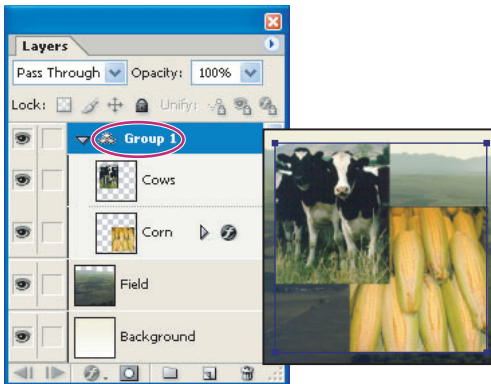
Layers in an ImageReady layer group can be selected and manipulated as a single object.

To group layers:

1 Select multiple layers in the layers palette.

2 Do one of the following:

• Choose Layer > Group Layers (or use Ctrl + G (Windows) or Command + G (Mac OS) to group.

• Alt-drag (Windows) or Option-drag (Mac OS) layers to the folder icon at the bottom of the layers palette to group the layers.

3 To Ungroup the layers, choose Layer > Ungroup Layers (or use Ctrl + Shift + G (Windows) or Command + Shift + G (Mac OS) to Ungroup.

Duplicating layers

Duplicating layers is an easy way to copy content within an image or between images. When duplicating layers between images, keep in mind that the layer's content will appear smaller or larger if it is copied to a file with different resolution. (See "Understanding image size and resolution" on page 62.)

To duplicate a layer or layer set within an image:

1 Select a layer or layer set in the Layers palette.

2 Do one of the following:

• Drag the layer or layer set to the New Layer button ▣.

• Choose Duplicate Layer or Duplicate Layer Set from the Layers menu or the Layers palette menu. In Photoshop, enter a name for the layer or layer set, and click OK.

• (Photoshop) Press Alt (Windows) or Option (Mac OS), and drag the layer or layer set to the New Layer button or the New Layer Set button. Enter a name for the layer or layer set, and click OK.

To duplicate a layer or layer set between images:

1 Open the source and destination images.

2 In the Layers palette of the source image, select a layer or layer set.

3 Do one of the following:

• Drag the layer or layer set from the Layers palette into the destination image.

• Select the Move tool ▸⊕ , and drag from the source image to the destination image. The duplicate layer or layer set appears above the active layer in the Layers palette of the destination image. Shift-drag to position the image content in the same location it occupied in the source image (if the source and destination images have the same pixel dimensions) or at the center of the document window (if the source and destination images have different pixel dimensions).

• (Photoshop) Choose Duplicate Layer or Duplicate Layer Set from the Layers menu or the Layers palette menu. Choose the destination document from the Document pop-up menu, and click OK.

• Choose Select > All to select all of the pixels on the layer, and choose Edit > Copy. Then choose Edit > Paste in the destination image.

To create a new document from a layer or layer set (Photoshop):

1 Select a layer or layer set in the Layers palette.

2 Choose Duplicate Layer or Duplicate Layer Set from the Layers menu or the Layers palette menu.

3 Choose New from the document pop-up menu, and click OK.

Changing the stacking order of layers

The stacking order in the Layers palette determines whether the content of a layer or layer set appears in front of or behind other elements in the image.

To change the order of layers and layer sets:

Do one of the following:

• Drag the layer or layer set up or down in the Layers palette. Release the mouse button when the highlighted line appears where you want to place the layer or layer set.

• To move a layer into a layer set, drag a layer to the layer set folder ▢. The layer is placed at the bottom of the layer set.

Note: If a layer set is expanded so that you can see all the layers within it, adding a layer beneath the expanded set automatically adds the layer to that set. To avoid this, collapse the layer set before adding the new layer.

• Select a layer or layer set, choose Layer > Arrange, and choose a command from the submenu. If the selected item is in a layer set, the command applies to the stacking order within the layer set. If the selected item is not in a layer set, the command applies to the stacking order within the Layers palette.

- (ImageReady) To reverse the order of selected layers, choose Layer > Reverse Layers or choose Reverse Layers from the Layers palette menu. Note that these options appear dimmed if you do not have at least two layers selected.

Note: By definition, the background layer is always at the bottom of the stacking order. Therefore, the Send to Back command places the selected item directly above the background layer. (See "About the background layer" on page 371.)

Linking layers

By linking two or more layers or layer sets, you can move their contents together. You can also copy, paste, align, merge, apply transformations to, and create clipping masks from linked layers. In ImageReady, working with multiple layer selections is more flexible and provides all the functionality of linking (see "Selecting layers" on page 374), but linking is still an option in order to provide backwards compatibility.

To link layers:

1 Select a layer or layer set in the Layers palette.

2 Click in the column immediately to the left of any layers you want to link to the selected layer. A link icon 🔗 appears in the column.

To link selected layers: (ImageReady)

Choose Link Layers from the Layers palette menu.

To unlink layers:

In the Layers palette, click the link icons to remove the links.

Aligning layers

You can align either layers or the contents of layers and layer sets using the Move tool. (See "Moving selections and layers within an image" on page 241.) In ImageReady, you can align layer groups.

To align the contents of layers:

1 Do one of the following:

- To align the content of a layer to a selection border, make a selection in the image. Then select a layer in the Layers palette.

- To align the contents of multiple layers to a selection border, make a selection in the image. Then link the layers you want to align in the Layers palette. (See "Linking layers" on page 378.)

- To align the contents of layers to the content of the active layer, link the layers you want to align to the active layer. (See "Linking layers" on page 378.)

- To align multiple layers (ImageReady), either select multiple layers with the Move tool or select a layer group.

2 Choose Layer > Align Linked or Layer > Align To Selection (Photoshop) or choose Edit > Align Layers (ImageReady), and choose a command from the submenu. These same commands are available as Alignment buttons in the Move tool options bar:

- Top Edges ⬚ aligns the top pixel on the linked layers to the top pixel on the active layer or the top edge of the selection border.
- Vertical Centers ⬚ aligns the vertical center pixel on the linked layers to the vertical center pixel on the active layer or the vertical center of the selection border.
- Bottom Edges ⬚ aligns the bottom pixel on the linked layers to the bottom pixel on the active layer or the bottom edge of the selection border.
- Left Edges ⬚ aligns the left pixel on the linked layers to the left pixel on the active layer or the left edge of the selection border.
- Horizontal Centers ⬚ aligns the horizontal center pixel on the linked layers to the horizontal center pixel on the active layer or the horizontal center of the selection border.
- Right Edges ⬚ aligns the right pixel on the linked layers to the right pixel on the active layer or the right edge of the selection border.

Distributing layers

You can distribute your layers in your document in a number of different ways. Both Photoshop and ImageReady have tools that let you distribute the layers in commonly used formations, and you can can customize the distribution as well. For instance, you might have layers that you want to align by centers but that might cause some overlap. So you can distribute the space between the layers evenly to remedy the problem.

To evenly distribute layers and layer groups:

1 Link three or more layers (Photoshop) or select multiple layers or a layer group with the Move tool (ImageReady).

2 Choose Layers > Distribute Linked (Photoshop) or Edit > Distribute Linked Layers (ImageReady) from the main menu, or in the options bar, click a Distribution button. Each of these buttons works on linked layers in Photoshop, or multiple selected layers or layer groups in ImageReady:

- Top edges ⬚ spaces the layers evenly starting from the top pixel on each layer.
- Vertical Centers ⬚ spaces the layers evenly starting from the vertical center pixel of each layer.
- Bottom Edges ⬚ spaces the layers evenly starting from the bottom pixel of each layer.
- Left Edges ⬚ spaces the layers evenly starting from the left pixel of each layer.
- Horizontal Centers ⬚ spaces the layers evenly starting from the horizontal center of each layer.

- Right Edges ▮▮ spaces the layers evenly starting from the right pixel on each layer.

Layers spaced unevenly (top) and spaced evenly (bottom)

To distribute layers unevenly (ImageReady):

1 Select the Move tool.

2 Select the layers you wish to space.

3 Enter a number in the Distribute Spacing box to the right of the Distribution buttons in the options bar. This number equals the number of pixels that will separate the layers. You can choose different numbers for different combinations of layers or layer groups to create an uneven spacing pattern.

4 Choose one of the Distribute Vertically or Distribute Horizontally buttons to finish the distribution process.
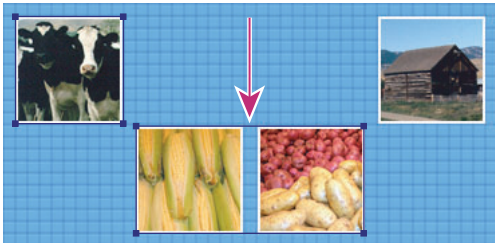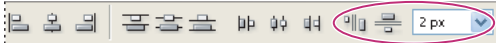
Space Between Distributed Layers Box lets you input size of layer separation.

Locking layers

You can fully or partially lock layers to protect their contents. For instance, you might want to lock a layer fully when you finish with it. Another layer might have the correct transparency and styles, but you are still deciding on positioning, so you want to leave that layer partially locked. When a layer is locked, a lock icon displays to the right of the layer name. The lock icon is solid when the layer is fully locked; it is hollow when the layer is partially locked.

To lock all properties of a layer or layer set:

1 Select a layer or layer set.

2 Do one of the following:

- Click the Lock All 🔒 option in the Layers palette.

- (ImageReady) Choose Layer Options from the Layers palette menu, and select the Lock All option.

Note: *When a layer in a locked layer set has individual lock options applied to it, the lock icon is dimmed* 🔒 *.*

To partially lock a layer:

1 Select a layer.

2 Click one or more lock options in the Layers palette. (In ImageReady, you can also choose Layer Options from the Layers palette menu.) Select one or more lock options:

- Lock Transparency 🔲 to confine editing to the opaque portions of the layer. This option is equivalent to the Preserve Transparency option in earlier versions of Photoshop.
- Lock Image 🖌 to prevent modification of the layer's pixels using the painting tools.
- Lock Position ⊕ to prevent the layer's pixels from being moved.

Note: *For type layers, Lock Transparency and Lock Image are selected by default and cannot be deselected.*

To apply lock options to all linked layers or all layers in a layer set:

1 Select a linked layer or a layer set.

2 Choose Lock All Linked Layers or Lock All Layers in Set from the Layers menu or the Layers palette menu.

3 Select lock options, and click OK.

Unifying layers (ImageReady)

The unify buttons in the Layers palette determine how the changes you make to a layer in the active rollover state or animation frame apply to the other states in a rollover or frames in an animation. When a unify button is selected, changes apply to all states and frames; when a button is deselected, changes apply to only the active state or frame. (See "Unifying and matching layer rollovers and animations" on page 509.)

Sampling from layers

The default behavior of the Magic Wand, Smudge, Blur, Sharpen, Paint Bucket, Clone Stamp, and Healing Brush tools is to sample color only from pixels on the active layer. This means you can smudge or sample in a single layer even when other layers are visible, and you can sample from one layer and paint in another one.

Alternately, you can choose to paint using sampled data from all visible layers. For example, you can use the Clone Stamp tool to clone an area containing pixels from all the visible layers.

To sample from all visible layers:

1 Select the Magic Wand tool ✶, the Smudge tool 👋, the Blur tool 🌢, the Sharpen tool △, the Paint Bucket tool 🎨, the Clone Stamp tool 🖈, or the Healing Brush tool 🖊.

2 In the options bar, select Use All Layers.

Note: *When you are using tools that sample image data, painting or editing in a new layer where there are no pixels produces the best results when Use All Layers is selected.*

Managing Layers

After you add layers to an image, you can use the Layers palette to manage them, and in ImageReady you can use the File menu to export them.

Renaming layers

As you add layers to an image, it's helpful to rename layers based on their content. Using descriptive layer names allows you to easily identify layers in the Layers palette.

To rename a layer or layer set:

1 Do one of the following:

• Double-click the layer or layer set's name in the Layers palette, and enter a new name.

• Press Alt (Windows) or Option (Mac OS), and double-click the layer set's name in the Layers palette. Enter a new name in the Name text box, and click OK.

• (Photoshop) Select a layer or layer set, and choose Layer Properties or Layer Set Properties from the Layers menu or the Layers palette menu. Enter a new name in the Name text box, and click OK.

• (ImageReady) Select a layer or layer set, and choose Layer Options or Layer Set Options from the Layers menu or the Layers palette menu. Enter a new name in the Name text box, and click OK.

Color coding layers

Color coding layers and layer sets makes it easier to locate related layers in the Layers palette.

To assign a color to a layer or layer set:

1 Do one of the following:

• (Photoshop) Select a layer or layer set, and choose Layer Properties or Layer Set Properties from the Layers menu or the Layers palette menu.

• (ImageReady) Select a layer or layer set, and choose Layer Options or Layer Set Options from the Layers menu or the Layers palette menu.

• For layer sets, press Alt (Windows) or Option (Mac OS), and double-click the layer set's name in the Layers palette.

2 Choose a color from the Color pop-up menu, and click OK.

Rasterizing layers

You cannot use the painting tools or filters on layers that contain vector data (such as type layers, shape layers, and vector masks) and generated data (such as fill layers). However, you can rasterize these layers to convert their contents into a flat, raster image.

To rasterize a single layer:

1 Select the layer you want to rasterize.

2 Choose Layer > Rasterize, and choose an option from the submenu.

To rasterize multiple layers:

Do one of the following:

- Link the layers you want to rasterize, and choose Layer > Rasterize > Linked Layers. (See "Linking layers" on page 378.)

- To rasterize all layers that contain vector and generated data, choose Layer > Rasterize > All Layers.

Deleting layers

Deleting layers that you no longer need reduces the size of your image file.

To delete a layer or layer set:

1 Select a layer or layer set in the Layers palette. In ImageReady you can select multiple layers.

2 Do one of the following:

- To delete the layer or layer set with confirmation, click the Trash button. Alternately, choose Delete Layer or Delete Layer Set from the Layers menu or the Layers palette menu.

- To delete the layer or layer set without confirmation, drag it to the Trash button or Alt-click (Windows) or Option-click (Mac OS) the Trash button.

To delete linked layers (Photoshop):

Do one of the following:

- To delete the linked layers with confirmation, choose Delete Linked Layers from the Layers menu or the Layers palette menu. Alternately, Ctrl-click (Windows) or Command-click (Mac OS) the Trash button.

- To delete the linked layers without confirmation, Ctrl-Alt-click (Windows) or Command-Option-click (Mac OS) the Trash button.

To delete hidden layers (Photoshop):

Choose Delete Hidden Layers from the Layers menu or the Layers palette menu.

Merging and stamping layers

When you have finalized the content of layers, you can merge them to create partial versions of your composite image. This helps you manage the size of your image files. When you merge layers, the data on the top layers replaces the data it overlaps on the lower layers. The intersection of all transparent areas in the merged layers remains transparent.
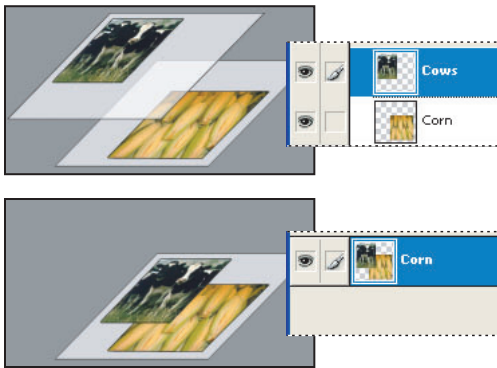
Before and after merging two layers

Note: *You cannot use an adjustment layer or fill layer as the target layer for a merge. (See* *"Merging adjustment layers or fill layers" on page 405*.)

In addition to merging layers, you can stamp layers. Stamping allows you to merge the contents of more than one layer into a target layer while leaving the other layers intact. Typically, the selected layer will stamp down to the layer below it.

Note: *When you save a merged document, you cannot revert back to the unmerged state; the layers are permanently merged.*

To merge two layers or layer sets:

1 Position the layers or layer sets you want to merge next to each other in the Layers palette, and make sure that the visibility for both items is enabled.

2 Select the top item in the pair.

3 Do one of the following:

• If the top item is a layer, choose Merge Down from the Layers menu or the Layers palette menu.

• If the top item is a layer set, choose Merge Layer Set from the Layers menu or the Layers palette menu.

To merge layers in a clipping mask:

1 Hide any layers you do not want to merge.

2 Select the base layer in the group.

3 Choose Merge Clipping Mask from the Layers menu or the Layers palette menu.

To merge all visible linked layers:

Choose Merge Linked from the Layers palette or the Layers palette menu.

To merge all the visible layers and layer sets in an image:

Choose Merge Visible from the Layers palette or the Layers palette menu.

To stamp layers:

1 Position the layer you want to stamp to above the layer you want to stamp from, and make sure that the visibility for both items is enabled.

2 Select the top item in the pair.

3 Press Ctrl+Alt+E (Windows) or Command+Option+E (Mac OS).

The selected layer is stamped with the contents of the other layer.

To stamp linked layers:

Select one of the linked layers, and press Ctrl+Alt+E (Windows) or Command+Option+E (Mac OS). The selected layer is stamped with the contents from the other linked layers.

To stamp all visible layers:

Select the layer or layer set that you want to contain the new contents, and press Shift+Ctrl+Alt+E (Windows) or Shift+Command+Option+E (Mac OS).

alternately, you can hold down Alt (Windows) or Option (Mac OS), and choose Layer > Merge Visible. The modified Merge command merges all the visible data into the current target layer.

Flattening all layers

In a flattened image, all visible layers are merged into the background, which greatly reduces the file size. Flattening an image discards all hidden layers and fills the remaining transparent areas with white. In most cases, you won't want to flatten a file until you have finished editing the individual layers.

Note: Converting an image between some color modes flattens the file. Be sure to save a copy of your file that includes all layers if you want to edit the original image after the conversion.

To flatten an image:

1 Make sure that all the layers you want to keep are visible.

2 Choose Layer > Flatten Image, or choose Flatten Image from the Layers palette menu.

Tracking file size

File size depends on the pixel dimensions of an image and the number of layers contained in the image. Images with more pixels may produce more detail when printed, but they require more disk space to store and may be slower to edit and print. You should keep track of your file sizes to make sure the files are not becoming too large for your purposes. If the file is becoming too large, reduce the number of layers in the image or change the image size.

You can view file size information for an image at the bottom of the application window (Windows) or document window (Mac OS). For more information, see "Displaying file and image information" on page 46.

Exporting layers (ImageReady)

In ImageReady, you can export some or all layers of a document as files. You can export layers as Photoshop (PSD), GIF, JPEG, PNG 8, PNG 24, WBMP or SWF. See "Exporting layers as files (ImageReady)" on page 579.

Setting opacity and blending options

A layer's opacity and blending options determine how its pixels interact with pixels on other layers.

Setting layer opacity

A layer's opacity determines to what degree it obscures or reveals the layer beneath it. A layer with 1% opacity appears nearly transparent, while one with 100% opacity appears completely opaque.

To specify opacity for a layer or layer set:

1 Select a layer or layer set in the Layers palette.

Note: *You cannot change the opacity of a background layer or a locked layer. You can, however, convert a background layer to a regular layer that does support transparency. See* *"About the background layer" on page 371*.

2 Do one of the following:

• In the Layers palette, enter a value in the Opacity text box or drag the Opacity pop-up slider.

• Choose Layer > Layer Style > Blending Options. Enter a value in the Opacity text box or drag the Opacity pop-up slider.

• Select the Move tool and type a number on your keyboard for the percentage of opacity for the selected layer.

Note: *To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu.*

Choosing a blending mode

A layer's blending mode determines how its pixels blend with underlying pixels in the image. You can create a variety of special effects using blending modes.

By default, the blending mode of a layer set is Pass Through, which means that the layer set has no blending properties of its own. When you choose a different blending mode for a layer set, you effectively change the order in which the entire image is composited. All of the layers in the layer set are composited first. The composited layer set is then treated as a single image and blended with the rest of the image using the selected blending mode. Thus, if you choose a blending mode other than Pass Through for the layer set, none of the adjustment layers or layer blending modes inside the layer set will apply to layers outside the set.

For a description of each blending mode, see *"Selecting a blending mode" on page 331*.

Note: *There is no Clear blending mode for layers. In addition, the Color Dodge, Color Burn, Darken, Lighten, Difference, and Exclusion modes are unavailable for Lab images.*

To specify a blending mode for a layer or layer set:

1 Select a layer or layer set in the Layers palette.

2 Choose a blending mode:

• In the Layers palette, choose an option from the Blend Mode pop-up menu.

• Choose Layer > Layer Style > Blending Options, and then choose an option from the Blend Mode pop-up menu.

Filling new layers with a neutral color

Some filters (such as the Lighting Effects filter) cannot be applied to layers with no pixels. Selecting Fill with Mode-neutral color in the New Layer dialog box resolves this problem by first filling the layer with a preset, neutral color. The neutral color is assigned based on the layer's blending mode and is invisible. If no effect is applied, filling with a neutral color has no effect on the remaining layers. The Fill with Neutral Color option is not available for layers that use the Normal, Dissolve, Hue, Saturation, Color, or Luminosity modes.

Specifying fill opacity

In addition to setting opacity for a layer, which affects any layer styles and blending modes applied to the layer, you can specify a fill opacity for layers. Fill opacity affects pixels painted in a layer or shapes drawn on a layer without affecting the opacity of any layer effects that have been applied to the layer.

To specify fill opacity for a layer:

Do one of the following:

- (Photoshop) In the Layers palette, enter a value in the Fill Opacity text box or drag the Fill Opacity pop-up slider.

- (Photoshop) Double-click a layer thumbnail, choose Layer > Layer Style > Blending Options, or choose Add a Layer Style > Blending Options from the Layers palette menu. Enter a value in the Fill Opacity text box.

Note: *To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu. (ImageReady) Choose Layer > Layer Style > Blending Options and enter a value in the Fill Opacity text box.*

Specifying knockout options

Knockout options let you specify which layers "punch through" to reveal content from other layers. For example, you can use a text layer to knock out a color adjustment layer and reveal a portion of the image using the original colors.

To create a knockout effect, you need to decide which layer will create the shape of the knockout, which layers will be punched through, and which layer will be revealed. If you want to reveal a layer other than the Background, you can place the layers you want to use in a layer set or clipping mask.
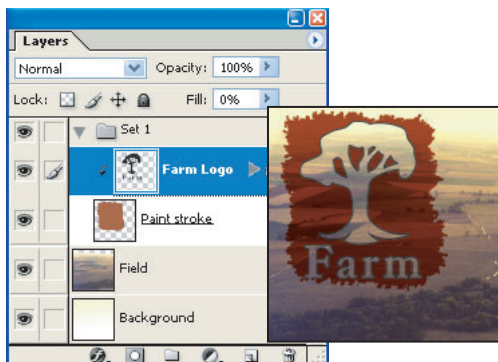
Farm logo with shallow knockout to Field layer

To create a knockout:

1 Do one of the following in the Layers palette:

• Position the layer that will create the knockout above the layers that will be punched through, and make the layer you want to reveal the Background. (Choose Layer > New > Background from Layer to convert a regular layer to the Background.)

• Place the layers you want to use in a layer set. The top layer in the set will punch through to the bottom layer in the set or the Background. If you want to reveal the Background, make sure the blending mode of the layer set is set to Pass Through (the default).

• Place the layers you want to use in a clipping mask. The top layer in the group will punch through to the bottom layer in the group or the Background. (See "Creating clipping masks" on page 413.) If you want to reveal the bottom layer in the group, make sure the Blend Clipped Layers as Group option for the bottom layer is selected. (See "Grouping blend effects" on page 389.)

2 Select the top layer (the layer that will create the knockout).

3 Double-click a layer thumbnail (Photoshop), choose Layer > Layer Style > Blending Options, or choose Blending Options from the Layers palette menu.

Note: To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu.

4 Choose an option from the Knockout pop-up menu:

• Shallow to knock out to the first possible stopping point such as the bottom of the layer set or clipping mask containing the knockout option.

• Deep to knock out to the Background. If there is no Background, Deep knocks out to transparency.

5 Lower the fill opacity or change the blending mode to create the knockout effect. (See "Specifying fill opacity" on page 387 and "Choosing a blending mode" on page 386.)

6 Click OK.

Restricting blending to channels (Photoshop)

You can restrict blending effects to a specified channel when blending a layer or layer set. By default, all channels are included when blending a layer or layer set. The channel selections vary based on the type of image you are editing. For example, if you are editing a RGB image, the channel choices are R, G, and B. If you are editing a CMYK image, the channel choices are C, M, Y, and K. (See "About color channels" on page 155.) When using an RGB image, for example, you can choose to exclude the Red channel from blending; in the composite image, only information contained in the Green and Blue channels are affected.

To exclude channels from blending:

1 Double-click a layer thumbnail, and do one of the following:

• Choose Layer > Layer Style > Blending Options,

• Choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette.

Note: *To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu.*

2 In the Advanced Blending area of the Layer Style dialog box, deselect any channels you do not want to include when the layer is blended.

Grouping blend effects

By default, layers in a clipping mask are blended with the underlying layers using the blending mode of the bottommost layer in the group. However, you can choose to have the blending mode of the bottommost layer apply only to that layer, allowing you to maintain the original blending appearance of the clipped layers. (See "Creating clipping masks" on page 413.)

You can also apply the blending mode of a layer to layer effects that modify opaque pixels, such as Inner Glow or Color Overlay, without changing layer effects that modify only transparent pixels, such as Outer Glow or Drop Shadow.

To specify the scope of blending options:

1 Select the layer that you want to affect.

2 Do one of the following:

• Double-click a layer thumbnail, choose Blending Options from the Layers palette menu (Photoshop), or choose Layer > Layer Style > Blending Options.

Note: *To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu.*

3 Specify the scope of blending options:

• Select Blend Interior Effects as Group to apply the blending mode of the layer to layer effects that modify opaque pixels, such as Inner Glow, Satin, Color Overlay, and Gradient Overlay.

• Select Blend Clipped Layers as Group to apply the blending mode of the base layer to all layers in the clipping mask. Deselecting this option, which is always selected by default, maintains the original blending mode and appearance of each layer in the group.
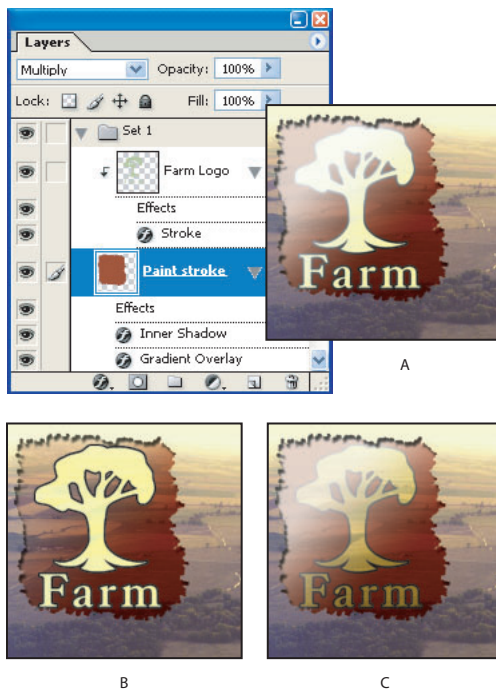
Advanced blending options
A. Farm Logo and Paint Stroke layers each with its own blending mode **B.** Blend Interior Effects as Group option selected **C.** Blend Clipped Layers as Group option selected

- Select Transparency Shapes Layers to restrict layer effects and knockouts to opaque areas of the layer. Deselecting this option, which is always selected by default, applies these effects throughout the layer.

- Select Layer Mask Hides Effects to restrict layer effects to the area defined by the layer mask.

- Select Vector Mask Hides Effects to restrict layer effects to the area defined by the vector mask.

4 Click OK.

Specifying a range for blending layers (Photoshop)

The sliders in the Blending Options dialog box let you control which pixels from the active layer and from the underlying visible layers appear in the final image. For example, you can drop dark pixels out of the active layer or force bright pixels from the underlying layers to show through. You can also define a range of partially blended pixels to produce a smooth transition between blended and unblended areas.

To define a range for the blending operation:

1 Double-click a layer thumbnail, choose Layer > Layer Style > Blending Options, or choose Add a Layer Style > Blending Options from the Layers palette menu.

Note: To view blending options for a text layer, choose Layer > Layer Style > Blending Options, or choose Blending Options from the Add a Layer Style button at the bottom of the Layers palette menu.

2 In the Advanced Blending area of the Layer Style dialog box, choose an option from the Blend If pop-up menu.

- Gray to specify a blending range for all channels.

- An individual color channel (for example, red, green, or blue in an RGB image) to specify blending in that channel. (See "About color channels" on page 155.)

3 Use the This Layer and Underlying Layer sliders to set the brightness range of the blended pixels—measured on a scale from 0 (black) to 255 (white). Drag the white slider to set the high value of the range. Drag the black slider to set the low value of the range.

To define a range of partially blended pixels, hold down Alt (Windows) or Option (Mac OS), and drag one half of a slider triangle. The two values that appear above the divided slider indicate the partial blending range.

Keep the following guidelines in mind when specifying blending ranges:

- Use the This Layer sliders to specify the range of pixels on the active layer that will blend, and therefore appear, in the final image. For example, if you drag the white slider to 235, pixels with brightness values higher than 235 will remain unblended and will be excluded from the final image.

- Use the Underlying Layer sliders to specify the range of pixels in the underlying visible layers that will blend in the final image. Blended pixels are combined with pixels in the active layer to produce composite pixels, while unblended pixels show through overlying areas of the active layer. For example, if you drag the black slider to 19, pixels with brightness values lower than 19 will remain unblended and will show through the active layer in the final image.

Using layer effects and styles

Layer styles let you quickly apply effects to a layer's content. You can scan through a variety of predefined layer styles and apply a style with just a click of the mouse, or you can create a custom style by applying multiple effects to a layer.

About layer effects and styles

Photoshop and ImageReady provide a variety of effects—such as shadows, glows, bevels, overlays, and strokes—that let you quickly change the appearance of a layer's contents. Layer effects are linked to the layer contents. When you move or edit the contents of the layer, the effects are modified correspondingly. For example, if you apply a drop shadow effect to a text layer, the shadow will change automatically when you edit the text.

The effects that you apply to a layer become part of the layer's custom *style*. When a layer has a style, an "f" icon 🄵 appears to the right of the layer's name in the Layers palette. You can expand the style in the Layers palette to view all the effects that compose the style and edit the effects to change the style.

When you save a custom style, it becomes a preset style. Preset styles appear in the Styles palette and can be applied with just a click of the mouse. Photoshop and ImageReady provide a variety of preset styles to fill a wide range of uses.
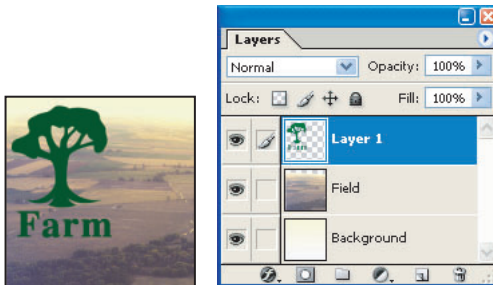
Illustration of a layer without a style
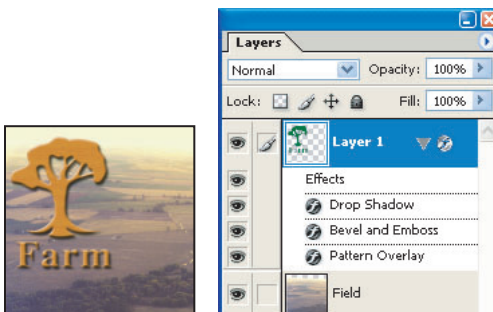
Illustration of a layer with a style

Note: *You cannot apply layer effects and styles to a background, a locked layer, or a layer set.*

Applying preset styles

The Styles palette, Layer Styles dialog box, and Layer Styles pop-up palette in the options bar for the Pen and Shape tool let you view and select preset layer styles. By default, applying a preset style replaces the current layer style. However, you can add the attributes of a second style to those of the current style using a keyboard modifier.

The layer styles that come with Photoshop and ImageReady are grouped into libraries by function. For example, one library contains styles for creating Web buttons; another library contains styles adding effects to text.

To display the Styles palette:

Choose Window > Styles.

To apply a preset style to a layer:

Do one of the following:

• Click a style in the Styles palette to apply it to the currently selected layer.

• Drag a style from the Styles palette onto a layer in the Layers palette.

- Drag a style from the Styles palette to the document window, and release the mouse button when the pointer is over the layer content to which you want to apply the style.

Note: *Hold down Shift while clicking or dragging to add the style to (instead of replace) any existing effects on the destination layer.*

- Choose Layer > Layer Style > Blending Options, and click the word *Styles* in the Layer Styles dialog box (top item in the list on the left side of the dialog box). Click the style you want to apply, and click OK.

- When using a Shape or Pen tool in shape layers mode, select a style from the pop-up palette in the options bar before drawing the shape.

To apply a style from an existing layer to another layer:

In the Layers palette, drag the style from a layer's effect list to another layer.

To create a new layer with the style of an existing layer (ImageReady):

In the Layers palette, drag the layer effects to the New Layer button.

To load a library of preset styles:

1 Click the triangle ⊙ in the Styles palette, Layer Style dialog box (Photoshop), or Layer Style pop-up palette in the options bar when you have the Pen or Shape tool selected (Photoshop).

2 Do one of the following:

- Choose Load Styles (Photoshop) or Append Styles (ImageReady) to add a library to the current list. Then select the library file you want to use, and click Load.

- Choose Replace Styles to replace the current list with a different library. Then select the library file you want to use, and click Load.

- Choose a library file (displayed at the bottom of the palette menu). Then click OK to replace the current list, or click Append to append the current list.

Note: *You can also use the Preset Manager to load and reset style libraries. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.*

To return to the default library of preset styles:

1 Click the triangle ⊙ in the Styles palette, Layer Styles dialog box, or Layer Styles pop-up palette in the options bar (Photoshop).

2 Choose Reset Styles. You can either replace the current list or append the default library to the current list.

To change how preset styles are displayed:

1 Click the triangle ⊙ in the Styles palette, Layer Styles dialog box, or Layer Styles pop-up palette in the options bar (Photoshop).

2 Choose a display option from the palette menu:

- (Photoshop) Text Only to view the layer styles as a list.

- Small or Large Thumbnail to view the layer styles as thumbnails.

- Small or (Photoshop) Large List to view the layer styles as a list, with a thumbnail of the selected layer style displayed.

Creating custom styles

You can create custom styles using one or more of the following effects:

Drop Shadow Adds a shadow that falls behind the contents on the layer.

Inner Shadow Adds a shadow that falls just inside the edges of the layer's content, giving the layer a recessed appearance.

Outer Glow and Inner Glow Add glows that emanate from the outside or inside edges of the layer's content.

Bevel and Emboss Add various combinations of highlights and shadows to a layer.

Satin   Applies shading to the interior of a layer that reacts to the shape of the layer, typically creating a satiny finish.

Color, Gradient, and Pattern Overlay Fill the layer's content with a color, gradient, or pattern.

Stroke Outlines the object on the current layer using color, a gradient, or a pattern. It is particularly useful on hard-edged shapes such as type.

To apply a custom style to a layer:

1 Do one of the following:

• Click the Layer Styles button ⊘ in the Layers palette and choose an effect from the list.

• Choose an effect from the Layer > Layer Style submenu.

2 Set effect options in the Layer Style dialog box. (See "Editing styles" on page 395.)

3 To add additional effects to the style, do one of the following:

• Repeat steps 1 and 2.

• Select additional effects in the Layer Style dialog box. Click the check box to the left of the effect name to add the effect without selecting it.

Displaying layer styles

When a layer has a style, an "f" icon ⊘ appears to the right of the layer's name in the Layers palette. You can show or hide the style's effects in the image and in the Layers palette.

To hide or show all layer styles in an image:

Choose Layer > Layer Style > Hide All Layer Effects or Show All Layer Effects.

To expand or collapse layer styles in the Layers palette:

Do one of the following:

• Click the triangle ▹ next to the layer styles icon ⊘ to expand the list of layer effects applied to that layer.

• Click the inverted triangle ▿ to collapse the layer effects.

• To expand or collapse all of the layer styles applied within a layer set, hold down Alt (Windows) or Option (Mac OS) and click the triangle or inverted triangle for the set. The layer styles applied to all layers within the layer set expand or collapse correspondingly.

Editing styles

You edit a layer's style by adjusting its effect settings.
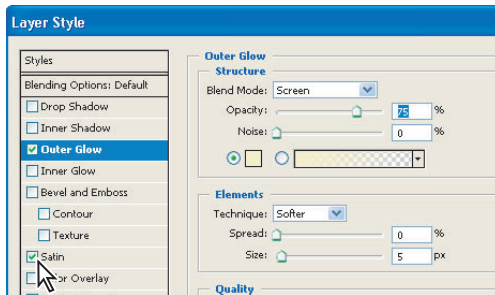
Layer Style dialog box. Click a check box to apply the default settings
without displaying the effect's options.
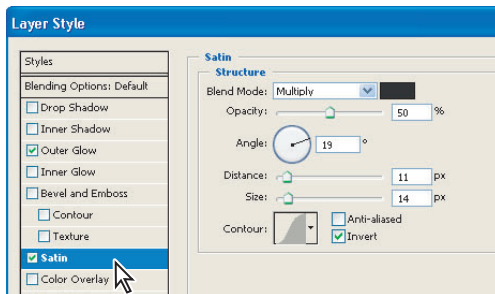
Click an effect name to display the effect's options.

To edit a layer style:

1 Do one of the following:

• In the Layers palette, double-click an effect displayed below the layer name. (Click the inverted triangle ▾ next to the "f" icon 🄵 to display the effects contained in the style.)

• Choose Layer > Layer Style and the effect you want to edit.

2 Set one or more of the following options in the Layer Style dialog box. The available options depend on the selected effect:

💡 You can edit multiple effects without closing the Layer Style dialog box. Select an effect on the left side of the dialog box to display an effect's options.

Angle Determines the lighting angle at which the effect is applied to the layer. In Photoshop, you can drag in the document window to adjust the angle of a Drop Shadow, Inner Shadow, or Satin effect.

Anti-alias Blends the edge pixels of a contour or gloss contour. Most useful on shadows with a small size and complicated contour.

Blend Mode Determines how the layer style blends with the underlying layers, which may or may not include the active layer. For example, an inner shadow blends with the active layer because the effect is drawn on top of that layer, but a drop shadow blends only with the layers beneath the active layer. In most cases, the default mode for each effect produces the best results. (See "Choosing a blending mode" on page 386.)

Choke Shrinks the boundaries of the matte of an Inner Shadow or Inner Glow prior to blurring.

Color Specifies the color of a shadow, glow, or highlight. You can click the color box and choose a color. (See "Using the Adobe Color Picker" on page 164.)

Contour With solid-color glows, Contour allows you to create rings of transparency. With gradient-filled glows, Contour allows you to create variations in the repetition of the gradient color and opacity. With bevel and emboss, Contour allows you to sculpt the ridges, valleys, and bumps that are shaded in the embossing process. With shadows, Contour allows you to specify the fade. For more information, see "Modifying layer effects with contours" on page 398.

Distance Specifies the offset distance for a shadow or satin effect. In Photoshop, you can drag in the document window to adjust the offset distance.

Depth Specifies the depth of a bevel and is a ratio of size. It also specifies the depth of a pattern.

Global Angle Turns on global lighting for the effect. Global lighting applies the same angle to all effects with the Global Angle option selected, giving the appearance of a consistent light source shining on the image. (See "Applying global lighting" on page 398.) Deselect Global Angle to assign a local angle to Drop Shadow, Inner Shadow, and Bevel effects.

Gloss Contour Creates a glossy, metal-like appearance and is applied after shading a bevel or emboss.

Gradient Specifies the gradient of a layer effect. In Photoshop, click the gradient to display the Gradient Editor or click the inverted arrow ▾ and choose a gradient from the pop-up palette. In Photoshop, you can edit a gradient or create a new gradient using the Gradient Editor. (See "Creating smooth gradient fills" on page 339.) In ImageReady, click the inverted arrow ▾ next to the gradient sample and select a gradient from the list, or choose a gradient type from the pop-up list. You can edit the color or opacity in the Gradient Overlay panel the same way you do in the Gradient Editor. For some effects, you can specify additional gradient options. Reverse flips the orientation of the gradient, Align With Layer uses the bounding box of the layer to calculate the gradient fill, and Scale scales the application of the gradient. You can also use the mouse to move the center of the gradient by clicking and dragging in the image window. Style specifies the shape of the gradient.

Highlight or Shadow Mode Specifies the blending mode of a bevel or emboss highlight or shadow.

Jitter Varies the application of a gradient's color and opacity.

Layer Knocks Out Drop Shadow Controls the drop shadow's visibility in a semitransparent layer.

Noise Specifies the amount of random elements in the opacity of a glow or shadow as you enter a value or drag the slider.

Opacity Sets the opacity of the layer effect as you enter a value or drag the slider.

Pattern Specifies the pattern of a layer effect. In ImageReady, click the inverted arrow ▾ next to the pattern sample and choose a pattern from the list. In Photoshop, click the pop-up palette and choose a pattern. Click the New preset button ▣ to create a new preset pattern based on the current settings. Click Snap to Origin to position the origin of the pattern with that of the document if Link with Layer is selected, or to position the origin with the top left corner of the layer if it is deselected. Select Link with Layer to specify that the pattern moves with the layer as it is relocated, and drag the Scale slider or enter a value to specify the size of the pattern. You can drag a pattern in the layer to position it while in this panel. The position can be reset with the Snap to Origin button. There must be at least one pattern loaded for the pattern option to be available. You can also load patterns using the Preset Manager.

Position Specifies the position of a stroke effect as Outside, Inside, or Center.

Range Controls which portion or range of the glow is targeted for the contour.

Size Specifies the amount of blur or the size of the shadow.

Soften Blurs the results of shading before compositing to reduce unwanted artifacts.

Source Specifies the glow source for an inner glow. Choose Center to apply a glow that emanates from the center of the layer's content, or Edge to apply a glow that emanates from the inside edges of the layer's content.

Spread Expands the boundaries of the matte prior to blurring.

Style Specifies the style of a bevel: Inner Bevel to create a bevel on the inside edges of the layer contents, Outer Bevel to create a bevel on the outside edges of the layer contents, Emboss to create the effect of embossing the layer contents against the underlying layers, Pillow Emboss to create the effect of stamping the edges of the layer contents into the underlying layers, or Stroke Emboss to confine the emboss to the boundaries of a stroke effect applied to the layer. (Note that the Stroke Emboss effect will not be visible if no stroke is applied to the layer.)

Technique For bevel and emboss, Smooth blurs the edges of a matte slightly and is useful for all types of mattes, whether their edges are soft or hard. It does not preserve detailed features at larger sizes. Chisel Hard uses a distance measurement technique and is primarily useful on hard-edged mattes from anti-aliased shapes such as type. It preserves detailed features better than the Smooth technique. Chisel Soft uses a modified distance measurement technique and, while not as accurate as Chisel Hard, it is more useful on a larger range of mattes. It preserves features better than the Smooth technique. For glows, Softer applies a blur and is useful on all types of mattes, whether their edges are soft or hard. At larger sizes, it does not preserve detailed features. Precise uses a distance measurement technique to create a glow and is primarily useful on hard-edged mattes from anti-aliased shapes such as type. It preserves features better than the Softer technique.

Texture Allows you to specify a pattern used to texture the bevel effect. Scale allows you to scale the size of the texture. Link with Layer specifies that the texture moves with the layer as it is relocated. Invert inverts the texture. Depth varies the degree and direction (up/down) to which the texturing is applied. Snap to Origin controls the snap of the pattern's origin with that of the document if Link with Layer is disabled and with the top left corner of the layer if it is selected. You can also drag the texture with the mouse to position it while in this panel.

Modifying layer effects with contours

You can use contours to shape the appearance of an effect over a given range in the Drop Shadow, Inner Shadow, Inner Glow, Outer Glow, Bevel and Emboss, and Satin effects when creating custom layer styles. For example, a Linear contour on a Drop Shadow causes the opacity to drop off in a linear transition, while a Custom contour can be used to create a unique shadow transition. Custom contours created in Photoshop can be used in ImageReady.

You can select, reset, delete, or change the preview of contours in the contour pop-up palette and Preset Manager. For more information, see "Using pop-up palettes" on page 24 and "Managing libraries with the Preset Manager (Photoshop)" on page 52.
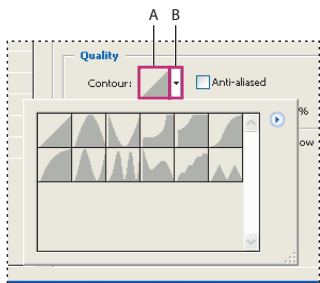
Detail of Layer Style dialog box for Drop Shadow effect
A. Click to display the Contour Editor dialog box. **B.** Click to display the pop-up palette.

To create a custom contour:

1 Select the Drop Shadow, Inner Shadow, Inner Glow, Outer Glow, Bevel and Emboss, Contour, or Satin effect in the Layer Style dialog box. (See "Editing styles" on page 395.)

2 Click the contour thumbnail in the Layer Style dialog box.

3 Click the contour to add points and drag to adjust the contour. Or enter values for Input and Output.

4 To create a sharp corner instead of a smooth curve, select a point and click Corner.

5 To save the contour to a file, click Save and name the contour.

6 To store a contour as a preset, choose New.

7 Click OK. New contours are added at the bottom of the pop-up palette.

To load contours from the Contour Editor dialog box:

Click the contour in the Layer Style dialog box, and in the Contour Editor dialog box, choose Load. Go to the folder where the contour library you want to load is located and click Open.

To delete a contour in the Contour Editor dialog box:

Click the inverted arrow ▼ next to the currently selected contour to view the pop-up palette. Press Alt (Windows) or Option (Mac OS), and click the contour you want to delete.

Applying global lighting

Using global light gives the appearance of a consistent light source shining on the image.

To set a global lighting angle:

To set a global lighting angle for all layers, do one of the following:

- Choose Layer > Layer Style > Global Light. In the Global Light dialog box, enter a value or drag the angle radius to set the Angle and Altitude, and click OK.

- In the Layer Style dialog box for Drop Shadow, Inner Shadow, or Bevel, select Use Global Light. For Angle, enter a value or drag the slider, and click OK.

The new lighting angle appears as the default for each layer effect that uses the global lighting angle.

Creating and managing preset styles

After you customize a layer style, you can save it as a preset style. Preset styles appear in the Styles palette, Layer Styles dialog box, Layer Styles pop-up palette in the options bar for the Pen and Shape tool, and Preset Manager. (See "Applying preset styles" on page 392.) You can also create libraries of preset styles, rename preset styles, and delete preset styles.

To create a new preset style:

1 In the Layers palette, select the layer that contains the style you want to save as a preset.

2 Do one of the following:

- Drag the selected layer into the Styles palette or onto the New Item button ◲ in the Styles palette.

- Click an empty area of the Styles palette.

- Press Alt (Windows) or Option (Mac OS) and click the New Item button at the bottom of the Styles palette.

- Choose New Style from the Styles palette menu.

- Choose Layer > Layer Style > Blending Options, and click New Style in the Layer Style dialog box.

3 Enter a name for the preset style, set style options, and click OK.

    💡 To create a preset style from a single effect, drag the effect from the Layers palette to the Styles palette.

To rename a preset style:

Do one of the following:

- Double-click a style in the Styles palette. If the Styles palette is set to display styles as thumbnails, enter a new name in the dialog box, and click OK. Otherwise, type a new name directly in the Style palette, and press Enter (Windows) or Return (Mac OS).

- Select a style in the Styles area of the Layer Styles dialog box. (See "Applying preset styles" on page 392.) Then choose Rename Style from the pop-up menu, enter a new name, and click OK.

- (Photoshop) When using a shape or pen tool, select a style from the Layer Style pop-up palette in the options bar. Then choose Rename Style from the pop-up palette menu.

To delete a preset style:

Do one of the following:

- Drag a style to the Trash button 🗑 at the bottom of the Styles palette.
- Press Alt (Windows) or Option (Mac OS) and click the layer style in the Styles palette.
- (Photoshop) Select a style in the Styles area of the Layer Styles dialog box. (See "Applying preset styles" on page 392.) Then choose Delete Style from the pop-up menu.
- (Photoshop) When using a shape or pen tool, select a style from the Layer Style pop-up palette in the options bar. Then choose Delete Style from the pop-up palette menu.

To save a set of preset styles as a library:

1 Do one of the following:

- Choose Save Styles from the Styles palette menu.
- Select Styles on the left side of the Layer Styles dialog box. (See "Applying preset styles" on page 392.) Then choose Save Styles from the pop-up menu.
- (Photoshop) When using a shape or pen tool, click the layer style thumbnail in the options bar. Then choose Save Styles from the pop-up palette menu.

2 Choose a location for the style library, enter a filename, and click Save.

You can save the library anywhere. However, if you place the library file in the Presets/ Styles folder inside the Photoshop program folder, the library name will appear at the bottom of the Styles palette menu when you restart the application.

Note: *You can also use the Preset Manager to rename, delete, and save libraries of preset styles. For more information, see "Managing libraries with the Preset Manager (Photoshop)" on page 52.*

Copying and pasting styles

Copying and pasting styles is an easy way to apply the same effects to multiple layers.

To copy layer styles between layers:

1 In the Layers palette, select the layer containing the style you want to copy.

2 Choose Layer > Layer Style > Copy Layer Style.

3 Do one of the following:

- To paste into a single layer, select the destination layer in the palette, and choose Layer > Layer Style > Paste Layer Style.
- To paste into multiple layers, link the destination layers. (See "Linking layers" on page 378.) Then choose Layer > Layer Style > Paste Layer Style to Linked.

The pasted layer style will replace the existing layer style on the destination layer or layers.

To copy layer styles between layers by dragging:

Do one of the following:

- In the Layers palette, drag a single layer effect from one layer to another to duplicate the layer effect, or drag the Effects bar from one layer to another to duplicate the layer style.

- Drag one or more layer effects from the Layers palette to the image to apply the resulting layer style to the highest layer in the Layers palette that contains pixels at the drop point.

Scaling layer effects

A layer style may have been tuned to look best on a target resolution with features of a given size. Using Scale Effects allows you to scale the effects contained in the layer style without scaling the object to which the layer style is applied.

To scale a layer effect:

1 Select the layer in the Layers palette.

2 Choose Layer > Layer Style > Scale Effects.

3 Enter a percentage or drag the slider.

4 Select Preview to preview the changes in the image.

5 Click OK.

Removing layer effects

You can remove individual effects from a layer style and remove a style from the layer.

To remove an effect from a style:

1 In the Layers palette, expand the layer style so you can see its effects.

2 Do one of the following:

- Drag the effect to the Trash button.
- (ImageReady) Select the effect, and choose Delete Effect from the Layers palette menu.

To remove a style from a layer:

1 In the Layers palette, select the layer containing the style you want to remove.

2 Do one of the following:

- In the Layers palette, drag the Effects bar to the Trash button.
- Choose Layer > Layer Style > Clear Layer Style.
- Select the layer, and then click the Clear Style button ⊘ at the bottom of the Styles palette.
- (ImageReady) Select an effect in the Layers palette, and choose Delete All Effects from the Layers palette menu.

Converting layer styles to layers

To customize or fine-tune the appearance of layer styles, you can convert the layer styles to regular image layers. Once you have converted a layer style to image layers, you can enhance the result by painting or applying commands and filters. However, you can no longer edit the layer style on the original layer, and the layer style will no longer update as you change the original image layer.

Note: *The layers produced by this process may not result in artwork that exactly matches the version using layer styles. In Photoshop, you may see an alert when you create the new layers.*

To convert a layer style to image layers:

1 In the Layers palette, select the layer containing the layer style you want to convert.

2 Choose Layer > Layer Style > Create Layers.

You can now modify and restack the new layers in the same way as regular layers. Some effects—for example, Inner Glow—convert to layers within a clipping mask.

You can also drag a layer style to the New Layer button at the bottom of the Layers palette to generate a new layer from an existing style.

Using adjustment layers and fill layers (Photoshop)

Adjustment layers and fill layers add another level of flexibility to working with layers. Adjustment layers allow you to experiment with color and apply tonal adjustments to an image; fill layers allow you to quickly add color, patterns, and gradient elements to an image. If you change your mind about the results, you can go back and edit or remove the adjustment or fill at any time.

Original, adjustment layer applied to barn only (which brings out more detail in the barn), and adjustment layer applied to entire image (which lightens everything but pixelates the clouds)

About adjustment layers and fill layers

Adjustment layers let you experiment with color and tonal adjustments to an image without permanently modifying the pixels in the image. The color and tonal changes reside within the adjustment layer, which acts as a veil through which the underlying image layers appear. Keep in mind that an adjustment layer affects all the layers below it. This means that you can correct multiple layers by making a single adjustment, rather than making the adjustment to each layer separately.

Note: *Adjustment layers can be applied and edited only in Photoshop; however, they can be viewed in ImageReady.*

Fill layers let you fill a layer with a solid color, a gradient, or a pattern. Unlike adjustment layers, fill layers do not affect the layers underneath them.

Creating adjustment layers or fill layers

Adjustment layers and fill layers have the same opacity and blending mode options as image layers and can be rearranged, deleted, hidden, and duplicated in the same manner as image layers. By default, adjustment layers and fill layers have layer masks, as indicated by the mask icon to the left of the layer thumbnail. If a path is active when you create the adjustment or fill layer, a vector mask is created instead of a layer mask.

To confine the effects of an adjustment layer to a group of layers, create a clipping mask consisting of these layers. You can place the adjustment layers in or at the base of the clipping mask. The adjustment will be confined to the layers inside the group.

(See "Creating clipping masks" on page 413.) Alternately, you can create a layer set, and have the set use any blending mode other than Pass Through.
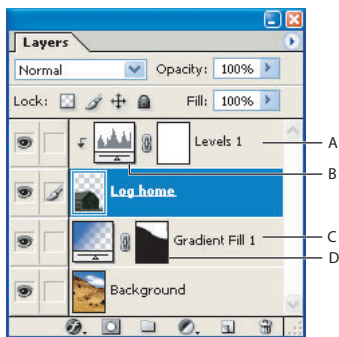
Adjustment and fill layers
A. Adjustment layer confined to Log home layer only   **B.** Layer thumbnail   **C.** Fill layer affecting all layers below it   **D.** Layer mask

To create an adjustment layer or fill layer:

1 Do one of the following:

- Click the New Adjustment Layer button ◔ at the bottom of the Layers palette, and choose the layer type you want to create.

- Choose Layer > New Fill Layer, and choose an option from the submenu. Then name the layer, set other layer options, and click OK. (See "Setting opacity and blending options" on page 385 and "Creating clipping masks" on page 413.)

- Choose Layer > New Adjustment Layer, and choose an option from the submenu. Then name the layer, set other layer options, and click OK. (See "Setting opacity and blending options" on page 385 and "Creating clipping masks" on page 413.)

Note: To confine the effects of the adjustment layer or fill layer to a selected area, make a selection, create a closed path and select it, or select an existing closed path. When you use a selection, you create an adjustment layer or fill layer confined by a layer mask. When you use a path, you create an adjustment layer or fill layer confined by a vector mask.

2 Choose from the following layer properties, and then click OK.

Solid Color Specify a color. (See "Using the Adobe Color Picker" on page 164.)

Gradient Click the gradient to display the Gradient Editor, or click the inverted arrow ▾ and choose a gradient from the pop-up palette. (See "Creating smooth gradient fills" on page 339.) Set additional options if desired. Style specifies the shape of the gradient. Angle specifies the angle at which the gradient is applied. Scale changes the size of the gradient. Reverse flips the orientation of the gradient. Dither reduces banding by applying dithering to the gradient. Align with Layer uses the bounding box of the layer to calculate the gradient fill. You can use the mouse to move the center of the gradient by clicking and dragging in the image window.

Pattern Click the pattern, and choose a pattern from the pop-up palette. Click Scale and enter a value or drag the slider to scale the pattern. Click Snap to Origin to position the origin of the pattern with that of the document window. (See "Using rulers, columns, the Measure tool, guides, and the grid" on page 40.) Select Link with Layer to specify that the pattern moves with the fill layer as it is relocated. When Link With Layer is selected, you can drag in the image to position the pattern while the Pattern Fill dialog box is open.

Levels Specify values for the highlights, shadows, and midtones. (See "Using the Levels dialog box" on page 185.)

Curves Adjust the intensity values of pixels along a 0–255 scale while keeping up to 15 other values constant. For more information, see "Using the Curves dialog box (Photoshop)" on page 189.

Color Balance Drag a slider toward a color you want to increase in the image; drag a slider away from a color you want to decrease in the image. For more information, see "Using the Color Balance command (Photoshop)" on page 199.

Brightness/Contrast Specify values for Brightness and Contrast. (See "Using the Brightness/Contrast command" on page 215.)

Hue/Saturation Choose which colors to edit, and specify values for Hue, Saturation, and Lightness. (See "Using the Hue/Saturation command" on page 200.)

Selective Color Choose the color you want to adjust, and drag the sliders to increase or decrease the components in the selected color. For more information, see "Using the Selective Color command (Photoshop)" on page 214.

Channel Mixer Modify a color channel. For more information, see "Mixing color channels (Photoshop)" on page 212.

Gradient Map Choose a gradient and set gradient options. For more information, see "Using the Gradient Map command (Photoshop)" on page 223.

Photo Filter Make color adjustments by simulating the effect of a filter in front of a camera lens.

Invert Inverted adjustment layers don't have options. (See "Using the Invert command" on page 222.)

Threshold Specify a threshold level. (See "Using the Threshold command (Photoshop)" on page 222.)

Posterize Specify the number of tonal levels for each color channel. (See "Using the Posterize command (Photoshop)" on page 223.)

Editing adjustment layers or fill layers

Once you create an adjustment or fill layer, you can easily edit the settings, or dynamically replace it with a different adjustment or fill type. You can also edit the mask of an adjustment layer or fill layer to control the effect that the layer has on the image. By default, all areas of an adjustment or fill layer are "unmasked" and, therefore, are showing. (See "Creating and editing layer masks" on page 409.)

To edit an adjustment or fill layer:

1 Do one of the following:

· Double-click the adjustment or fill layer's thumbnail in the Layers palette.

· Choose Layer > Layer Content Options.

2 Make the desired adjustments, and click OK.

Note: Inverted adjustment layers do not have editable settings.

To change the content of an adjustment or fill layer:

1 Select the adjustment layer or fill layer that you want to change.

2 Choose Layer > Change Layer Content and select a different fill or adjustment layer from the list.

Merging adjustment layers or fill layers

You can merge an adjustment or fill layer several ways: with the layer below it, with the layers in its own grouped layer, with the layers it is linked to, and with all other visible layers. You cannot, however, use an adjustment layer or fill layer as the target layer for a merge. When you merge an adjustment layer or fill layer with the layer below it, the adjustments are rasterized and become permanently applied within the merged layer. (See "Merging and stamping layers" on page 383.) You can also rasterize a fill layer without merging it. (See "Rasterizing layers" on page 382.)

Adjustment layers and fill layers whose masks contain only white values do not add significantly to the file size, so it is not necessary to merge these adjustment layers to conserve file space.

Working with layer comps

Designers often create multiple compositions or *comps* of a page layout to show clients. Using layer comps, you can create, manage and view multiple versions of a layout in a single Photoshop or ImageReady file. Layer comps are fully interchangeable between Photoshop and ImageReady.

Note: ImageReady reads only RGB files, so pay special attention to RGBs you get from color conversions (from CMYK, Lab, and so on) in Photoshop. This is important in testing your layer comps.

About layer comps and the Layer Comps palette

A layer comp is a snapshot of a state of the Layers palette. Layer comps record three types of layer options:

· Layer visibility—whether a layer in the Layers palette is showing or hidden

· Layer position in the document

· Layer appearance—whether a layer style is applied to the layer

You create a comp by making changes to the layers in your document and *updating* the comp in the Layer Comps palette. You view comps by *applying* them in the document. Choose Window > Layer Comps to show the palette.
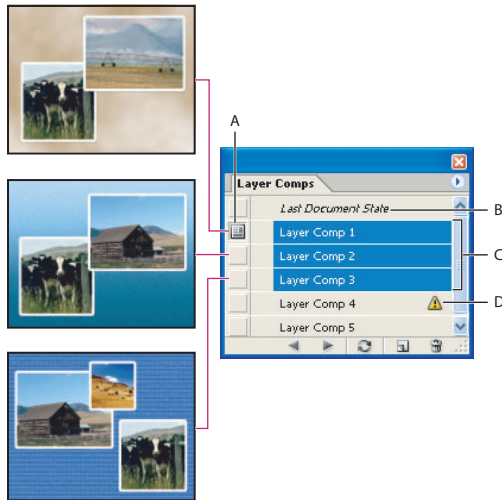
Layer Comps palette
A. Apply Layer Comp icon **B.** Last Document State **C.** Selected comps
D. Layer Comp Cannot Be Fully Restored icon

Creating a layer comp

To create a layer comp, you work with the Layers palette and the Layer Comp palette.

To create a layer comp:

1 Do one of the following:

- Choose Window > Layer Comps to bring up the Layer Comp palette. Click the Create New Layer Comp button ▫ at the bottom of the Layer Comps palette. The new comp will be based on the current state of layers in the Layers palette.

- To duplicate a comp, select a comp in the Layer Comps palette and choose Duplicate Comp from the Layer Comps palette menu ◉, or drag the comp to the New comps button.

2 In the New Layer Comp dialog box, name the comp, add descriptive comments, and choose options to apply to layers: Visibility (defaults to On), Position, and Appearance. Then click OK. Note that any new comp preserves the options you chose for the previous one, so you won't have to go through all these choices again if you want them to be identical.

3 To change your comp options, select Layer Comp Options from the palette menu, or double click the layer comp you want to change (Don't double click the name of the layer comp, as that will let you change only the name.) As you make changes, periodically click the Update Layer Comp button ◌ at the bottom of the Comps palette (make sure that the comp you want to update is selected).

Viewing layer comps

To view a layer comp, you first need to apply it in the document. In the Layer Comp palette, click the Apply Layer Comp icon ▤ next to a selected comp.

To cycle through a view of all the layer comps, use the Previous ◀ and Next ▶ buttons at the bottom of the palette.

To cycle through a view of specific selected comps, select the comps in the Layer Comps palette and then click the Next and Previous buttons at the bottom of the palette. This will cycle only through the comps you have selected.

Applying layer comps

To apply a layer comp, do one of the following:

- In the Layer Comp palette, click the Apply Layer Comp icon ▤ next to a selected comp. You can apply the previous and next layer comp by clicking on the backward and forward buttons at the bottom of the Layer Comps palette.

- Choose Apply Layer Comp from the Layer Comps palette menu.

Updating layer comps

You can save changes to a layer comp by selecting it in the Layer Comps palette and then clicking the Update Layer Comp button ↻ on the bottom of the palette. This rewrites an existing layer comp, bringing it up to date. For example, if your current comp has captured a certain document configuration (that is, certain layers visible, certain styles applied to some of your layers, and certain positions of the layers pixels on the canvas), and later you modify some of the parameters, making the original comp layer obsolete, you can simply update the existing layer comp to preserve the new configuration.

Restoring layer comps

When you apply any number of layer comps to view how they change your document, you have the option of restoring the document to its original state. Do one of the following to restore your document:

- Click on the Apply This Layer Comp icon next to the Last Document State.

- With any layer comp selected, choose Restore Last Document State from the palette menu.

Validating layer comps

There may be times when one or all of your layer comps get into a state where they can no longer be fully restored. This can happen if you delete a layer, merge a layer, convert a layer to a background, or use color conversion. In such instances, a caution icon ⚠ appears on the comp slots that meet one of these conditions. This will happen when the condition first occurs, not necessarily when you try to restore the layer comp. You can do one of the following:

- Ignore the warning, which may result in the loss of one or more layers. Other saved parameters may be preserved.

- Update the comp, which will result in the loss of the previously captured parameters, but will bring the comp up to date.

Click the caution icon to see a message that explains that the layer comp cannot be restored properly. Choose Clear to remove the alert icon and leave the remaining layers unchanged.

Right-click (Windows) or Control-click (Mac OS) the caution icon to see the popup menu that lets you choose either the Clear Layer Comp Warning or the Clear All Layer Comp Warnings command.

Deleting layer comps

To delete a layer comp, select the layer comp in the Layer Comps palette and do one of the following:

- Click the Trash button in the palette.
- Drag it to the Trash button in the palette
- Choose Delete Layer Comp from the palette menu.

Masking layers

You can use masks to protect sections of layers from being edited and to show or hide sections of an image.

About masking layers

Masks control how different areas within a layer or layer set are hidden and revealed. By making changes to the mask, you can apply a variety of special effects to the layer without actually affecting the pixels on that layer. You can then apply the mask and make the changes permanent or remove the mask without applying the changes.

There are two types of masks:

- Layer masks are resolution-dependent bitmap images that are created with the painting or selection tools.
- (Photoshop) Vector masks are resolution independent and are created with the Pen or Shape tools.

In the Layers palette, both the layer and vector masks appear as an additional thumbnail to the right of the layer thumbnail. For the layer mask, this thumbnail represents the grayscale channel that is created when you add the layer mask. (See "Storing masks in alpha channels" on page 254.) The vector mask thumbnail represents a path that clips out the contents of the layer.
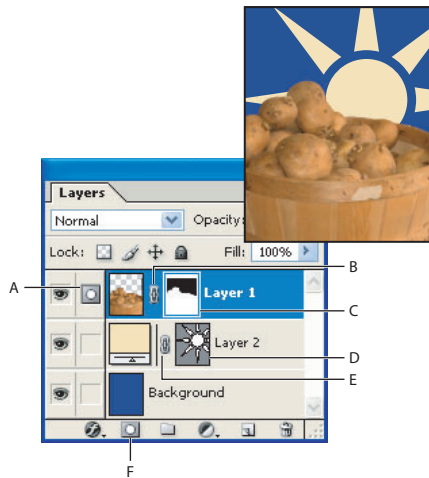
Masking layers
A. Layer mask selected **B.** Layer mask link icon **C.** Layer mask thumbnail **D.** Vector mask
thumbnail **E.** Vector mask link icon **F.** New Layer Mask

Creating and editing layer masks

You can obscure an entire layer or layer set, or just a selected part of it, using a layer mask.
You can also edit a layer mask to add or subtract from the masked region. A layer mask is a
grayscale image, so what you paint in black will be hidden, what you paint in white will
show, and what you paint in gray shades will show in various levels of transparency.
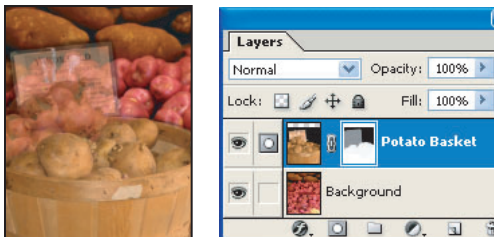
Background painted with black, description card painted with gray, basket painted with white

To add a mask that shows or hides the entire layer:

1 Choose Select > Deselect to clear any selection borders in the image.

2 In the Layers palette, select the layer or layer set to which to add a mask.

3 Do one of the following:

• To create a mask that reveals the entire layer, click the New Layer Mask ▣ button in the
   Layers palette, or choose Layer > Add Layer Mask > Reveal All.

• To create a mask that hides the entire layer, Alt click (Windows) or Option-click (Mac OS)
   the New Layer Mask button, or choose Layer > Add Layer Mask > Hide All.

To add a mask that shows or hides a selection:

1 In the Layers palette, select the layer or layer set to which to add a mask.

2 Select the area in the image, and do one of the following:

•   Click the New Layer Mask button ▣ in the Layers palette to create a mask that reveals the selection.

•   Choose Layer > Add Layer Mask > Reveal Selection or Hide Selection.

To duplicate a mask (ImageReady):

You can duplicate a layer mask and apply it to another layer by Alt-dragging (Windows) or Option-dragging (Mac OS) it to the target layer.

To edit a layer mask:

1 Click the layer mask thumbnail in the Layers palette to make it active.

2 Select any of the editing or painting tools.

Note: The foreground and background colors default to grayscale values when the mask is active.

3 Do one of the following:

•   To subtract from the mask and reveal the layer, paint the mask with white.

•   To make the layer partially visible, paint the mask with gray.

•   To add to the mask and hide the layer or layer set, paint the mask with black.

To edit the layer instead of the layer mask, select it by clicking its thumbnail in the Layers palette. The paintbrush icon ✏ appears to the left of the thumbnail to indicate that you are editing the layer.

💡   To paste a copied selection into a layer mask, Alt-click (Windows) or Option-click (Mac OS) the layer mask thumbnail in the Layers palette to select and display the mask channel. Choose Edit > Paste, drag the selection in the image to produce the desired masking effect, and choose Select > Deselect. Click the layer thumbnail in the Layers palette to deselect the mask channel.

To select and display the layer mask channel (Photoshop):

Do one of the following:

•   Alt-click (Windows) or Option-click (Mac OS) the layer mask thumbnail to view only the grayscale mask. The eye icons in the Layers palette are dimmed because all layers or layer sets are hidden. To redisplay the layers, Alt-click or Option-click the layer mask thumbnail, or click an eye icon.

•   Hold down Alt+Shift (Windows) or Option+Shift (Mac OS), and click the layer mask thumbnail to view the mask on top of the layer in a rubylith masking color. Hold down Alt+Shift or Option+Shift, and click the thumbnail again to turn off the color display.

To disable or enable a layer mask:

Do one of the following:

•   Shift-click the layer mask thumbnail in the Layers palette.

•   Select the layer with the layer mask you want to disable or enable, and choose Layer > Disable Layer Mask or Layer > Enable Layer Mask.

A red *X* appears over the mask thumbnail in the Layers palette when the mask is disabled, and the layer's content appears without masking effects.

To change the rubylith display for a layer mask (Photoshop):

1 Do one of the following:

• Alt-click (Windows) or Option-click (Mac OS) the layer mask thumbnail to select the layer mask channel; then double-click the layer mask thumbnail.

• Double-click the layer mask channel in the Channels palette.

2 To choose a new mask color, in the Layer Mask Display Options dialog box, click the color swatch, and choose a new color.

3 To change the opacity, enter a value between 0% and 100%.

Both the color and opacity settings affect only the appearance of the mask and have no effect on how underlying areas are protected. For example, you might want to change these settings to make the mask more easily visible against the colors in the image.

4 Click OK.

Creating and editing vector masks

A vector mask creates a sharp-edged shape on a layer and is useful any time you want to add a design element with clean, defined edges. Once you create a layer with a vector mask, you can apply one or more layer styles to it, edit them if needed, and instantly have a usable button, panel, or other Web design element.

To add a vector mask that shows or hides the entire layer (Photoshop):

1 In the Layers palette, select the layer to which you want to add a vector mask.

2 Do one of the following:

• To create a vector mask that reveals the entire layer, choose Layer > Add Vector Mask > Reveal All.

• To create a vector mask that hides the entire layer, choose Layer > Add Vector Mask > Hide All.

To add a vector mask that shows the contents of a shape (Photoshop):

1 In the Layers palette, select the layer to which to add a vector mask.

2 Select a path or use one of the shape or pen tools to draw a work path. For more information, see "Creating a work path (Photoshop)" on page 300.

3 Choose Layer > Add Vector Mask > Current Path.

To edit a vector mask (Photoshop):

Click the vector mask thumbnail in the Layers palette or the thumbnail in the Paths palette. Then change the shape using the shape and pen tools.

To remove a vector mask:

Do one of the following in the Layers palette:

• Drag the vector mask thumbnail to the Trash button 🗑.

• (Photoshop) Select the layer with the vector mask you want to delete, and choose Layer > Delete Vector Mask.

To disable or enable a vector mask:

Do one of the following:

- Shift-click the vector mask thumbnail in the Layers palette.

- (Photoshop) Select the layer with the vector mask you want to disable or enable, and choose Layer > Disable Vector Mask or Layer > Enable Vector Mask.

A red *X* appears over the mask thumbnail in the Layers palette when the mask is disabled, and the layer's content appears without masking effects.

To convert a vector mask to a layer mask (Photoshop):

Select the layer with the vector mask you want to convert, and choose Layer > Rasterize > Vector Mask.

Important: *Once you rasterize a vector mask, it cannot be changed back into a vector object.*

Unlinking layers and masks

By default, a layer or layer set is linked to its layer mask or vector mask, as indicated by the link icon between the thumbnails in the Layers palette. The layer and its mask move together in the image when you move either one with the Move tool. Unlinking them lets you move them independently and shift the mask's boundaries separately from the layer.

To unlink a layer from its mask:

Click the link icon in the Layers palette.

To reestablish the link between a layer and its mask:

Click between the layer and mask path thumbnails in the Layers palette.

Applying and discarding layer masks

When you have finished creating a layer mask, you can either apply the mask and make the changes permanent or discard the mask without applying changes. Because layer masks are stored as alpha channels, applying and discarding layer masks can help reduce file size. (See "Storing masks in alpha channels" on page 254.)

To apply or discard a layer mask:

1 Click the layer mask thumbnail in the Layers palette.

2 To remove the layer mask and make changes permanent, click the Trash button 🗑 at the bottom of the Layers palette, and then click Apply (Photoshop) or Yes (ImageReady).

3 To remove the layer mask without applying the changes, click the Trash button at the bottom of the Layers palette, and then click Discard (Photoshop) or No (ImageReady).

You can also apply or discard layer masks using the Layer menu.

Selecting opaque areas on a layer

By loading a layer mask, you can quickly select all the opaque areas on a layer—that is, the areas within the layer boundaries. This is useful when you want to exclude transparent areas from a selection. You can also load the boundaries of a layer mask as a selection.

To load a layer or layer mask's boundaries as a selection:

Do one of the following:

- In the Layers palette, Ctrl-click (Windows) or Command-click (Mac OS) the layer or layer mask thumbnail.

- To add the pixels to an existing selection, press Ctrl+Shift (Windows) or Command+Shift (Mac OS), and click the layer or layer mask thumbnail in the Layers palette.

- To subtract the pixels from an existing selection, press Ctrl+Alt (Windows) or Command+Option (Mac OS), and click the layer or layer mask thumbnail in the Layers palette.

- To load the intersection of the pixels and an existing selection, press Ctrl+Alt+Shift (Windows) or Command+Option+Shift (Mac OS), and click the layer or layer mask thumbnail in the Layers palette.

If you want to move all the contents of a layer, use the Move tool without loading a transparency mask.

Creating clipping masks

You can use the content of a layer to mask the layers above it. The transparent pixels of the bottom or *base layer* mask out the content of layers above it that are part of a *clipping mask*. For example, you might have a shape on one layer, a texture on the overlying layer, and some text on the topmost layer. If you define all three layers as part of a clipping mask, the texture and the text appear only through the shape on the base layer, and take on the opacity of the base layer.

Note that only successive layers can be included in a clipping mask. The name of the base layer in the mask is underlined, and the thumbnails for the overlying layers are indented. Additionally, the overlying layers display a clipping mask icon ↴. The Blend Clipped Layers as Group option in the Layer Style dialog box determines whether the blending mode of the base affects the whole group or just the base. (See "Grouping blend effects" on page 389.)
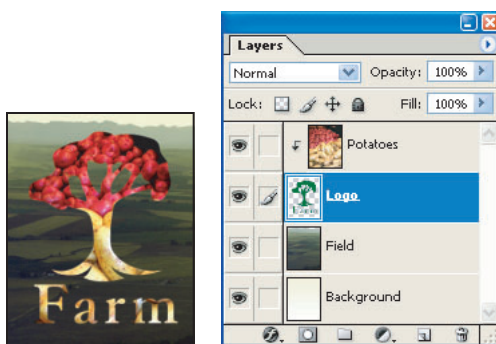
Clipping mask with Potatoes and Logo layers

To create a clipping mask:

Do one of the following:

• Hold down Alt (Windows) or Option (Mac OS), position the pointer over the line dividing two layers in the Layers palette (the pointer changes to two overlapping circles ⬤), and click.

• Select a layer in the Layers palette, and choose Layer > Create Clipping Mask.

• Link the desired layers in the Layers palette. (See "Linking layers" on page 378.) Then choose Layer > Create Clipping Mask from Linked.

The clipping mask is assigned the opacity and mode attributes of the bottommost layer in the group.

To duplicate a clipping mask to another layer

1 Select the clipping mask.

2 Alt-click (Windows) or Option-click (Mac OS) the mask and drag it to the destination layer. Make sure the destination layer highlights before letting go of the mouse button; otherwise, the layer won't receive the mask properly.

To remove a layer from a clipping mask:

Do one of the following:

• Hold down Alt (Windows) or Option (Mac OS), position the pointer over the line separating two grouped layers in the Layers palette (the pointer changes to two overlapping circles ⬤), and click.

• In the Layers palette, select a layer in the clipping mask, and choose Layer > Release Clipping Mask. This command removes the selected layer and any layers above it from the clipping mask.

To ungroup all layers in a clipping mask:

1 In the Layers palette, select the base layer in the clipping mask.

2 Choose Layer > Release Clipping Mask.

Applying Filters for Special Effects

Using filters

To use a filter, choose the appropriate submenu command from the Filter menu. These guidelines can help you in choosing filters:

- Filters are applied to the active, visible layer or a selection.
- Most filters can be applied cumulatively using the Filter Gallery. All filters can be applied individually.
- Filters cannot be applied to Bitmap-mode or indexed-color images.
- Some filters work only on RGB images.
- All filters can be applied to 8-bit images. Only the following filters can be applied to 16-bit images: Blur, Average Blur, Blur More, Gaussian Blur, Motion Blur, Noise, Add Noise, Despeckle, Dust & Scratches, Median, Sharpen, Sharpen Edges, Sharpen More, Unsharp Mask, Stylize, Emboss, Find Edges, and Solarize.
- Some filters are processed entirely in RAM. If all your available RAM is used to process a filter effect, you may get an error message (see "Improving filter performance" on page 436).

Using the Filter Gallery

Using the Filter Gallery, you can apply filters cumulatively, and apply individual filters more than once. You can also rearrange filters and change the settings of each filter you've applied to achieve the effect you want.

Note that not all available filters can be applied using the Filter Gallery. To learn how to apply these filters, see "Applying filters individually" on page 417.

Displaying the Filter Gallery Choose Filter > Filter Gallery.

Displaying filter thumbnails Click a filter category name to display previews of available filter effects.

Changing the display of the filter preview You can do any of the following to change the display of the filter preview area:

- Use the + or – button under the preview area to zoom in or zoom out of the image.
- Click the zoom bar (where the zoom percentage appears) to choose a zoom percentage.
- Click the Show/Hide button ⊗ ▲ at the top of the dialog box to hide the filters thumbnails. Hiding the thumbnails expands the preview area.
- Drag in the preview area with the Hand tool to see a different area of the image.
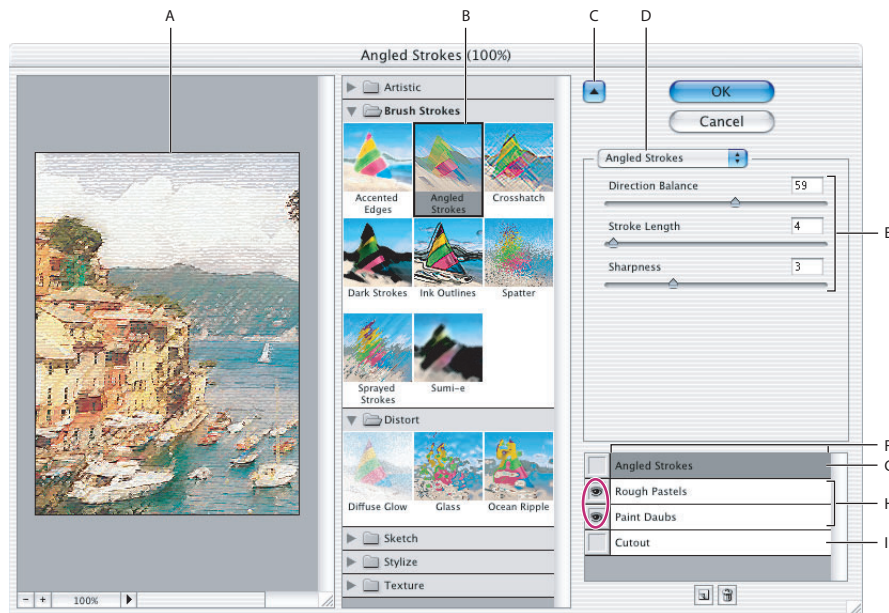
Filter Gallery dialog box
A. Preview **B.** Thumbnail of selected filter **C.** Show/Hide filter thumbnails **D.** Filters pop-up menu **E.** Options for selected filter **F.** List of filter effects to apply or arrange **G.** Filter effect selected but not applied **H.** Filter effects applied cumulatively but not selected **I.** Hidden filter effect

Applying and arranging filter effects Filter effects are applied in the order you select them. You can rearrange filters once you apply them by dragging a filter name to another position in the list of applied filters. Rearranging filter effects can dramatically change the way your image looks. Click the eye icon 👁 next to a filter to hide the effect in the preview image. You can also delete applied filters by selecting the filter and clicking the Delete Effect Layer button 🗑.

Applying filters using the Filter Gallery dialog box

Because you can apply more than one filter to an image when you use the Filter Gallery dialog box, you have a lot of control over the way your image is affected by each filter.

💡 To save time when trying various filters, experiment by selecting a small, representative part of your image.
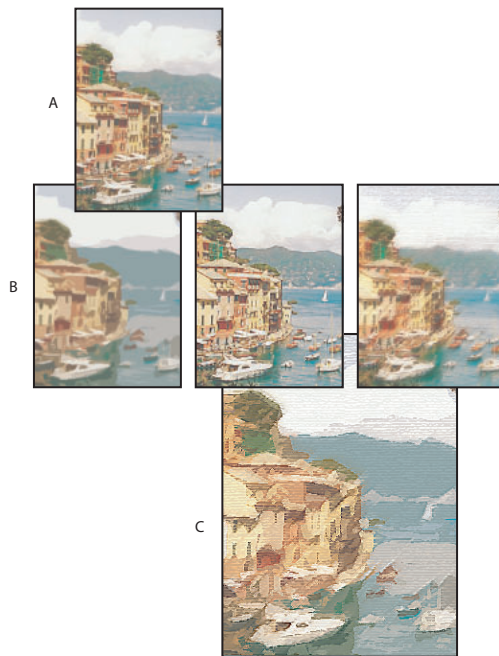
Applying filters using the Filter Gallery
A. Original image **B.** Images each with a single filter applied **C.** Three filters applied cumulatively

To apply filters:

1 Do one of the following:

• To apply a filter to an entire layer, make sure that the layer is active or selected.

• To apply a filter to an area of a layer, select that area.

2 Choose Filter > Filter Gallery.

3 To apply a filter, click the filter's name. You may need to click the inverted triangle next to the filter's category to see a list of the filters.

4 Enter values or select options for the filter you've selected.

5 Do any of the following:

• Choose additional filters to apply.

• Rearrange applied filters.

• Remove applied filters.

6 When you're satisfied, click the OK button.

Applying filters individually

Applying filters—especially to large images—can be time-consuming. Some filters let you preview the effect before applying it. You can then choose to apply the filter or cancel the operation without wasting time.

If the dialog box contains a preview window, use the following methods to preview the effect:

• If the dialog box contains sliders, hold down Alt (Windows) or Option (Mac OS) while dragging a slider to see a real-time preview (real-time rendering) of the effect.

• Drag in the preview window to center a specific area of the image in the window.

• Use the + or – button under the preview window to zoom in or zoom out on the preview

• Click in the image window to center a specific area of the image in the preview window. (This may not work with all preview windows.)

Some individual filters use dialog boxes to help you customize the filter effect. These filter names are followed by ellipses (…) so you can identify them.

To apply a filter:

1 Do one of the following:

• To apply a filter to an entire layer, make sure that the layer is active or selected.

• To apply a filter to an area of a layer, select that area.

2 Choose a filter from the submenus in the Filter menu.

If no dialog box appears, the filter effect is applied.

3 If a dialog box appears, enter values or select options, and then click the OK button.

Blending filter effects (Photoshop)

The Fade command changes the opacity and blending mode of any filter, painting tool, erasing tool, or color adjustment. The Fade command blending modes are a subset of those in the painting and editing tools options (excluding the Behind and Clear modes).

Applying the Fade command is similar to applying the filter effect on a separate layer and then using the layer opacity and blending mode controls. (See "Using adjustment layers and fill layers (Photoshop)" on page 402.)

Note: *The Fade command can also modify the effects of using the Extract command, Liquify command, and Brush Strokes filters.*

To fade the effect of a filter, painting tool, or color adjustment:

1 Apply a filter, painting tool, or color adjustment to an image or selection.

2 Choose Edit > Fade. Select the Preview option to preview the effect.

3 Drag the slider to adjust the opacity, from 0% (transparent) to 100%. (See "Specifying opacity, flow, strength, or exposure" on page 334.)

4 Choose a blending mode from the Mode menu (see "Selecting a blending mode" on page 331).

5 Click OK.

Note: *The Color Dodge, Color Burn, Lighten, Darken, Difference, and Exclusion blending modes do not work on Lab images.*

Defining undistorted areas

The Displace, Shear, and Wave filters in the Distort submenu and the Offset filter in the Other submenu let you treat areas undefined (or unprotected) by the filter in the following ways:

• Wrap Around fills the undefined space with content from the opposite edge of the image.

• Repeat Edge Pixels extends the colors of pixels along the image's edge in the direction specified. Banding may result if the edge pixels are different colors.

• Set to Background (Offset filter only) fills the selected area with the current background color.

Using texture and glass surface controls

The Conté Crayon, Glass, Rough Pastels, Texturizer, and Underpainting filters have texturizing options. These options make images appear as if they were painted onto textures such as canvas and brick or viewed through glass blocks.

To use texture and glass surface controls:

1 From the Filter menu, choose Artistic > Rough Pastels, Artistic > Underpainting, Distort > Glass, Sketch > Conté Crayon, or Texture > Texturizer.

2 For Texture, choose a texture type or choose Load Texture to specify a Photoshop file.

3 Drag the Scaling slider to enlarge or reduce the effect on the image surface.

4 Drag the Relief slider (if available) to adjust the depth of the texture's surface.

5 Select Invert to reverse the surface's light and dark colors.

6 For Light Direction, indicate the direction of the light source on the image.

Tips for creating special effects

Try the following techniques to create special effects with filters.

Create edge effects You can use various techniques to treat the edges of an effect applied to only part of an image. To leave a distinct edge, simply apply the filter. For a soft edge, feather the edge, and then apply the filter. For a transparent effect, apply the filter, and then use the Fade command to adjust the selection's blending mode and opacity. (See "Blending filter effects (Photoshop)" on page 418.)

Apply filters to layers You can apply filters to individual layers or to several layers in succession to build up an effect. For a filter to affect a layer, the layer must be visible and must contain pixels—for example, a neutral fill color. (See "Filling new layers with a neutral color" on page 387.)

Apply filters to individual channels You can apply a filter to an individual channel, apply a different effect to each color channel, or apply the same filter but with different settings.

Create backgrounds By applying effects to solid-color or grayscale shapes, you can generate a variety of backgrounds and textures. You might then blur these textures. Although some filters have little or no visible effect when applied to solid colors (for example, Glass), others produce interesting effects.

Combine multiple effects with masks or with duplicate images Using masks to create selection areas gives you more control over transitions from one effect to another. For example, you can filter the selection created with a mask.

You can also use the History Brush tool to paint a filter effect onto part of the image. First, apply the filter to an entire image. Next, step back in the History palette to the image state before the filter was applied, and set the history brush source to the filtered state. Then, paint the image. (See "About the History palette" on page 34.)

Improve image quality and consistency You can disguise faults, alter or enhance images, or make a series of images look related by applying the same effect to each. Use the Actions palette to record the process of modifying one image, and then use this action on the other images. (See "Using the Actions palette" on page 627.)

Choosing a filter effect

The built-in filters are grouped into 14 submenus. In addition, any third-party filters installed appear at the bottom of the Filter menu.

Artistic filters

Choose a filter from the Artistic submenu to achieve a painterly or special effect for a fine arts or commercial project. For example, use the Cutout filter for collages or type treatment. These filters replicate natural or traditional media effects. All of the Artistic filters can be applied using the Filter Gallery (see "Using the Filter Gallery" on page 415).

Colored Pencil Draws an image using colored pencils on a solid background. Important edges are retained and given a rough crosshatch appearance; the solid background color shows through the smoother areas.

💡   For a parchment effect, change the background color just before applying the Colored Pencil filter to a selected area.

Cutout Portrays an image as though it were made from roughly cut-out pieces of colored paper. High-contrast images appear as if in silhouette, while colored images are built up from several layers of colored paper.

Dry Brush Paints the edges of the image using a dry brush technique (between oil and watercolor). The filter simplifies an image by reducing its range of colors to areas of common color.

Film Grain Applies an even pattern to the shadow tones and midtones of an image. A smoother, more saturated pattern is added to the image's lighter areas. This filter is useful for eliminating banding in blends and visually unifying elements from various sources.

Fresco Paints an image in a coarse style using short, rounded, and hastily applied dabs.

Neon Glow Adds various types of glows to the objects in an image and is useful for colorizing an image while softening its look. To select a glow color, click the glow box and select a color from the color picker.

Paint Daubs Lets you choose from various brush sizes (from 1 to 50) and types for a painterly effect. Brush types include simple, light rough, light dark, wide sharp, wide blurry, and sparkle.

Palette Knife Reduces detail in an image to give the effect of a thinly painted canvas that reveals the texture underneath.

Plastic Wrap Coats the image in shiny plastic, accentuating the surface detail.

Poster Edges Reduces the number of colors in an image (posterizes) according to the posterization option you set, and finds the edges of the image and draws black lines on them. Large broad areas of the image have simple shading, while fine dark detail is distributed throughout the image.

Rough Pastels Makes an image appear as if stroked with colored pastel chalk on a textured background. In areas of bright color, the chalk appears thick with little texture; in darker areas, the chalk appears scraped off to reveal the texture. For more on the filter options, see "Using texture and glass surface controls" on page 419.

Smudge Stick Softens an image using short diagonal strokes to smudge or smear the darker areas of the images. Lighter areas become brighter and lose detail.

Sponge Creates images with highly textured areas of contrasting color, appearing to have been painted with a sponge.

Underpainting Paints the image on a textured background, and then paints the final image over it. For more on the filter options, see "Using texture and glass surface controls" on page 419.

Watercolor Paints the image in a watercolor style, simplifying details in an image, using a medium brush loaded with water and color. Where significant tonal changes occur at edges, the filter saturates the color.

Blur filters

The blur filters soften a selection or an entire image, and are useful for retouching. They smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas in an image.
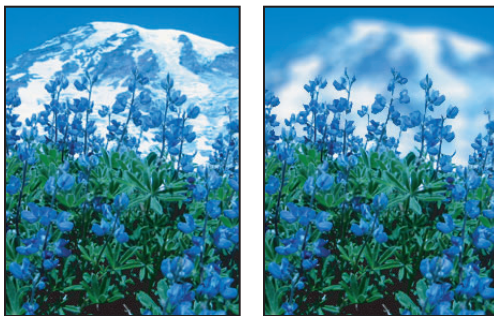
Before (left) and after (right) using the Lens Blur filter; the background is blurred but foreground stays sharp

Note: *To apply a Blur filter to the edges of a layer, be sure to deselect the Preserve Transparency option in the Layers palette.*

Average Finds the average color of an image or selection, and then fills the image or selection with the color to create a smooth look. For example, if you select an area of grass, the filter will change the area into a smooth patch of green.

Blur and Blur More Eliminate noise where significant color transitions occur in an image. Blur filters smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas. The Blur More filter produces an effect three or four times stronger than that of the Blur filter.

Gaussian Blur Quickly blurs a selection by an adjustable amount. Gaussian refers to the bell-shaped curve that is generated when Photoshop applies a weighted average to the pixels. The Gaussian Blur filter adds low-frequency detail and can produce a hazy effect.

Lens Blur (Photoshop) Adds blur to an image to give the effect of a narrower *depth of field* so that some objects in the image stay in focus while others areas become blurred. A simple selection can be used to determine which areas become blurred, or you can provide a separate alpha channel *depth map* to describe exactly how you want the blur added.

The Lens Blur filter uses a depth map to determine the position of pixels in an image. You can use alpha channels and layer masks to create depth maps; black areas in an alpha channel are treated as though they're at the front of the photo, and white areas are treated as if they're far in the distance.

To create a gradual blurring (none at the bottom to maximum at the top), create a new alpha channel and apply a gradient so the channel is white at the top of the image and black at the bottom. Then start the Lens Blur filter and choose the alpha channel from the Source pop-up menu. To change the direction of the gradient, check the Invert check box.

The way the blur appears depends on the Iris shape you choose. Iris shapes are determined by the number of blades they contain. You can change blades of an iris by curving (making them more circular) or rotating them. You can also magnify or reduce the view of the preview by clicking on the minus button – or the plus button +.

To use the Lens Blur filter:

1 Choose Filter > Blur > Lens Blur.

2 For Preview, Choose Faster to generate quicker previews. Choose More Accurate to view the final version of the image. More Accurate previews take longer to update.

3 For Depth Map, choose a source (if you have one) from the Source pop-up menu. Drag the Blur Focal Distance slider to set the depth at which pixels are in focus. For example, if your focal distance is set at 100, pixels at 1 and at 255 are completely blurred, and pixels closer to 100 are blurred less. If you click the preview image, the Blur Focal Distance slider matches the location you clicked, setting that depth as in-focus.

4 Select Invert if you want to invert the selection or alpha channel you're using as the depth map source.

5 Choose an Iris from the Shape pop-up menu. If you'd like, drag the Blade Curvature slider to smooth out the edges of the iris. Drag the Rotation slider to rotate the iris. To add more blur, drag the Radius slider.

6 For Specular Highlight, drag the Threshold slider to select a brightness cutoff so that all the pixels that are brighter than that value are treated as specular highlights. To increase the brightness of the highlights, drag the Brightness slider.

7 To add noise to an image, choose Uniform or Gaussian. To add noise without affecting the color in your image, choose Monochromatic. Drag the Amount slider to add or remove noise.

Film grain and noise are removed from the original image when you blur it. To make the image look more realistic, you may want to add noise back to the image so the photo doesn't look retouched.

8 Click the OK button to make the changes to your image.

Motion Blur Blurs in a particular direction (from –360º to +360º) and at a specific intensity (from 1 to 999). The filter's effect is analogous to taking a picture of a moving object with a fixed exposure time.

Radial Blur Simulates the blur of a zooming or rotating camera to produce a soft blur. Choose Spin, to blur along concentric circular lines, and then specify a degree of rotation; or Zoom, to blur along radial lines, as if zooming in or out of the image, and specify an amount from 1 to 100. Blur quality ranges from Draft (for the fastest but grainy results) or Good and Best for smoother results, which are indistinguishable from each other except on a large selection. Specify the origin of the blur by dragging the pattern in the Blur Center box.

Smart Blur Precisely blurs an image. You can specify a radius, to determine how far the filter searches for dissimilar pixels to blur; a threshold, to determine how different the pixels' values should be before they are eliminated; and a blur quality. You also can set a mode for the entire selection (Normal) or for the edges of color transitions (Edge Only and Overlay). Where significant contrast occurs, Edge Only applies black-and-white edges, and Overlay Edge applies white.

Brush Stroke filters

Like the Artistic filters, the Brush Stroke filters give a painterly or fine-arts look using different brush and ink stroke effects. Some of the filters add grain, paint, noise, edge detail, or texture to an image for a pointillist effect. All of the Brush Stroke filters can be applied using the Filter Gallery (see "Applying filters using the Filter Gallery dialog box" on page 416).

Accented Edges Accentuates the edges of an image. When the edge brightness control is set to a high value, the accents resemble white chalk; when set to a low value, the accents resemble black ink.

Angled Strokes Repaints an image using diagonal strokes. The lighter areas of the image are painted in strokes going in one direction, while the darker areas are painted in strokes going the opposite direction.

Crosshatch Preserves the details and features of the original image while adding texture and roughening the edges of the colored areas in the image with simulated pencil hatching. The Strength option controls the number of hatching passes, from 1 to 3.

Dark Strokes Paints dark areas of an image closer to black with short, tight strokes, and paints lighter areas of the image with long, white strokes.

Ink Outlines Redraws an image with fine narrow lines over the original details, in pen-and-ink style.

Spatter Replicates the effect of a spatter airbrush. Increasing the options simplifies the overall effect.

Sprayed Strokes Repaints an image, using its dominant colors with angled, sprayed strokes of color.

Sumi-e Paints an image in Japanese style, as if with a wet brush full of black ink on rice paper. The effect is soft blurry edges with rich blacks.

Distort filters

The Distort filters geometrically distort an image, creating 3D or other reshaping effects. Note that these filters can be very memory intensive. The Diffuse Glow, Glass, and Ocean Ripple filters can be applied using the Filter Gallery (see "Applying filters using the Filter Gallery dialog box" on page 416).

Diffuse Glow Renders an image as though it were viewed through a soft diffusion filter. The filter adds see-through white noise to an image, with the glow fading from the center of a selection.

Displace filter Uses an image, called a *displacement map*, to determine how to distort a selection. For example, using a parabola-shaped displacement map, you can create an image that appears to be printed on a cloth held at its corners.

This filter creates displacement maps, using a flattened file saved in Adobe Photoshop format (except Bitmap mode images). You can also use the files in the Plug-Ins/Displacement Maps folder in the Photoshop program folder.

To use the Displace filter:

1 Choose Filter > Distort > Displace.

2 Enter the scale for the magnitude of the displacement.

When the horizontal and vertical scale are set to 100%, the greatest displacement is 128 pixels (because middle gray produces no displacement).

3 If the displacement map is not the same size as the selection, choose how the map will fit the image—Stretch to Fit to resize the map, or Tile to fill the selection by repeating the map in a pattern.

4 Choose Wrap Around or Repeat Edge Pixels to determine how undistorted areas of the image will be treated. (See "Defining undistorted areas" on page 419.)

5 Click OK.

6 Select and open the displacement map. The distortion is applied to the image.

The Displace filter shifts a selection using a color value from the displacement map—0 is the maximum negative shift, 255 the maximum positive shift, and a gray value of 128 produces no displacement. If a map has one channel, the image shifts along a diagonal defined by the horizontal and vertical scale ratios. If the map has more than one channel, the first channel controls the horizontal displacement and the second channel controls the vertical displacement.

Glass Makes an image appear as if it is being viewed through different types of glass. You can choose a glass effect or create your own glass surface as a Photoshop file and apply it. You can adjust scaling, distortion, and smoothness settings. When using surface controls with a file, follow the instructions for the Displace filter. For more information about Glass filter controls, see "Using texture and glass surface controls" on page 419.

Ocean Ripple Adds randomly spaced ripples to the image's surface, making the image look as if it were under water.

Pinch　Squeezes a selection. A positive value up to 100% shifts a selection toward its center; a negative value up to −100% shifts a selection outward.

Polar Coordinates　Converts a selection from its rectangular to polar coordinates, and vice versa, according to a selected option. You can use this filter to create a cylinder anamorphosis—art popular in the 18th century—in which the distorted image appears normal when viewed in a mirrored cylinder.

Ripple　Creates an undulating pattern on a selection, like ripples on the surface of a pond. For greater control, use the Wave filter. Options include the amount and size of ripples.

Shear　Distorts an image along a curve. Specify the curve by dragging the line in the box to form a curve for the distortion. You can adjust any point along the curve. Click Default to return the curve to a straight line. In addition, you choose how to treat undistorted areas. (See "Defining undistorted areas" on page 419.)

Spherize　Gives objects a 3D effect by wrapping a selection around a spherical shape, distorting the image, and stretching it to fit the selected curve.

Twirl　Rotates a selection more sharply in the center than at the edges. Specifying an angle produces a twirl pattern.

Wave　Works in a similar way to the Ripple filter, but with greater control. Options include the number of wave generators, the wavelength (distance from one wave crest to the next), the height of the wave, and the wave type: Sine (rolling), Triangle, or Square. The Randomize option applies random values. You can also define undistorted areas. (See "Defining undistorted areas" on page 419.)

💡　To replicate wave results on other selections, click Randomize, set the Number of Generators to 1, and set the minimum and maximum Wavelength and Amplitude parameters to the same value.

ZigZag　Distorts a selection radially, depending on the radius of the pixels in your selection. The Ridges option sets the number of direction reversals of the zigzag from the center of the selection to its edge. You also choose how to displace the pixels: Pond Ripples displaces pixels to the upper left or lower right, Out From Center displaces pixels toward or away from the center of the selection, and Around Center rotates pixels around the center.

Noise filters (Photoshop)

The Noise filters add or remove *noise*, or pixels with randomly distributed color levels. This helps to blend a selection into the surrounding pixels. Noise filters can create unusual textures or remove problem areas, such as dust and scratches, from an image.

Add Noise　Applies random pixels to an image, simulating the effect of shooting pictures on high-speed film. The Add Noise filter can also be used to reduce banding in feathered selections or graduated fills or to give a more realistic look to heavily retouched areas. Options include noise distribution: Uniform distributes color values of noise using random numbers between 0 and plus or minus the specified value for a subtle effect and Gaussian distributes color values of noise along a bell-shaped curve for a speckled effect. The Monochromatic option applies the filter to only the tonal elements in the image without changing the colors.

Despeckle Detects the edges in an image (areas where significant color changes occur) and blurs all of the selection except those edges. This blurring removes noise while preserving detail.

Dust & Scratches Reduces noise by changing dissimilar pixels. To achieve a balance between sharpening the image and hiding defects, try various combinations of radius and threshold settings. Or apply the filter on selected areas in the image.

To use the Dust & Scratches filter:

1 Choose Filter > Noise > Dust & Scratches.

2 If necessary, adjust the preview zoom ratio until the area containing noise is visible.

3 Drag the Threshold slider left to 0 to turn off the value, so that all pixels in the selection or image can be examined.

The Threshold determines how different the pixels' values should be before they are eliminated.

Note: *The Threshold slider gives greater control for values between 0 and 128—the most common range for images—than for values between 128 and 255.*

4 Drag the Radius slider left or right, or enter a value in the text box from 1 to 16 pixels. The radius determines how far the filter searches for differences among pixels.

Adjusting the radius makes the image blurry. Stop at the smallest value that eliminates the defects.

5 Increase the threshold gradually by entering a value or by dragging the slider to the highest value possible that eliminates defects.

Median Reduces noise in an image by blending the brightness of pixels within a selection. The filter searches the radius of a pixel selection for pixels of similar brightness, discarding pixels that differ too much from adjacent pixels, and replaces the center pixel with the median brightness value of the searched pixels. This filter is useful for eliminating or reducing the effect of motion on an image.

Pixelate filters

The filters in the Pixelate submenu sharply define a selection by clumping pixels of similar color values in cells.

Color Halftone Simulates the effect of using an enlarged halftone screen on each channel of the image. For each channel, the filter divides the image into rectangles and replaces each rectangle with a circle. The circle size is proportional to the brightness of the rectangle.

To use the Color Halftone filter:

1 Choose Filter > Pixelate > Color Halftone.

2 Enter a value in pixels for the maximum radius of a halftone dot, from 4 to 127.

3 Enter a screen-angle value (the angle of the dot from the true horizontal) for one or more channels:

•　For Grayscale images, use only channel 1.

•　For RGB images, use channels 1, 2, and 3, which correspond to the red, green, and blue channels.

- For CMYK images, use all four channels, which correspond to the cyan, magenta, yellow, and black channels.

- Click Defaults to return all the screen angles to their default values.

4 Click OK.

Crystallize Clumps pixels into a solid color in a polygon shape.

Facet Clumps pixels of solid or similar colors into blocks of like-colored pixels. You can use this filter to make a scanned image look hand-painted or to make a realistic image resemble an abstract painting.

Fragment Creates four copies of the pixels in the selection, averages them, and offsets them from each other.

Mezzotint Converts an image to a random pattern of black-and-white areas or of fully saturated colors in a color image. To use the filter, choose a dot pattern from the Type menu in the Mezzotint dialog box.

Mosaic Clumps pixels into square blocks. The pixels in a given block are the same color, and the colors of the blocks represent the colors in the selection.

Pointillize Breaks up the color in an image into randomly placed dots, as in a pointillist painting, and uses the background color as a canvas area between the dots.

Render filters

The Render filters create 3D shapes, cloud patterns, refraction patterns, and simulated light reflections in an image. You can also manipulate objects in 3D space, create 3D objects (cubes, spheres, and cylinders), and create texture fills from grayscale files to produce 3D-like effects for lighting.

Clouds Generates a soft cloud pattern using random values that vary between the foreground and the background colors. To generate a more stark cloud pattern, hold down Alt (Windows) or Option (Mac OS) as you choose Filter > Render > Clouds. When you apply the Clouds filter, the image data on the active layer is replaced.

Difference Clouds Uses randomly generated values that vary between the foreground and back-ground color to produce a cloud pattern. The filter blends the cloud data with the existing pixels in the same way that the Difference mode blends colors. The first time you choose this filter, portions of the image are inverted in a cloud pattern. Applying the filter several times creates rib and vein patterns that resemble a marble texture. When you apply the Difference Clouds filter, the image data on the active layer is replaced.

Fibers Creates the look of woven fibers using the foreground and background colors. You can control how the colors vary by sliding the Variance slider (a low value creates longer streaks of color, while a high value makes very short fibers with more varied distribution of color). The Strength slider controls how each fiber looks. A low setting creates spread out fibers, while a high setting produces short, stringy fibers. Click the Randomize button to change how the pattern looks; you can click the button a number of times until you find a pattern you like. When you apply the Fibers filter, the image data on the active layer is replaced with fibers.

Try adding a gradient map adjustment layer to colorize the fibers (see "Using the Gradient Map command (Photoshop)" on page 223).

Lens Flare Simulates the refraction caused by shining a bright light into the camera lens. Specify a location for the center of the flare by clicking anywhere inside the image thumbnail or by dragging its cross hair.

Lighting Effects Lets you produce myriad lighting effects on RGB images by varying 17 light styles, three light types, and four sets of light properties. You can also use textures from grayscale files (called *bump maps*) to produce 3D-like effects and save your own styles for use in other images. (See "The Lighting Effects filter" on page 432.)

Sharpen filters

The Sharpen filters focus blurry images by increasing the contrast of adjacent pixels.

Sharpen and Sharpen More Focus a selection and improve its clarity. The Sharpen More filter applies a stronger sharpening effect than does the Sharpen filter.

Sharpen Edges and Unsharp Mask Find the areas in the image where significant color changes occur and sharpen them. The Sharpen Edges filter sharpens only edges while preserving the overall smoothness of the image. Use this filter to sharpen edges without specifying an amount. For professional color correction, use the Unsharp Mask filter to adjust the contrast of edge detail and produce a lighter and darker line on each side of the edge. This process will emphasize the edge and create the illusion of a sharper image. (See "Sharpening images" on page 224.)

Sketch filters

Filters in the Sketch submenu add texture to images, often for a 3D effect. The filters also are useful for creating a fine-arts or hand-drawn look. Many of the Sketch filters use the foreground and background color as they redraw the image. All of the Sketch filters can be applied using the Filter Gallery (see "Applying filters using the Filter Gallery dialog box" on page 416).

Bas Relief Transforms an image to appear carved in low relief and lit to accent the surface variations. Dark areas of the image take on the foreground color, and light colors use the background color.

Chalk & Charcoal Redraws an image's highlights and midtones with a solid midtone gray back-ground drawn in coarse chalk. Shadow areas are replaced with black diagonal charcoal lines. The charcoal is drawn in the foreground color, the chalk in background color.

Charcoal Redraws an image to create a posterized, smudged effect. Major edges are boldly drawn, while midtones are sketched using a diagonal stroke. Charcoal is the foreground color, and the paper is the background color.

Chrome Treats the image as if it were a polished chrome surface. Highlights are high points, and shadows are low points in the reflecting surface. After applying the filter, use the Levels dialog box to add more contrast to the image.

Conté Crayon Replicates the texture of dense dark and pure white Conté crayons on an image. The Conté Crayon filter uses the foreground color for dark areas and the background color for light areas. For a truer effect, change the foreground color to one of the common Conté Crayon colors (black, sepia, sanguine) before applying the filter. For a muted effect, change the background color to white with some foreground color added to it before applying the filter. (See "Using texture and glass surface controls" on page 419.)

Graphic Pen   Uses fine, linear ink strokes to capture the details in the original image and is especially striking with scanned images. The filter replaces color in the original image, using the foreground color for ink and background color for paper.

Halftone Pattern   Simulates the effect of a halftone screen while maintaining the continuous range of tones.

Note Paper   Creates an image that appears to be constructed of handmade paper. The filter simplifies an image and combines the effects of the Stylize > Emboss and Texture > Grain filters. Dark areas of the image appear as holes in the top layer of paper, revealing the background color.

Photocopy   Simulates the effect of photocopying an image. Large areas of darkness tend to copy only around their edges, and midtones fall away to either solid black or white.

Plaster   Molds an image from 3D plaster, and then colorizes the result using the foreground and background color. Dark areas are raised, and light areas are sunken.

Reticulation   Simulates the controlled shrinking and distorting of film emulsion to create an image that appears clumped in the shadow areas and lightly grained in the highlights.

Stamp   Is best used with black-and-white images. The filter simplifies the image to appear stamped with a rubber or wood stamp.

Torn Edges   Is particularly useful for images consisting of text or high-contrast objects. The filter reconstructs the image as ragged, torn pieces of paper, and then colorizes the image using the foreground and background colors.

Water Paper   Uses blotchy daubs that appear painted onto fibrous, damp paper, causing the colors to flow and blend.

Stylize filters

The Stylize filters produce a painted or impressionistic effect on a selection by displacing pixels and by finding and heightening contrast in an image. After using filters like Find Edges and Trace Contour that highlight edges, you can apply the Invert command to outline the edges of a color image with colored lines or to outline the edges of a grayscale image with white lines. (See "Using the Invert command" on page 222.)

Diffuse   Shuffles pixels in a selection to make the selection look less focused according to the selected option: Normal moves pixels randomly, (ignoring color values), Darken Only replaces light pixels with darker pixels, and Lighten Only replaces dark pixels with lighter pixels. Anisotropic shuffles pixels in the direction of the least change in color.

Emboss   Makes a selection appear raised or stamped by converting its fill color to gray and tracing the edges with the original fill color. Options include an embossing angle (from –360° to lower [stamp] the surface, to +360° to raise the surface), height, and a percentage (1% to 500%) for the amount of color within the selection. To retain color and detail when embossing, use the Fade command after applying the Emboss filter.

Extrude   Gives a 3D texture to a selection or layer.

To use the Extrude filter:

1 Choose Filter > Stylize > Extrude.

2 Choose a 3D type:

• Blocks creates objects with a square front face and four side faces. To fill the front face of each block with the average color of the block, select Solid Front Faces. To fill the front face with the image, deselect Solid Front Faces.

• Pyramids creates objects with four triangular sides that meet at a point.

3 Enter a value in the Size text box to determine the length of any side of the object's base, from 2 to 255 pixels.

4 Enter a value in the Depth text box to indicate how far the tallest object appears to protrude from the screen, from 1 to 255.

5 Choose a depth option:

• Random to give each block or pyramid an arbitrary depth.

• Level-based to make each object's depth correspond to its brightness—bright protrudes more than dark.

6 Select Mask Incomplete Blocks to hide any object extending beyond the selection.

Find Edges Identifies the areas of the image with significant transitions and emphasizes the edges. Like the Trace Counter filter, Find Edges outlines the edges of an image with dark lines against a white background and is useful for creating a border around an image.

Glowing Edges Identifies the edges of color and adds a neon-like glow to them. This filter can be applied cumulatively with other filters using the Filter Gallery (see "Using the Filter Gallery" on page 415).

Solarize Blends a negative and a positive image—similar to exposing a photographic print briefly to light during development.

Tiles Breaks up an image into a series of tiles, off-setting the selection from its original position. You can choose one of the following to fill the area between the tiles: the background color, the foreground color, a reverse version of the image, or an unaltered version of the image, which puts the tiled version on top of the original and reveals part of the original image underneath the tiled edges.

Trace Contour Finds the transitions of major brightness areas and thinly outlines them for each color channel, for an effect similar to the lines in a contour map.

To use the Trace Contour filter:

1 Choose Filter > Stylize > Trace Contour.

2 Choose an Edge option to outline areas in the selection: Lower outlines where the color values of pixels fall below the specified level, and Upper outlines where the color values fall above.

3 Enter a threshold (Level) for evaluating color values (tonal level), from 0 to 255. Experiment to see what values bring out the best detail in the image.

Use the Info palette in Grayscale mode to identify a color value that you want traced. Then enter the value in the Level text box. (See "Using the Info palette" on page 25.)

Wind Creates tiny horizontal lines in the image to simulate a wind effect. Methods include Wind; Blast, for a more dramatic wind effect; and Stagger, which offsets the wind lines in the image.

Texture filters

Use the Texture filters to give an image the appearance of depth or substance, or to add an organic look.

Craquelure Paints an image onto a high-relief plaster surface, producing a fine network of cracks that follow the contours of the image. Use this filter to create an embossing effect with images that contain a broad range of color or grayscale values.

Grain Adds texture to an image by simulating different kinds of grain—regular, soft, sprinkles, clumped, contrasty, enlarged, stippled, horizontal, vertical, and speckle.

Mosaic Tiles Draws the image as if it were made up of small chips or tiles and adds grout between the tiles. (In contrast, the Pixelate > Mosaic filter breaks up an image into blocks of different-colored pixels.)

Patchwork Breaks up an image into squares filled with the predominant color in that area of the image. The filter randomly reduces or increases the tile depth to replicate the highlights and shadows.

Stained Glass Repaints an image as single-colored adjacent cells outlined in the foreground color.

Texturizer Applies a texture you select or create to an image. (See "Using texture and glass surface controls" on page 419.)

Video filters

The Video submenu contains the De-Interlace and NTSC Colors filters.

De-Interlace Smooths moving images captured on video by removing either the odd or even interlaced lines in a video image. You can choose to replace the discarded lines by duplication or interpolation.

NTSC Colors Restricts the gamut of colors to those acceptable for television reproduction, to prevent oversaturated colors from bleeding across television scan lines.

Other filters

Filters in the Other submenu let you create your own filters, use filters to modify masks, offset a selection within an image, and make quick color adjustments.

Custom Lets you design your own filter effect. With the Custom filter, you can change the brightness values of each pixel in the image according to a predefined mathematical operation known as *convolution*. Each pixel is reassigned a value based on the values of surrounding pixels. This operation is similar to the Add and Subtract calculations for channels.

You can save the custom filters you create and use them with other Photoshop images.

To create a Custom filter:

1 Choose Filter > Other > Custom.

2 Select the center text box, which represents the pixel being evaluated. Enter the value by which you want to multiply that pixel's brightness value, from –999 to +999.

3 Select a text box representing an adjacent pixel. Enter the value by which you want the pixel in this position multiplied.

For example, to multiply the brightness value of the pixel to the immediate right of the current pixel by 2, enter 2 in the text box to the immediate right of the center text box.

4 Repeat steps 2 and 3 for all pixels to include in the operation. You don't have to enter values in all the text boxes.

5 For Scale, enter the value by which to divide the sum of the brightness values of the pixels included in the calculation.

6 For Offset, enter the value to be added to the result of the scale calculation.

7 Click OK. The custom filter is applied to each pixel in the image, one at a time.

Use the Save and Load buttons to save and reuse custom filters.

High Pass Retains edge details in the specified radius where sharp color transitions occur and suppresses the rest of the image. (A radius of 0.1 pixel keeps only edge pixels.) The filter removes low-frequency detail in an image and has an effect opposite to that of the Gaussian Blur filter.

It is helpful to apply the High Pass filter to a continuous-tone image before using the Threshold command or converting the image to Bitmap mode. The filter is useful for extracting line art and large black-and-white areas from scanned images.

Minimum and Maximum Are useful for modifying masks. The Minimum filter has the effect of applying a spread—spreading out black areas and shrinking white areas. The Maximum filter has the effect of applying a choke—spreading out white areas and choking in black areas. Like the Median filter, the Maximum and Minimum filters look at individual pixels in a selection. Within a specified radius, the Maximum and Minimum filters replace the current pixel's brightness value with the greatest or least brightness value of the surrounding pixels.

Offset Moves a selection a specified horizontal or vertical amount, leaving an empty space at the selection's original location. You can fill the empty area with the current background color, with another part of the image, or with your choice of fill if the selection is near the edge of an image. (See "Defining undistorted areas" on page 419.)

Tile Maker (ImageReady) Enables you to prepare an image for use as a tiled background. You can blend the edges of an image to create a seamless background. You can also create a kaleidoscopic background in which an image is flipped horizontally and vertically to create an abstract design.

Digimarc filters

The Digimarc filters embed a digital watermark into an image to store copyright information. For more information, see "Adding digital copyright information" on page 590.

The Lighting Effects filter

The Lighting Effects filter lets you produce myriad lighting effects on RGB images. You can also use textures from grayscale files (called *bump maps*) to produce 3D-like effects and save your own styles for use in other images.

Note: *The Lighting Effects filter works only on RGB images.*

Using the Lighting Effects filter

You can apply the Lighting Effects filter using the Lighting Effects dialog box. You'll see a preview of your image to see how the settings you choose affect the image.

To use the Lighting Effects filter:

1 Choose Filter > Render > Lighting Effects.

2 For Style, choose a style. (See "Choosing a Lighting Effects style" on page 434.)

3 For Light Type, choose a type. If you're using multiple lights, select and deselect On to turn individual lights on and off. (See "Choosing a Lighting Effects type" on page 433.)

4 To change the color of the light, click the color box in the Light Type area of the dialog box.

The color picker chosen in the General Preferences dialog box opens. For information on choosing a color picker, see "Using the Adobe Color Picker" on page 164, or "Using other color pickers" on page 171.

5 To set light properties, drag the corresponding slider for the following options:

• Gloss determines how much the surface reflects light (as on the surface of a piece of photographic paper) from Matte (low reflectance) to Glossy (high reflectance).

• Material determines whether the light or the object on which the light is cast reflects more light. Plastic reflects the light's color; Metallic reflects the object's color.

• Exposure increases the light (positive values) or decreases the light (negative values). A value of 0 has no effect.

• Ambience diffuses the light as if it were combined with other light in a room, such as sunlight or fluorescent light. Choose a value of 100 to use only the light source, or a value of –100 to remove the light source. To change the color of the ambient light, click the color box and use the color picker that appears.

  💡 To duplicate a light, Alt-drag (Windows) or Option-drag (Mac OS) the light within the preview window.

6 To use a texture fill, choose a channel for Texture Channel. (See "Using a Lighting Effects texture" on page 436.)

Choosing a Lighting Effects type

You can choose from several light types:

• Omni shines light in all directions from directly above the image—like a light bulb over a piece of paper.

• Directional shines light from far away so that the light angle doesn't change—like the sun.

• Spotlight casts an elliptical beam of light. The line in the preview window defines the light direction and angle, and the handles define the edges of the ellipse.

To adjust an Omni light:

1 Choose Filter > Render > Lighting Effects.

2 For Light Type, choose Omni.

3 Adjust the light:

- To move the light, drag the center circle.

- To increase or decrease the size of the light (like a light moving closer or farther away), drag one of the handles defining the edges of the effect.

To adjust the angle and height of the directional light using the preview window:

1 Choose Filter > Render > Lighting Effects.

2 For Light Type, choose Directional.

3 Adjust the light:

- To move the light, drag the center circle.

- To change the direction of the light, drag the handle at the end of the line to rotate the light's angle. Ctrl-drag (Windows) or Command-drag (Mac OS) to keep the light's height (line length) constant.

- To change the light's height, drag the handle at the end of the line. Shorten the line for a bright light, and lengthen it for a less intense one. A very short line produces pure white light, a very long one no light. Shift-drag to keep the angle constant and change the light's height (line length).

To adjust the angle and height of the spotlight using the preview window:

1 Choose Filter > Render > Lighting Effects.

2 For Light Type, choose Spotlight.

3 Adjust the light:

- To move the light, drag the center circle.

- To increase the light angle, drag the handle to shorten the line. To decrease the light angle, drag to lengthen the line.

- To stretch the ellipse or rotate the light, drag one of the handles. Shift-drag to keep the angle constant and change only the size of the ellipse. Ctrl-drag (Windows) or Command-drag (Mac OS) to keep the size constant and change the angle or direction of the spotlight.

- To set the light focus (or spotlight intensity) and control how much of an ellipse is filled with light, drag the Intensity slider: full intensity (a value of 100) is brightest, normal intensity is about 50, negative intensity takes away light, and –100 intensity produces no light. Use the Focus slider to control how much of the ellipse is filled with light.

Choosing a Lighting Effects style

Use the Style menu in the Lighting Effects dialog box to choose from 17 light styles. You can also create your own lighting style by adding lights to the Default setting. The Lighting Effects filter requires at least one light source. Only one light can be edited at a time, but all added lights will be used to create the effect.

2 o'clock Spotlight A yellow spotlight with medium (17) intensity and wide (91) focus.

Blue Omni A blue overhead omni light with full (85) intensity and no focus.

Circle of Light Four spotlights. White has full (100) intensity and a concentrated (8) focus. Yellow has strong intensity (88) and a concentrated focus (3). Red has medium (50) intensity and a concentrated (0) focus. Blue has full (100) intensity and medium (25) focus.

Crossing A white spotlight with medium (35) intensity and a wide (69) focus.

Crossing Down Two white spotlights with medium (35) intensity and wide (100) focus.

Default A white spotlight with a medium intensity and a wide focus.

Five Lights Down/Five Lights Up Five white spotlights down or up with full (100) intensity and wide (60) focus.

Flashlight An omni yellow light with medium (46) intensity.

Flood Light A white spotlight with medium (35) intensity and wide (69) focus.

Parallel Directional A directional blue light with full (98) intensity and no focus.

RGB Lights Red, blue, and green lights that produce a light of medium (60) intensity and wide (96) focus.

Soft Direct Lights Two unfocused white and blue directional lights. White has a soft (20) intensity. Blue has a medium (67) intensity.

Soft Omni A soft omni light of medium (50) intensity.

Soft Spotlight A white spotlight with full (98) intensity and wide (100) focus.

Three Down Three white spotlights with soft (35) intensity and wide (96) focus.

Triple Spotlight Three spotlights with slight (35) intensity and wide (100) focus.

To add a light:

In the Lighting Effects dialog box, drag the light icon at the bottom of the dialog box into the preview area. Repeat as desired for a maximum of 16 lights.

To delete a light:

In the Lighting Effects dialog box, drag the light by its center circle to the Trash button at the bottom right of the preview window.

To create a new style:

1 In the Lighting Effects dialog box, choose Default for Style.

2 Drag the light icon at the bottom of the dialog box into the preview area. Repeat as desired for a maximum of 16 lights.

To save a style:

1 In the Lighting Effects dialog box, click Save.

2 Name the style, and click OK.

Saved styles include all of the settings for each light and appear in the Style menu whenever you open the image.

To delete a style:

In the Lighting Effects dialog box, choose a style, and then click Delete.

Using a Lighting Effects texture

The Texture Channel in the Lighting Effects dialog box lets you use a grayscale texture such as paper or water to control how light reflects off an image. You can use any channel in your image (including a channel copied from a different image) as a texture, or you can create your own texture. For an embossed text effect, use a channel with white text on a black background, or vice versa.

To use the Texture Channel in the Lighting Effects dialog box:

1 If necessary, create an alpha channel in your image and add texture. To use a texture from another image, copy and paste the image into a new channel. (See "Creating alpha channels (Photoshop)" on page 255.)

2 In the Lighting Effects dialog box, choose a channel from the Texture Channel menu: the image's Red, Green, or Blue channel or any channel added to the image.

3 Select White is High to raise the white parts of the channel from the surface. Deselect this option to raise the dark parts.

4 Drag the Height slider to vary the texture from Flat (0) to Mountainous (100).

Loading images and textures

To produce their effects, some filters load and use other images, such as textures and displacement maps. These filters include the Conté Crayon, Displace, Glass, Lighting Effects, Rough Pastels, Texture Fill, Texturizer, Underpainting, and Custom filters.

Not all of these filters load images or textures in the same way. (See "The Lighting Effects filter" on page 432.)

To load images and textures:

1 Choose the filter you want from the appropriate submenu.

2 In the filter's dialog box, choose Load Texture from the Texture pop-up menu, and locate and open a texture image.

All textures must be in the Photoshop format. Most filters use only the grayscale information of a color file.

Improving filter performance

Some filter effects can be memory-intensive, especially when applied to a high-resolution image. You can use these techniques to improve performance:

• Try out filters and settings on a small portion of an image.

• Apply the effect to individual channels—for example, to each RGB channel—if the image is large and you're having problems with insufficient memory. (With some filters, effects vary if applied to the individual channel rather than the composite channel, especially if the filter randomly modifies pixels.)

• Free up memory before running the filter by using the Purge command. (See "Correcting mistakes" on page 33.)

• Allocate more RAM to Photoshop. If necessary, exit other applications to make more memory available to Photoshop.

- Try changing settings to improve the speed of memory-intensive filters, such as Lighting Effects, Cutout, Stained Glass, Chrome, Ripple, Spatter, Sprayed Strokes, and Glass filters. (For example, with the Stained Glass filter, increase cell size. With the Cutout filter, increase Edge Simplicity, decrease Edge Fidelity, or both.)

- If you plan to print to a grayscale printer, convert a copy of the image to grayscale before applying filters. However, applying a filter to a color image and then converting to grayscale may not have the same effect as applying the filter to a grayscale version of the image.

About plug-in filters

You can install plug-in filters developed by non-Adobe software developers. Once installed, the plug-in filters appear at the bottom of the Filter menu and work in the same way as built-in filters.

If you are interested in creating plug-in modules, contact Adobe Systems Developer Support. (See "Using plug-in modules" on page 57.)

Note: *If you have problems or questions about a third-party plug-in, contact the plug-in's manufacturer for support.*

Using Type

About type

Type in Photoshop consists of mathematically defined shapes that describe the letters, numbers, and symbols of a *typeface*. Many typefaces are available in more than one format, the most common formats being Type 1 (also called PostScript fonts), TrueType, Open Type, New CID, and CID nonprotected (Japanese only).

When you add type to an image, the characters are composed of pixels and have the same resolution as the image file—zooming in on characters shows jagged edges. However, Photoshop and ImageReady preserve the vector-based type outlines and use them when you scale or resize type, save a PDF or EPS file, or print the image to a PostScript printer. As a result, it's possible to produce type with crisp, resolution-independent edges.

Creating type

You can create horizontal or vertical type anywhere in an image. Depending on how you use the type tools, you can enter *point type* or *paragraph type*. Point type is useful for entering a single word or a line of characters; paragraph type is useful for entering and formatting the type as one or more paragraphs.
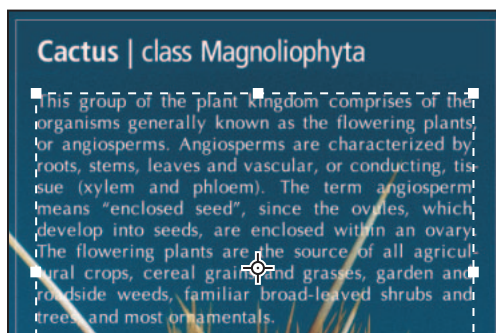
Type entered as point type (top) and in a bounding box (bottom)

When you create type, a new type layer is added to the Layers palette. In Photoshop, you can also create a selection border in the shape of the type.

Note: *In Photoshop, a type layer is not created for images in Multichannel, Bitmap, or Indexed Color mode, because these modes do not support layers. In these image modes, type appears on the background.*

About using the type tools (Photoshop)

Clicking in an image with a type tool puts the type tool in edit mode. When the tool is in edit mode, you can enter and edit characters as well as perform some other commands from the various menus; however, certain operations require that you first commit changes to the type layer. To determine if a type tool is in edit mode, look in the options bar—if you see the Commit button ✔ and the Cancel button ⊘, the type tool is in edit mode.

To commit changes to a type layer:

Do one of the following:

• Click the Commit button ✔ in the options bar.

• Press the Enter key on the numeric keypad.

• Press Ctrl+Enter on the main keyboard (Windows) or Command+Return (Mac OS).

• Select any tool in the toolbox, click in the Layers, Channels, Paths, Actions, History, or Styles palette, or select any available menu command.

Entering point type

When you enter point type, each line of type is independent—the length of a line grows or shrinks as you edit it, but it doesn't wrap to the next line. The type you entered appears in a new type layer.

To enter point type:

1 Do one of the following:

• (Photoshop) Select the Horizontal Type tool T or the Vertical Type tool ⊥T.

• (ImageReady) Select the Type tool T.

Note: *To change between horizontal or vertical text in ImageReady, click the Change Text Orientation button in the tool options bar or choose Change Text Orientation from the Character palette menu.*

2 Click in the image to set an insertion point for the type. The small line through the I-beam marks the position of the type *baseline* (the imaginary line on which type rests). For vertical type, the baseline marks the center axis of the type characters.

3 Select additional type options in the options bar, Character palette, or Paragraph palette. (See "Formatting characters" on page 448 and "Formatting paragraphs" on page 459.)

4 Enter the characters you want. To begin a new line, press Enter on the main keyboard (Windows) or Return (Mac OS).

Note: *(Photoshop) You can also transform point type while in edit mode. Hold down the Ctrl (Windows) or Command (Mac OS) key. A bounding box will appear around the type. You can grab a handle to scale or skew the type. You can also rotate the bounding box. For more information on resizing or transforming type, see "Entering paragraph type" on page 440.*

5 (Photoshop) When you're finished entering or editing the type, do one of the following:

• Click the Commit button ✔ in the options bar.

• Press the Enter key on the numeric keypad.

- Press Ctrl+Enter on the main keyboard (Windows) or Command+Return (Mac OS).
- Select any tool in the toolbox, click in the Layers, Channels, Paths, Actions, History, or Styles palette, or select any available menu command.

Entering paragraph type

When you enter paragraph type, the lines of type wrap to fit the dimensions of the bounding box. You can enter multiple paragraphs and select a paragraph justification option.

You can resize the bounding box, causing the type to reflow within the adjusted rectangle. You can adjust the bounding box while you're entering type or after you create the type layer. You can also rotate, scale, and skew type using the bounding box.

To enter paragraph type:

1 Do one of the following:

- (Photoshop) Select the Horizontal Type tool T or the Vertical Type tool ↓T.
- (ImageReady) Select the Type tool T.

Note: To change between horizontal or vertical text in ImageReady, click the Change Text Orientation button in the tool options bar or choose Change Text Orientation from the Character palette menu.

2 Do one of the following:

- Drag diagonally to define a bounding box for the type.
- Hold down Alt (Windows) or Option (Mac OS) as you click or drag to display the Paragraph Text Size dialog box. Enter values for Width and Height, and click OK.

3 Select additional type options in the options bar, Character palette, Paragraph palette, or Layer > Type submenu. (See "Formatting characters" on page 448 and "Formatting paragraphs" on page 459.)

4 Enter the characters you want. To begin a new paragraph, press Enter on the main keyboard (Windows) or Return (Mac OS). If you enter more type than can fit in the bounding box, the overflow icon ⊞ appears on the bounding box.

5 (Photoshop) If desired, resize, rotate, or skew the bounding box.

6 (Photoshop) Commit the type layer by doing one of the following:

- Click the Commit button ✔ in the options bar.
- Press the Enter key on the numeric keypad.
- Press Ctrl+Enter on the main keyboard (Windows) or Command+Return (Mac OS).
- Select any tool in the toolbox, click in the Layers, Channels, Paths, Actions, History, or Styles palette, or select any available menu command.

The type you entered appears in a new type layer.

To resize or transform a type bounding box:

1 Display the bounding box handles:

• (Photoshop) With the Type tool active, select the type layer in the Layers palette, and click in the text flow in the image.

• (ImageReady) With the Type tool active, select the type layer.

Note: You can transform point type while in edit mode. Hold down the Ctrl (Windows) or Command (Mac OS) key, and a bounding box will appear around the type.

2 Do one of the following:

• To resize the bounding box, position the pointer over a handle—the pointer turns into a double arrow ⤢—and drag. Shift-drag to maintain the proportion of the bounding box.

• (Photoshop) To rotate the bounding box, position the pointer outside of the bounding border—the pointer turns into a curved, two-sided arrow ↻—and drag. Shift-drag to constrain the rotation to 15° increments. To change the center of rotation, Ctrl-drag (Windows) or Command-drag (Mac OS) the center point to a new location. The center point can be outside the bounding box.

• (Photoshop) To skew the bounding box, hold down Ctrl+Shift (Windows) or Command+Shift (Mac OS) and drag a side handle. The pointer turns into an arrowhead with a small double arrow ⤡.
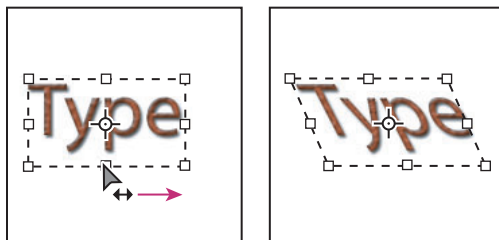
Skewing type using the bounding box

• (Photoshop) To scale the type as you resize the bounding box, Ctrl-drag (Windows) or Command-drag (Mac OS) a corner handle.

Note: You can also transform type layers using the transformation commands in the Edit menu, except for Perspective and Distort.

Creating a type selection border (Photoshop)

When you use the Horizontal Type Mask tool 🆃 or Vertical Type Mask tool 🆃, you create a selection in the shape of the type. Type selections appear on the active layer, and can be moved, copied, filled, or stroked just like any other selection. For more information about working with selections, see "About selections" on page 229.

To create a type selection border:

1 Select the layer on which you want the selection to appear. For best results, create the type selection border on a normal image layer, not a type layer.

2 Select the Horizontal Type Mask tool 🆃 or the Vertical Type Mask tool 🆃.

3 Select additional type options, and enter type at a point or in a bounding box. (See "Entering point type" on page 439 and "Entering paragraph type" on page 440.)

A red mask appears over the active layer as you enter the type. Once the type is committed, the type selection border appears in the image on the active layer.

Working with type layers

Once you create a type layer, you can edit the type and apply layer commands to it. You can change the orientation of the type, apply anti-aliasing, convert between point type and paragraph type, create a work path from type, or convert type to shapes. You can move, restack, copy, and change the layer options of a type layer as you do for a normal layer. You can also make the following changes to a type layer and still edit the type:

• Apply transformation commands from the Edit menu, except for Perspective and Distort.

Note: To apply the Perspective or Distort commands, or to transform part of the type layer, you must first rasterize the type layer, turning the type shapes into a pixel image. Keep in mind that rasterized type no longer has vector outlines and is uneditable as type. For more information, see "Rasterizing type layers" on page 442.

• Use layer styles.

• Use fill shortcuts. To fill with the foreground color, press Alt+Backspace (Windows) or Option+Delete (Mac OS); to fill with the background color, press Ctrl+Backspace (Windows) or Command+Delete (Mac OS).

• Warp type to conform to a variety of shapes.

Editing text in type layers

You can insert new text, change existing text, and delete text in type layers.

To edit text in a type layer:

1 Select the Horizontal Type tool T or the Vertical Type tool ⬇T.

2 Select the type layer in the Layers palette, or click in the text flow to automatically select a type layer.

3 Position the insertion point in the text, and do one of the following:

• Click to set the insertion point.

• Select one or more characters you want to edit.

4 Enter text as desired.

5 Commit the changes to the type layer. (See "About using the type tools (Photoshop)" on page 439.)

Rasterizing type layers

Some commands and tools—such as filter effects and painting tools—are not available for type layers. You must rasterize the type prior to applying the command or using the tool. *Rasterizing* converts the type layer to a normal layer and makes its contents uneditable as text. A warning message appears if you choose a command or tool that requires a rasterized layer. Some warning messages provide an OK button that you can click to rasterize the layer.

To convert a type layer to a normal layer:

1　Select the type layer in the Layers palette.

2　Choose Layer > Rasterize > Type.

Changing type layer orientation

The orientation of a type layer determines the direction of type lines in relation to the document window (for point type) or the bounding box (for paragraph type). When a type layer is vertical, the type lines flow up and down; when a type layer is horizontal, the type lines flow from left to right. Don't confuse the orientation of a type layer with the direction of characters in a type line. (See "Rotating vertical type" on page 456.)

To change the orientation of a type layer:

1　Select the type layer in the Layers palette.

2　Do one of the following:

•　Select a type tool and click the Text Orientation button ⫟ in the options bar.

•　Choose Layer > Type > Horizontal, or choose Layer > Type > Vertical.

•　Choose Change Text Orientation from the Character palette menu.

Specifying anti-aliasing

Anti-aliasing lets you produce smooth-edged type by partially filling the edge pixels. As a result, the edges of the type blend into the background.
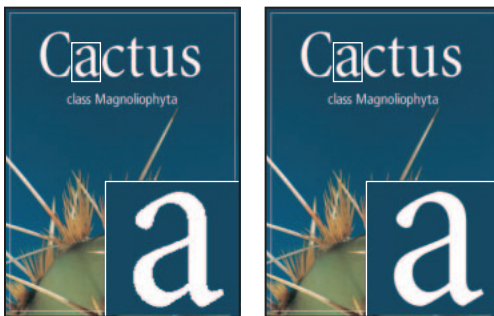
Anti-aliasing None (left), and Strong (right)

When creating type for display on the Web, consider that anti-aliasing greatly increases the number of colors in the original image. This limits your ability to reduce the number of colors in the image and thus reduce the image file size. This may also cause stray colors to appear along the edges of the type. When file size and limiting the number of colors is most important, leaving type without anti-aliased edges may be preferable, despite the jagged edges. Also, consider using larger type than you would use for printed works. Larger type can be easier to view on the Web and gives you more freedom in deciding whether to apply anti-aliasing to type.

Note: When you use anti-aliasing, type may be rendered inconsistently at small sizes and low resolutions (such as the resolution used for Web graphics). To reduce this inconsistency, deselect the Fractional Width option in the Character palette menu.

Anti-aliasing options include:

- None to apply no anti-aliasing
- Sharp to make type appear the most sharp
- Crisp to make type appear somewhat sharp
- Strong to make type appear heavier
- Smooth to make type appear smoother

To apply anti-aliasing to a type layer:

1 Select the type layer in the Layers palette.

2 Do one of the following:

- Choose an option from the anti-aliasing menu ªₐ in the options bar or the Character palette.
- Choose Layer > Type, and choose an option from the submenu.

Converting between point type and paragraph type

You can convert point type to paragraph type to adjust the flow of characters within a bounding box. Or you can convert paragraph type to point type to make each text line flow independently from the others.

When you convert from paragraph type to point type, a carriage return is added at the end of each line of type (with the exception of the last line).

Important: *When you convert paragraph type to point type, all characters that overflow the bounding box are deleted. To avoid losing text, adjust the bounding box so that all type is visible prior to conversion.*

To convert between point type and paragraph type:

1 Select the type layer in the Layers palette.

2 Choose Layer > Type > Convert to Point Text, or Layer > Type > Convert to Paragraph Text.

Warping type layers

Warping lets you distort type to conform to a variety of shapes; for example, you can warp type in the shape of an arc or a wave. The warp style you select is an attribute of the type layer—you can change a layer's warp style at any time to change the overall shape of the warp. Warping options give you precise control over the orientation and perspective of the warp effect.

Note: *You cannot warp type layers that include Faux Bold formatting or use fonts that do not include outline data (such as bitmap fonts).*
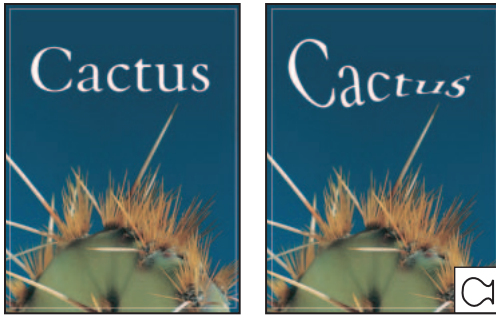
Example of type warped with Fish style

To warp type:

1 Select a type layer.

2 Do one of the following:

• Select a type tool, and click the Warp button ⬚ in the options bar.

• Choose Layer > Type > Warp Text.

3 Choose a warp style from the Style pop-up menu.

4 Select the orientation of the warp effect—Horizontal or Vertical.

5 If desired, specify values for additional warping options:

• Bend to specify how much warp is applied to the layer

• Horizontal Distortion and Vertical Distortion to apply perspective to the warp

To unwarp type:

1 Select a type layer that has warping applied to it.

2 Select a type tool and click the Warp button ⬚ in the options bar, or choose Layer > Type > Warp Text.

3 Choose None from the Style pop-up menu, and click OK.

Creating text on a path (Photoshop)

You can enter type that flows along the edge of a work path created by a pen or a shape tool. For information on how to create a work path, see "Creating a work path (Photoshop)" on page 300.

When you enter type along a path, it flows in the direction in which anchor points were added to the path. Entering horizontal type on a path results in letters that are perpendicular to the baseline. Entering vertical type on a path results in text orientation parallel to the baseline.

You can also move a path or change the shape of the path, and the type will conform to the new path location or shape.
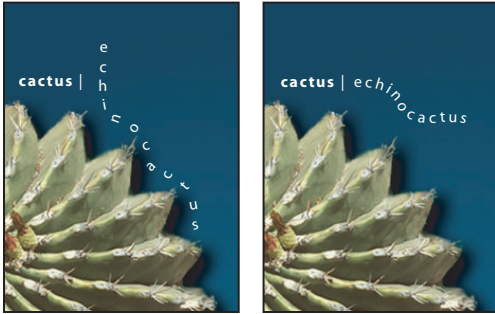
Example of horizontal and vertical type on an open path
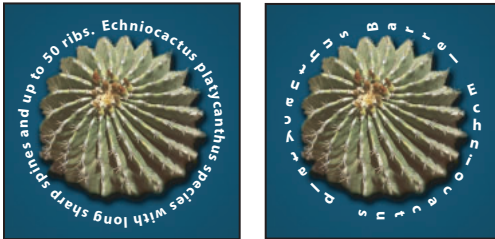
Example of horizontal and vertical type on a closed path created by a shape tool

To enter type along a path:

1 Do one of the following:

• Select the Horizontal Type tool T or the Vertical Type tool ⬇T.

• Select the Horizontal Type Mask tool ⛏ or the Vertical Type Mask tool ⬇⛏.

2 Position the pointer so the baseline indicator of the type tool ⅃ is on the path and click. After clicking, an insertion point appears on the path.
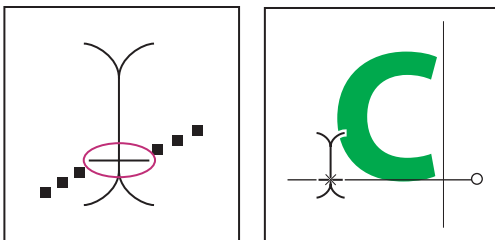
The baseline indicator of the Type tool (left) and the Type tool with its baseline indicator on a path (right)

3 Enter the type you want. Horizontal type appears along the path, perpendicular to the baseline. Vertical type appears along the path, parallel to the baseline.

To move type along a path:

1 Select the Direct Selection tool ▸ or Path Selection tool ▸ and position it over the type. The pointer changes to an I-beam with arrow ⵌ.

2 Click and drag the type along the path. Be careful not to drag across the path.

To flip type to the other side of a path:

1 Select the Direct Selection tool ▸ or Path Selection tool ▸ and position it over the type. The pointer changes to an I-beam with arrow ⵌ.

2 Click and drag the type across the path.
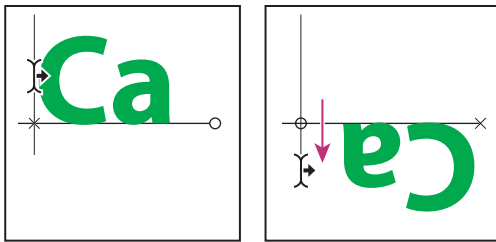
Using the Direct Selection tool or Path Selection tool to move or flip type on a path

To move a path with type:

Select the Path Selection tool ▸ or the Move tool ▸⊕ , and then click and drag the path to a new position. If you're using the Path Selection tool, make sure the pointer does not change to an I-beam with an arrow ⵌ or you'll move the type along the path.

To change the shape of a path with type:

1 Select the Direct Selection tool ▸.

2 Click an anchor point on the path and use the handles to change the shape of the path.

Creating a work path from type (Photoshop)

Creating a work path from type lets you work with the characters as vector shapes. A *work path* is a temporary path that appears in the Paths palette and defines the outline of a shape. Once you create a work path from a type layer, you can save and manipulate it like any other path. You cannot edit characters in the path as text; however, the original type layer remains intact and editable. For more information on manipulating paths, see "Moving, reshaping, and deleting path segments" on page 303.

To create a work path from type:

Select a type layer, and choose Layer > Type > Create Work Path.

Note: *You cannot create work paths from fonts that don't include outline data (such as bitmap fonts).*

Converting type to shapes (Photoshop)

When you convert type to shapes, the type layer is replaced by a layer with a vector mask. You can edit the vector mask and apply styles to the layer; however, you cannot edit characters in the layer as text. For more information on working with vector masks, see "Creating and editing vector masks" on page 411.

To convert type to shapes:

Select a type layer, and choose Layer > Type > Convert to Shape.

Note: *You cannot create shapes from fonts that don't include outline data (such as bitmap fonts).*

Formatting characters

Photoshop and ImageReady give you precise control over individual characters in type layers, including font, size, color, leading, kerning, tracking, baseline shift, and alignment. You can set type attributes before you enter characters or reset them to change the appearance of selected characters in a type layer.

Selecting characters

Before you can format individual characters, you must select them. You can select one character, a range of characters, or all characters in a type layer.

To select characters:

1 Do one of the following:

* (Photoshop) Select the Horizontal Type tool T or the Vertical Type tool ⏐T.

* (ImageReady) Select the Type tool T.

2 Select the type layer in the Layers palette, or click in the text flow to automatically select a type layer.

3 Position the insertion point in the text, and do one of the following:

* Drag to select one or more characters.

* Click in the text and then shift-click to select a range of characters.

* Choose Select > All to select all the characters in the layer.

* Double-click a word to select it. Triple-click a line to select it. Quadruple-click a paragraph to select it. Quintuple-click anywhere in the text flow to select all characters in a bounding box.

* To use the arrow keys to select characters, click in the text, and then hold down Shift and press the Right arrow or Left arrow key. To use the arrow keys to select words, hold down Shift+Ctrl (Windows) or Shift+Command (Mac OS) and press the Right Arrow or Left Arrow key.

4 To select all the characters in a layer without positioning the insertion point in the text flow, select the type layer in the Layers palette, and then double-click the layer's type icon T.

Note: *In Photoshop, selecting and formatting characters in a type layer puts the Type tool into edit mode. See* *"About using the type tools (Photoshop)" on page 439*.

To show or hide selection highlighting (ImageReady):

Do one of the following:

* Choose View > Show > Text Selection.

* Choose View > Extras. This command shows or hides all selected items in the View > Show submenu. (See *"Working with Extras" on page 45*.)

Using the Character palette

The Character palette provides options for formatting characters. Some formatting options are also provided in the options bar.

To display the Character palette:

Do one of the following:

- Choose Window > Character, or click the Character palette tab if the palette is visible but not active.

- With a type tool selected, click the palette button 🖹 in the options bar.

Choosing a font

A font is a complete set of characters—letters, numbers, and symbols—that share a common weight, width, and style. When you select a font, you can select the *font family* and its *type style* independently. The font family is a collection of fonts sharing an overall typeface design: for example, Times. A type style is a variant version of an individual font in the font family: for example, Regular, Bold, or Italic. The range of available type styles varies with each font. If a font doesn't include the style you want, you can apply *faux* styles—simulated versions of bold, italic, superscript, subscript, all caps, and small caps styles.

In addition to the fonts installed on your system, Photoshop uses font files in these local folders:

Windows Program Files/Common Files/Adobe/Fonts

Mac OS Library/Application Support/Adobe/Fonts

If you install a Type 1, TrueType, Open Type, or CID font into the local Fonts folder, the font appears in Adobe applications only.

To choose a font family and style:

1 Choose a font family from the Font Family pop-up menu in the Character palette or options bar. If more than one copy of a font is installed on your computer, an abbreviation follows the font name: (T1) for Type 1 fonts, (TT) for TrueType fonts, or (OT) for Open Type fonts.

💡 You can choose a font family and style by typing the desired name in the text box. As you type, the name of the first font or style beginning with that letter appears. Continue typing until the correct font or style name appears. Be sure to deselect the font name before entering new type in the image.

2 To choose a font style, do one of the following:

- Choose a font style from the Font Style pop-up menu in the Character palette or options bar.

- If the font family you chose does not include a bold or italic style, click the Faux Bold button **T** or the Faux Italic button *T* in the Character palette to apply a simulated style. Alternately, choose Faux Bold or Faux Italic from the Character palette menu.

- Use a dynamic shortcut. Dynamic shortcuts are keyboard shortcuts that are available (in edit mode only) for Faux Bold, Faux Italic, All Caps, Small Caps, Superscript, Subscript, Underline, and Strikethrough. For more information on dynamic shortcuts, see "Using Dynamic Shortcuts" on page 455.

Note: *You cannot apply Faux Bold formatting to warped type. (See "Warping type layers" on page 444.)*

Choosing a type size

The *type size* determines how large the type appears in the image:

- In Photoshop, the default unit of measurement for type is *points*. One PostScript point is equal to 1/72 of an inch in a 72-ppi image; however, you can switch between using the PostScript and traditional definitions of point size. You can change the default unit of measurement for type in the Units & Rulers area of the Preferences dialog box.

- In ImageReady, *pixels* are the only unit of measurement for type. This is because the ImageReady application is tailored to creating images for online viewing, in which pixels are the standard unit of measurement.

To choose a type size:

In the Character palette or options bar, enter or select a new value for Size **T**. In Photoshop, to use an alternate unit of measurement, enter the unit (in, cm, mm, pt, px, or pica) after the value in the Size text box. The value you enter is converted to the default unit of measurement.

To specify the default unit of measurement for type (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Units & Rulers.

- In Mac OS, choose Photoshop > Preferences > Units & Rulers.

2 Select a unit of measurement for Type.

To specify the point size definition (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Units & Rulers.

- In Mac OS, choose Photoshop > Preferences > Units & Rulers.

2 Select an option for Point/Pica Size. Traditional points are slightly smaller than PostScript points.

Changing the type color

The type you enter gets its color from the current foreground color; however, you can change the type color before or after you enter type. When editing existing type layers, you can change the color of individual, selected characters or all type in a layer.

To change the type color:

Do one of the following:

- Click the Color selection box in the options bar or Character palette, and select a color using the color picker. In ImageReady, you can also select an option from the Color selection box pop-up menu: Foreground Color, Background Color, Other (to use the color picker), or a color from the pop-up palette.

- Use fill shortcuts. To fill with the foreground color, press Alt+Backspace (Windows) or Option+Delete (Mac OS); to fill with the background color, press Ctrl+Backspace (Windows) or Command+Delete (Mac OS).

- Apply an overlay layer style to the type layer to apply a color, gradient, or pattern on top of the existing color. Applying an overlay layer style affects all characters in the type layer; you cannot use this method to change the color of individual characters. For more information on applying an overlay layer style, see "Using layer effects and styles" on page 391.

- Click the foreground color selection box in the toolbox, and select a color using the color picker. Or click a color in the Color palette, the Swatches palette, or (ImageReady) the Color Table palette. To use this method to change the color of an existing type layer, you must first select characters on that layer.

- (ImageReady) You can drag a color from the toolbox color selection box, the Color palette, the Color Table palette, or the Swatches palette, and drop it onto a type layer to automatically apply a color overlay style.

Specifying leading

The amount of space between lines of type is called *leading*. For Roman type, leading is measured from the baseline of one line of type to the baseline of the next line. The *baseline* is the invisible line on which most type lies. You can apply more than one leading amount within the same paragraph; however, the largest leading value in a line of type determines the leading value for that line.

You can use other options to set leading for Chinese, Japanese, or Korean type. See "Specifying how leading is measured" on page 465.
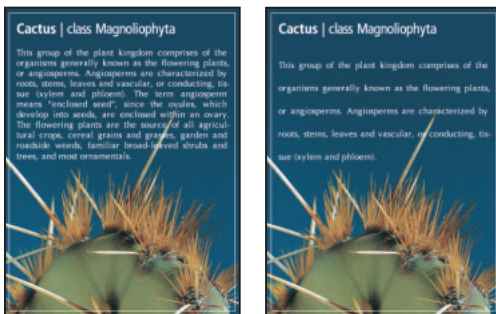
5-point type with 6-point leading (left), and with 12-point leading (right)

To change the leading:

In the Character palette, do one of the following:

- Choose the desired leading from the Leading menu ⬘.

- Select the existing leading value, and enter a new value.

To change the default auto leading percentage:

1   Display the Paragraph palette.

2   Choose Justification from the palette menu.

3   For Auto Leading, enter a new default percentage.

Specifying kerning and tracking

Kerning is the process of adding or subtracting space between specific letter pairs. You can control kerning manually, or you can use automatic kerning to turn on the kerning built into the font by the font designer. *Tracking* is the process of creating an equal amount of spacing across a range of letters.

Positive kerning or tracking values move characters apart (adding to the default spacing); negative values move characters closer together (reducing the default spacing). Kerning and tracking values are measured in units that are 1/1000 of an *em space*. The width of an em space is relative to the current type size. In a 1-point font, 1 em corresponds to 1 point; in a 10-point font, 1 em corresponds to 10 points. Kerning and tracking units are 1/1000 em. So, for example, 100 units in a 10-point font are equivalent to 1 point.
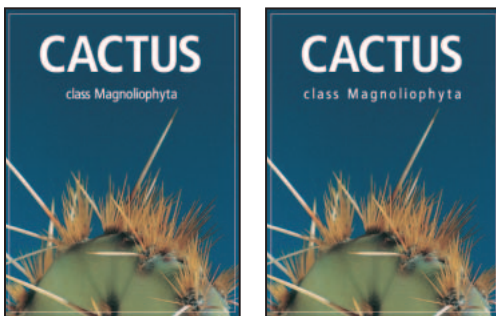
Default tracking (left), and tracking set to 350 (right)

To use a font's built-in kerning information:

In the Character palette, choose Metrics or Optical (Photoshop) or Auto (ImageReady) from the Kerning menu ⬙.

To adjust kerning manually:

1   Click with a type tool to set an insertion point between two characters.

Note: *If a range of type is selected, you can't manually kern the characters. Instead, use tracking.*

2   In the Character palette, enter or select a numeric value for Kerning ⬙.

3   Commit the changes to the type layer. (See "About using the type tools (Photoshop)" on page 439.)

To specify tracking:

1 Select the type you want to adjust.

2 In the Character palette, enter a numeric value or choose a numeric value from the pop-up menu for Tracking ⧉.

Adjusting horizontal or vertical scale

Horizontal scale and *vertical scale* specify the proportion between the height and width of the type. Unscaled characters have a value of 100%. You can adjust scale to compress or expand selected characters in both width and height.

To adjust the horizontal or vertical scale of type:

In the Character palette, enter a new percentage for Horizontal Scale **T** or Vertical Scale **⥁T**.

Specifying baseline shift

Baseline shift controls the distance that type appears from its baseline, either raising or lowering the selected type to create superscripts or subscripts.
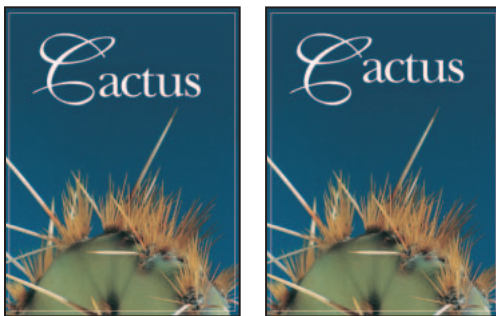
Default baseline shift (left), and baseline shift of 10 points (right)

To specify baseline shift:

1 Select the type that you want raised or lowered.

2 In the Character palette, enter a value for Baseline Shift ⧉. A positive value moves horizontal type above and vertical type to the right of the baseline; a negative value moves type below or to the left of the baseline.

Changing case

You can enter or format type as uppercase characters, either all caps or small caps. When you format type as small caps, Photoshop and ImageReady use the small caps designed as part of the font (if available). If the font does not include small caps, Photoshop and ImageReady generate faux small caps.

To change the case of type:

1 Select the type that you want to change.

2 Do one of the following:

• Click the All Caps button TT or the Small Caps button Tᵣ in the Character palette.

• Choose All Caps or Small Caps from the Character palette menu. A check mark indicates that the option is selected.

Note: Selecting Small Caps will not change characters that were originally typed in uppercase.

Making characters superscript or subscript

You can enter or format type as superscript or subscript characters. Superscript characters are reduced in size and shifted above the type baseline; subscript characters are reduced in size and shifted below the type baseline. If the font does not include superscript or subscript characters, Photoshop generates faux superscript or subscript characters.

To specify superscript or subscript characters:

1 Select the type you want to specify.

2 Do one of the following:

• Click the Superscript button T¹ or the Subscript button T₁ in the Character palette.

• Choose Superscript or Subscript from the Character palette menu. A check mark indicates that the option is selected.

Applying underline and strikethrough

You can apply a line under horizontal type, or to the left or right of vertical type. You can also apply a line through horizontal or vertical type. The line is always the same color as the type color.

To apply an underline or strikethrough:

1 Select the type you want to underline or strikethrough.

2 Choose an option:

• Click the Underline button T in the Character palette to apply an underline beneath horizontal type.

• Choose Underline Left or Underline Right from the Character palette menu to apply an underline to the left or right of vertical type. You can apply an underline to the left or right, but not to both sides. A check mark indicates that an option is selected.

Note: The Underline Left and Underline Right options appear in the Character palette menu only when a type layer containing vertical type is selected.

• Click the Strikethrough button T in the Character palette to apply a horizontal line through horizontal type or a vertical line through vertical type. Alternately, choose Strikethrough from the Character palette menu.

Using Dynamic Shortcuts

Dynamic Shortcuts are keyboard shortcuts that are only accessible when you are entering point or paragraph type, when type is selected, or when the I-beam is in text. You can view Dynamic Shortcuts in the Character palette menu when they are accessible. Dynamic Shortcuts are available for type options such as Faux Bold, Faux Italic, All Caps, Small Caps, Superscript, Subscript, Underline, and Strikethrough.
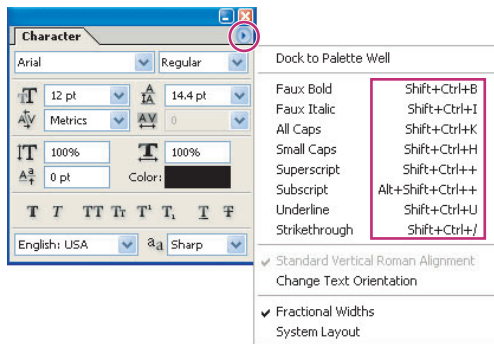
Dynamic shortcuts display in the Character palette menu only when you are entering point or paragraph type, when type is selected, or when the I-beam is in text.

Using fractional character widths

By default, type is displayed using fractional character widths. This means that the spacing between characters varies, with fractions of whole pixels between some characters. In most situations, fractional character widths provide the best spacing for type appearance and readability. However, for type in small sizes (less than 20 points) displayed online, fractional character widths can cause type to run together or have too much extra space, making it difficult to read.

You can turn off fractional character widths to fix type spacing in whole-pixel increments and prevent small type from running together. The fractional character width setting applies to all characters on a type layer—you cannot set the option for selected characters.

To turn fractional character widths on or off:

Choose Fractional Widths from the Character palette menu. A check mark indicates that the option is selected.

Viewing text using the operating system layout

The System Layout command lets you preview text using the operating system's default text handling. This is useful when designing user interface elements, such as dialog boxes and menus.

To turn system layout on or off:

Choose System Layout from the Character palette menu. A check mark indicates that the option is selected.

Rotating vertical type

When working with vertical type, you can rotate the direction of characters by 90°. Rotated characters appear upright; unrotated characters appear sideways (perpendicular to the type line).
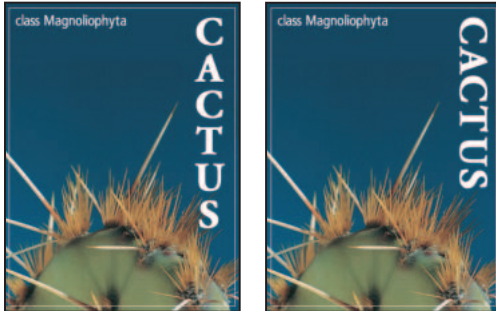
Original type (left), and type without vertical rotation (right)

To rotate characters in vertical type:

1 Select the vertical type you want to rotate or unrotate.

2 Choose Standard Vertical Roman Alignment from the Character palette menu. A check mark indicates that the option is selected.

Note: *You cannot rotate double-byte characters (full width characters only available in Chinese, Japanese, and Korean fonts). Any double-byte characters in the selected range will not be rotated.*

Applying Open Type features to characters

When working with Open Type fonts, you can use old style figures, ordinals, swash, titling, connection forms, stylistic alternates, ornaments, ligatures, discretionary ligatures, and fractions if the font provides them. For Japanese Open Type fonts, you can use ligatures, discretionary ligatures, Fractions Japanese 78, Japanese Expert, Japanese Traditional, Proportional Metrics, Kana, and italics if the font provides them. For more information on Japanese Open Type fonts, see "Using Asian Open Type fonts" on page 466.

To apply Open Type features:

1 Make sure you have an Open Type font chosen when using the Type tool.

2 From the Character palette menu, choose one of the following:

Old Style Are numerals shorter than regular numerals, with some old style numerals descending below the type baseline.

Ordinals Automatically formats ordinal numbers (such as 1st and 2nd) with superscript characters. Characters such as the superscript in the Spanish words segunda and segundo (2a and 2o) are also typeset properly.

Swash Substitutes swash glyphs (stylized letterforms with extended strokes).

Titling Formats characters (usually all in capitals) designed for use in large-size settings, such as titles.

Connection Forms Are alternate forms that provide better joining behavior.

Stylistic Alternate Formats stylized characters that create a purely aesthetic effect.

Ornaments Are devices that add a personal signature to the type family and can be used as title page decoration, paragraph markers, dividers for blocks of text, or as repeated bands and borders.

Ligatures Are typographic replacements for certain pairs of characters, such as fi, fl, ff, ffi, and ffl.
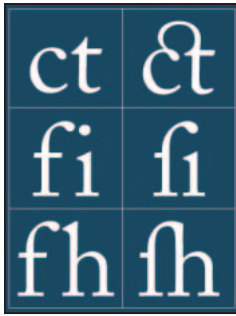
Type with Ligatures option unselected and selected

Discretionary Ligatures Are typographic replacement characters for letter pairs such as ct, st, and ft.

Fractions Automatically formats fractions, numbers separated by a slash (such as 1/2) are converted to a fraction (such as $\frac{1}{2}$).

Checking for spelling errors (Photoshop)

When you spell-check a document, Photoshop questions any words that aren't in its dictionary. If a questioned word is spelled correctly, you can confirm its spelling by adding the word to the dictionary. If a questioned word is misspelled, you can correct it.

To check and correct spelling:

1 In the Character palette, choose a language from the pop-up menu at the bottom of the palette. This sets the dictionary for spell-checking.

2 (Optional) Show or unlock type layers. The Check Spelling command does not check hidden or locked layers.

3 Do one of the following:

- Select a type layer.
- To check specific text, select the text.
- To check a word, place an insertion point in the word.

4 Choose Edit > Check Spelling.

5 As Photoshop finds unfamiliar words and other possible errors, do one of the following:

- Click Ignore to continue checking spelling without changing text. Click Ignore All to ignore the questioned word for the rest of the spell-check.
- To correct a misspelling, make sure the correctly spelled word is in the Change To text box and click Change. If the suggested word is not the word you want, you can select a different word in the Suggestions text box or enter the word in the Change To text box.

- To correct a repeated misspelling in a document, make sure the correctly spelled word is in the Change To text box and click Change All.

- Click Add to have Photoshop store the unrecognized word in the dictionary, so that subsequent occurrences are not flagged as misspellings.

- If you selected a type layer and want to spell-check only that layer, deselect Check All Layers.

Finding and replacing text (Photoshop)

You can search for a single character, a word, or group of words. Once you find what you're looking for, you can change it to something else.

To find and replace a word:

1 (Optional) Show or unlock type layers. The Find and Replace Text command does not check hidden or locked layers.

2 Do one of the following:

- Select the layer that contains the text you want to find and replace.

- Select a nontype layer if you have more than one text layer and you want to search through all layers in the document.

3 (Optional) If you selected a layer containing text, place an insertion point at the beginning of portion of text you want to search.

4 Choose Edit > Find and Replace Text.

5 In the Find What box, type or paste the text you want to find. To change the text, type the new text in the Change To text box.

6 Select one or more of the following options to refine your search:

Search All Layers Searches all layers in a document. This option is available when a non-type layer is selected in the Layers palette.

Forward Searches forward from an insertion point in the text. Deselecting this option searches the entire text in a layer regardless of where an insertion point has been placed.

Case Sensitive Searches for a word or words that exactly match the case of the text in the Find What text box. For example, with the Case Sensitive option selected, a search for "PrePress" will not find "Prepress" or "PREPRESS."

Whole Word Only Disregards the search text if it is embedded within a larger word. For example, if you are searching for "any" as a whole word, "many" will be disregarded.

7 Click Find Next to begin the search.

8 Click the button that reflects what you want to do next.

- Change replaces the found text with the revised text. To repeat the search, select Find Next.

- Change All searches for and replaces all occurrences of the found text.

- Change/Find replaces the found text with the revised text and then searches for the next occurrence.

Formatting paragraphs

A paragraph is any range of type with a carriage return at the end. You use the Paragraph palette to set options that apply to entire paragraphs, such as the alignment, indentation, and space between lines of type. For point type, each line is a separate paragraph. For paragraph type, each paragraph can have multiple lines, depending on the dimensions of the bounding box.

Selecting paragraphs and showing the Paragraph palette

You can use the Paragraph palette to set formatting options for a single paragraph, multiple paragraphs, or all paragraphs in a type layer.

To select paragraphs for formatting:

1 Do one of the following:

• (Photoshop) Select the Horizontal Type tool T or the Vertical Type tool ⌐T.

• (ImageReady) Select the Type tool T.

2 Select paragraphs by doing one of the following:

• Click in a paragraph to apply formatting to a single paragraph.

• Make a selection within a range of paragraphs to apply formatting to multiple paragraphs.

• Select the type layer in the Layers palette to apply formatting to all paragraphs in the layer.

To show the Paragraph palette:

Do one of the following:

• Choose Window > Paragraph, or click the Paragraph palette tab if the palette is visible but not active.

• With a type tool selected, click the Palette button ▤ in the options bar.

Aligning and justifying type

You can *align* type to one edge of a paragraph (left, center, or right for horizontal type; top, center, or bottom for vertical type) and *justify* type to both edges of a paragraph. Alignment options are available for both point type and paragraph type; justification options are only available for paragraph type.

To specify alignment:

1 Do one of the following:

• Select a type layer if you want all the paragraphs contained in that type layer to be affected.

• Select the paragraphs you want affected.

2 In the Paragraph palette or options bar, click an alignment option. The options for horizontal type are:

▤ Aligns type to the left, leaving the right edge of the paragraph ragged

▤ Aligns type to the center, leaving both edges of the paragraph ragged

▤ Aligns type to right, leaving the left edge of the paragraph ragged

The options for vertical type are:

▥ Aligns type to the top, leaving the bottom edge of the paragraph ragged

▥ Aligns type to the center, leaving both the top and bottom edges of the paragraph ragged

▥ Aligns type to bottom, leaving the top edge of the paragraph ragged

To specify justification for paragraph type:

1 Do one of the following:

• Select a type layer if you want all the paragraphs contained in that type layer to be affected.

• Select the paragraphs you want affected.

2 In the Paragraph palette, click a justification option. The options for horizontal type are:

▤ Justifies all lines except the last, which is left-aligned

▤ Justifies all lines except the last, which is center-aligned

▤ Justifies all lines except the last, which is right-aligned

▤ Justifies all lines including the last, which is force-justified

The options for vertical type are:

▥ Justifies all lines except the last, which is top-aligned

▥ Justifies all lines except the last, which is center-aligned

▥ Justifies all lines except the last, which is bottom-aligned

▥ Justifies all lines including the last, which is force-justified

Note: *Justification (right, center, and left align, and justify all) for type on a path starts at the insertion point and ends at the end of path.*

Indenting paragraphs

Indentation specifies the amount of space between type and the bounding box or line that contains the type. Indentation affects only the selected paragraph or paragraphs, so you can easily set different indentations for paragraphs.

To specify paragraph indentation:

1 Do one of the following:

• Select a type layer if you want all the paragraphs contained in that type layer to be affected.

• Select the paragraphs you want affected.

2 In the Paragraph palette, enter a value for an indentation option:

• Indent Left Margin ▪▤ to indent from the left edge of the paragraph. For vertical type, this option controls the indentation from the top of the paragraph.

• Indent Right Margin ▤▪ to indent from the right edge of the paragraph. For vertical type, this option controls the indentation from the bottom of the paragraph.

- Indent First Line ⁺≣ to indent the first line of type in the paragraph. For horizontal type, the first line indent is relative to the left indent; for vertical type, the first line indent is relative to the top indent. To create a first line hanging indentation, enter a negative value.

Changing space above or below paragraphs

You can control the space above and below paragraphs using the paragraph spacing options.

To specify paragraph spacing:

1 Do one of the following:

- Select a type layer if you want all the paragraphs contained in that type layer to be affected.

- Select the paragraphs you want affected.

2 In the Paragraph palette, enter a value for Space Before ⁺≣ and Space After ₊≣.

Specifying hanging punctuation

Hanging punctuation controls whether punctuation marks fall inside or outside the margins. If hanging punctuation is turned on for Roman fonts, then periods, commas, single-quotation marks, double-quotation marks, apostrophes, hyphens, em dashes, en dashes, colons, and semicolons appear outside the margins.

To use hanging punctuation for Roman fonts:

1 Do one of the following:

- Select a type layer if you want all the paragraphs contained in that type layer to be affected.

- Select the paragraphs you want affected.

2 Choose Roman Hanging Punctuation from the Paragraph palette menu. A check mark indicates that the option is selected.

Note: *When you use Roman Hanging Punctuation, any double-byte punctuation marks available in Chinese, Japanese, and Korean fonts in the selected range will not hang. See "Using burasagari" on page 470.*

Controlling hyphenation and justification

The settings you choose for hyphenation and justification affect the horizontal spacing of lines and the aesthetic appeal of type on a page. Hyphenation options determine whether words can be hyphenated and, if they can, what breaks are allowable. Justification options determine word, letter, and glyph spacing.

Note: *Hyphenation and justification settings apply only to Roman characters; double-byte characters available in Chinese, Japanese, and Korean fonts are not affected by these settings. See "Working with Japanese composition" on page 468.*

Adjusting hyphenation

You can hyphenate words manually or automatically.

Note: *You can apply hyphenation to specific paragraphs by first selecting only the paragraphs in a type layer that you want to affect.*

To choose a hyphenation dictionary:

Choose a language from the pop-up menu at the bottom of the Character palette

To turn automatic hyphenation on or off:

In the Paragraph palette, select or deselect the Hyphenate option.

To set automatic hyphenation options:

1 Choose Hyphenation from the Paragraph palette menu.

2 Enter values for the following options:

- Words Longer Than _ Letters to specify the minimum number of characters for hyphenated words. The default value is 5 letters.

- After First _ Letters and Before Last _ Letters to specify the minimum number of characters at the beginning or end of a word that can be broken by a hyphen. For example, by specifying 3 for these values, *aromatic* would be hyphenated as *aro- matic* instead of *ar- omatic* or *aromat- ic*.

- Hyphen Limit to specify the maximum number of hyphens that can appear on consecutive lines. Zero means unlimited hyphens.

- Hyphenation Zone to specify the distance at the end of a line that will cause a word to break in unjustified type. This option applies only when using the single-line composer. See "About composition methods" on page 463.

3 To prevent capitalized words from being hyphenated, deselect Hyphenate Capitalized Words. Then click OK.

Preventing unwanted word breaks

You can prevent words from breaking at the end of lines—for example, proper names or words whose break might have a misleading appearance. You also can keep multiple words from breaking—for example, clusters of initials and a last name.

To prevent characters from breaking:

1 Select the characters you want to prevent from breaking.

2 Choose No Break from the Character palette menu.

Note: *If many contiguous characters are entered with the No Break option selected, there won't be a forced wrap. However, none of the type may be visible once the number of characters exceed the type boundaries.*

Adjusting spacing

You can precisely control the way in which Photoshop and ImageReady space letters and words and scale characters. Adjusting spacing options is especially useful when working with justified type, although you can also adjust spacing for unjustified type.

Word spacing refers to the space between words that is created by pressing the spacebar. *Letter spacing* refers to the distance between letters and includes kerning or tracking values. *Glyph spacing* refers to the width of characters (a *glyph* is any font character).

Spacing options are always applied to an entire paragraph. To adjust the spacing in a few characters but not an entire paragraph, use the Tracking option.

To set spacing options:

1　Do one of the following:

• Select a type layer if you want all the paragraphs contained in that type layer to be affected.

• Select the paragraphs you want affected.

2　Choose Justification from the Paragraph palette menu.

3　Enter values for Word Spacing, Letter Spacing, and Glyph Spacing:

• For justified type only, enter values for Minimum and Maximum to define a range of acceptable spacing.

• Enter a value for Desired to set the spacing for both justified and unjustified paragraphs.

Word Spacing values can range from 0% to 1000%; at 100%, no additional space is added between words. Letter Spacing values can range from –100% to 500%; at 0%, no space is added between letters. Glyph Spacing values can range from 50% to 200%; at 100%, the width of characters is not scaled.

Working with composition

The appearance of type on the page depends on a complex interaction of processes called *composition*. Using the word spacing, letter spacing, glyph spacing, and hyphenation options you've selected, Photoshop and ImageReady evaluate possible line breaks and choose the one that best supports the specified parameters.

About composition methods

Photoshop and ImageReady offer two composition methods: the Adobe Every-line Composer and the Adobe Single-line Composer. Both composition methods evaluate possible breaks and choose the one that best supports the hyphenation and justification options you've specified for a given paragraph.

The Adobe Every-line Composer　Considers a network of break points for a range of lines and thus optimizes earlier lines in the paragraph in order to eliminate especially unattractive breaks later on. Working with multiple lines of type results in more even spacing and fewer hyphens.

The Adobe Every-line composer approaches composition by identifying possible breakpoints, evaluating them, and assigning a weighted penalty based on these principles:

• The highest importance is given to evenness of letter and word spacing. Possible breakpoints are evaluated and penalized according to how much they deviate from optimal spacing.

• Hyphenation is avoided when possible. Breakpoints that require hyphenation are penalized more than those that create uneven spacing.

- Good breakpoints are preferred over bad breakpoints. After breakpoint penalty values are identified for a range of lines, they are squared, magnifying the bad breakpoints. The composer then uses the good breakpoints.

The Adobe Single-line Composer Offers a traditional approach to composing type one line at a time. This option is useful if you prefer to have manual control over how lines break. The Adobe Single-line composer uses the following principles when considering a breakpoint:

- Compressed or expanded word spacing is preferable to hyphenation.
- Hyphenation is preferable to compressed or expanded letter spacing.
- If spacing must be adjusted, compression is better than expansion.

Choosing a composition method

You use the Paragraph palette to choose a composition method for selected paragraphs.

To choose a composition method for a paragraph:

Choose Adobe Every-line Composer or Adobe Single-line Composer from the Paragraph palette menu. A check mark indicates which option is selected.

Setting options for Asian type (Photoshop)

Photoshop provides several options for working with Chinese, Japanese, and Korean type. Characters in Asian fonts are often referred to as *double-byte characters.*

Displaying Asian type options

In order to view and set options for working with Chinese, Japanese, and Korean type, you must select Show Asian Text Options in the Preferences dialog box. You can also control how font names are displayed—in English or in the native language.

To display Asian type options:

1 Do one of the following:

- In Windows, Choose Edit > Preferences > General.
- In Mac OS, Choose Photoshop > Preferences > General.

2 Select Show Asian Text Options.

To display CJK font names in English:

1 Do one of the following:

- In Windows, Choose Edit > Preferences > General.
- In Mac OS, Choose Photoshop > Preferences > General.

2 Select Show Font Names in English.

Adjusting tsume

Tsume reduces the space around a character by a specified percentage value. As a result, the character itself is not stretched or squeezed. Instead, the space between the character's bounding box and the em box is compressed. When tsume is added to a character, spacing around both sides of the character is reduced by an equal percentage.

To reduce spacing between characters:

1 Select the characters you want to adjust.

2 In the Character palette, enter or select a percentage for Tsume 圀. The greater the percentage, the tighter the compression between characters. At 100% (the maximum value), there is no space between the character's bounding box and its em box.

Specifying how leading is measured

Top-to-top leading measures the spacing between lines of type from the top of one line to the top of the next line. This is different from Bottom-to-bottom leading, which measures the space between lines from the type baseline. If you use Top-to-top leading, the first line of type in a paragraph is aligned flush with the top of the bounding box; if you use Bottom-to-bottom leading, space appears between the first line of type and the bounding box.

The leading option you choose does not affect the amount of leading between lines, only how the leading is measured. (See "Specifying leading" on page 451.)

Note: *Top-to-top Leading and Bottom-to-bottom Leading are not available for vertical text.*

To specify how leading is measured:

1 Select the paragraphs you want to adjust.

2 Choose Top-to-top Leading or Bottom-to-bottom Leading from the Paragraph palette menu. A check mark indicates which option is selected.

Using tate-chuu-yoko

Tate-chuu-yoko (also called *kumimoji* and *renmoji*) is a block of horizontal type laid out within a vertical type line.
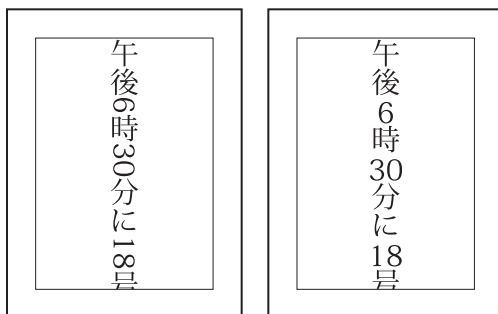
Before (left) and after (right) tate-chuu-yoko applied

To turn on or turn off tate-chuu-yoko:

1 Select the characters that you want to rotate.

2 Choose Tate-Chuu-Yoko from the Character palette menu. A check mark indicates that the option is turned on.

Note: Using tate-chuu-yoko does not prevent you from editing and formatting type; you can edit and apply formatting options to rotated characters as you do to other characters.

Specifying left and right underlining

When working with vertical type, you can add an underline on either side of the type line. For more information, see .

Using Asian Open Type fonts

Asian Open Type fonts may include a number of features that aren't available in current PostScript and TrueType fonts. It is recommended to use any weights of KozMinPro and KozGoPro Open Type fonts. These fonts have the largest collection of glyphs of the Asian fonts produced by Adobe.

To apply Asian Open Type font attributes:

1 In the Character palette, make sure that an Asian Open Type Pro font is selected.

2 From the Character palette menu, choose an Open Type option.

Ligatures Creates the standard Roman character ligatures fi, fl, ff, ffl, and ffi.

Discretionary Ligatures Are typographic replacement characters for letter pairs such as ct, st, and ft. This includes Roman letter and Kanji that become symbols and multicharacter ligatures.

Fractions Substitutes the expression of "number(s)/number(s)" characters with the pre-made glyph that represents the fractional expression. This substitution covers proportional, half-width, and full-width fractions. But the fractional expression must be using the consistent numbers for the whole expression.

Japanese 78 Substitutes the standard glyph with the jp78-variant glyph.

Japanese Expert Substitutes the standard glyph with the expert-variant glyphs.

Japanese Traditional Substitutes the standard glyph with the traditional-variant glyph.

Proportional Matrix Substitutes the half-width and the full-width glyph with the proportional glyph.

Kana Substitutes the standard kana glyph with the horizontally optimized kana glyph for horizontal layout. However, the differences are often very subtle.

Italics Substitutes the standard proportional glyph with the italic glyph.

3 Turn on the MSIME (Windows) or Kotoeri (Mac OS) input method.

4 Do one of the following:

• (Windows) Choose OS Start Menu > Accessory > System Tools > Character Code Table.

• (Mac OS) Select Kotoeri input method by choosing Show Character Palette from the Kotoeri menu.

5 Do one of the following:

• (Windows) In the Character Code Table, select the Show Details option, and then choose All for Group and choose Unicode for Character Set.

Character Code Table
A. Font menu **B.** Show Details checkbox

• (Mac OS) In the Kotoeri Character palette, set the display to All and then click the Glyph Catalog tab.

Kotoeri Character palette
A. View option **B.** Show More Options **C.** Font information

6 (Mac OS) Set the Kotoeri Character palette font to the Open Type font you are using.

7 Do one of the following:

• (Windows) Select the character you want to use, click the Choose button, and then copy and paste it.

• (Mac OS) Click the More Options button ▲, select the character you want to use, and then either double-click the character or click the Input button.

Working with Japanese composition

The Paragraph palette includes several options for composing Japanese characters.

Kinsoku Shori Determines line breaks in Japanese type. Characters that cannot begin a line or end a line are known as *kinsoku* characters. Photoshop includes weak and maximum kinsoku sets based on the Japanese Industrial Standard (JIS) X 4051-1995.

Mojikumi Determines spacing between punctuation, symbols, numbers, and other character classes in Japanese type. Photoshop includes several predefined mojikumi sets based on the Japanese Industrial Standard (JIS) X 4051-1995.

Oidashi and Oikomi When kinsoku shori or mojikumi is on, you can choose different methods for processing line breaks. *Oidashi*—push-out line breaking—is a method of moving characters down to the next line in order to prevent prohibited characters from ending or beginning a line. *Oikomi*—push-in line breaking—is a method of moving characters up to the previous line in order to prevent prohibited characters from ending or beginning a line.

To select a mojikumi set for a paragraph:

In the Paragraph palette, choose an option from the Mojikumi pop-up menu:

* None to turn off the use of mojikumi

* Mojikumi Set 1 to use half-width spacing for punctuation

* Mojikumi Set 2 to use full-width spacing for most characters except the last character in the line
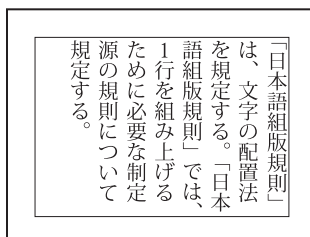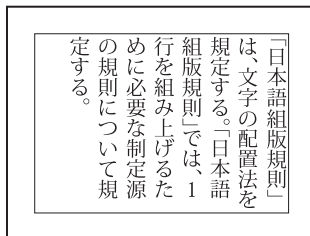
Mojikumi Set 1, and Mojikumi Set 2

* Mojikumi Set 3 to use full-width spacing for most characters and the last character in the line

- Mojikumi Set 4 to use full-width spacing for all characters
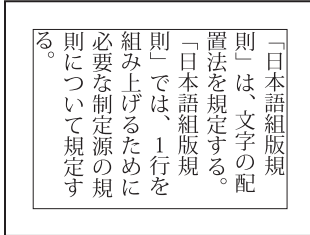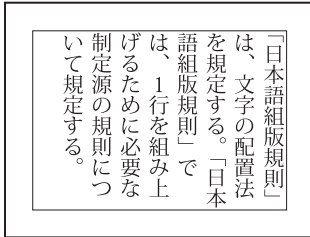
Mojikumi Set 3, and Mojikumi Set 4

To select a kinsoku shori set for a paragraph:

In the Paragraph palette, choose an option from the Kinsoku Shori pop-up menu:

- None to turn off the use of kinsoku shori
- JIS Weak or JIS Maximum to prevent the following characters from beginning or ending a line:

JIS Weak Set
Characters that can't begin a line
' ″、。々〉》」』】〕ヽヾ・ヽヾ！），．：；？］｝
Characters that can't end a line
' "〈《「『【〔（［｛
JIS Maximum Set
Characters that can't begin a line
！），．：；？］｝ ¢ - ' ″‰℃℉、。々〉》」』】〕
あいうえおつやゆよわ
゛ ゜ ヽゞ
アイウエオツヤユヨワカケ
・―ヽヾ！％），．：；？］｝
Characters that can't end a line
（［｛£§ ' "〈《「『【〒〔＃＄（＠［｛¥

To select a kinsoku line breaking option:

Choose Oidashi or Oikomi from the Paragraph palette menu. A check mark indicates which option is selected.

Using burasagari

Burasagari allows single-byte periods, double-byte periods, single-byte commas, and double-byte commas to fall outside the paragraph bounding box.

To turn on or turn off burasagari:

Choose one of the following options from the Paragraph palette menu:

None Disables Japanese hanging punctuations when a Kinsoku set is in effect. Kinsoku Shori can still cause push-in or push-out behavior but does not hang Burasagari characters on or immediately outside the text frame.

Burasagari Standard Is the default Burasagari option. The Standard option enables Japanese hanging punctuations but allows Burasagari characters to hang as little as possible. With the Standard option, the behavior varies whether the line is justified or nonjustified.

Burasagari Strong Enables Japanese hanging punctuation but forces the punctuation outside of the text frame when it needs to hang, regardless of the justification or alignment setting. A hanging punctuation will never be placed on the text frame as in Burasagari Standard. Also, the position of the hanging punctuation can cause a slight expansion, even for nonjustified text.

Designing Web Pages

About designing Web pages with Photoshop and ImageReady

When designing Web pages using Photoshop and ImageReady, keep in mind the tools and features that are available in each application.

- Photoshop provides tools for creating and manipulating static images for use on the Web. You can divide an image into slices, add links and HTML text, optimize the slices, and save the image as a Web page.

- ImageReady is designed for professional Web page layout. You can more easily work with layers as if they were independent objects: selecting, grouping, aligning, and arranging them. In addition, ImageReady includes tools and palettes for advanced Web processing and creating dynamic Web images like animations and rollovers.

The graphics tools and features in Photoshop and ImageReady simplify most Web design tasks:

Page design In ImageReady, preset document sizes for pages and banners, grids, guidelines, and smart guides simplify page layout. Both Photoshop and ImageReady let you add content to layouts using the text, drawing, and painting tools. In ImageReady, you can arrange and align content using layers, layer sets, and grouped layers. To experiment with different page compositions or to export variations of a page, use the Layer Comps palette. See "About layer comps and the Layer Comps palette" on page 405.

Slices When your page composition is ready for output to the Web, both Photoshop and ImageReady provide the Slice tool to let you divide page layouts or complex graphics into areas and specify independent compression settings (and smaller file sizes). (See "Creating and viewing slices" on page 472.)

Rollovers The Web Content palette in ImageReady enables you to track slices and their rollover states. For example, you can create a button for a Web page that glows whenever the user moves the pointer over it, and you can manage the button states and activities in those states. (See "About slices" on page 472.)

Animations For creating simple Web animations, ImageReady provides the Animation palette, giving you the ability to determine, frame by frame, the appearance of an animation that can be exported as an animated GIF or SWF file. You can create animation in conjunction with sets of slices, nested tables, percentage width tables, and *remote rollovers*, where you mouse over one image and a different image changes.

Export and image optimization When your page or graphic is ready for final export, the Save For Web dialog in Photoshop and the Optimization palette in ImageReady enables you to precisely determine how the page or graphic should be exported. Additionally, you can export an HTML file with the actual images. This text file instructs a browser how to properly display exported images and rollover effects. (See "Setting HTML output options" on page 489.)

Note: You can preview most Web effects directly in Photoshop or ImageReady. However, the appearance of an image on the Web depends on the operating system, color display system, and browser used to display the image. Be sure to preview images and pages in different browsers, on different operating systems, and with different color bit depths. (See "Previewing an image in a browser" on page 51.) Remote rollovers are best previewed in a browser.

Preparation in Adobe GoLive Additionally, Photoshop and ImageReady files can be opened directly in Adobe GoLive. Slices, URLs, and other Web features in Photoshop files are accessible in GoLive for management and editing. For more information on using GoLive, see the *Adobe GoLive User Guide*.

Automating the workflow Photoshop and ImageReady have a robust system that enables you to automate repetitive tasks. For example, ImageReady droplets allow designers to quickly convert a batch of images into a Web-ready format. (See "Automating Tasks" on page 627.)

Creating and viewing slices

A slice is a rectangular area of an image that you can use to create links, rollovers, and animations in the resulting Web page. Dividing an image into slices allows you both finer functional control and better file size optimization of your image.

About slices

You use slices to divide a source image into functional areas. When you save both the image and an HTML file, each slice is saved as an independent file with its own settings and color palette, and the proper links, rollover effects, and animation effects are preserved.

Slices are also advantageous when working with images that contain different types of data. For example, if one area of an image needs to be optimized in GIF format to support an animation, but the rest of the image is better optimized in JPEG format, you can isolate the animation using a slice.

Web page divided into slices with a highlighted rollover slice

To work with slices:

• Create a slice. (See "Creating and viewing slices" on page 472 and "Creating layer-based slices" on page 475.) After you create a slice, you can select it using the Slice Select tool ✄ and then move or resize it.

• Set options for each slice—such as content type, name, and URL—in the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady). (See "Setting HTML output options" on page 489).

• Align slices in ImageReady. You can also set values in the Output Settings dialog box that will generate HTML code to align your slices. These values use tables or cascading style sheets. (See "Setting output options" on page 616.)

Types of slices

Slices are categorized by their content type (auto, image, no-image, table) and by the way they are created (user, layer-based). For information on slice content types, see "Choosing a content type" on page 490.

Slices you create using the Slice tool are called *user slices*; slices you create based on the content of a layer are called *layer-based slices*. When you create a new user slice or layer-based slice, additional *auto slices* are generated to account for the remaining areas of the image. In other words, auto slices fill the space in the image that is not defined by user slices or layer-based slices. Auto slices are regenerated every time you add or edit user slices or layer-based slices. You can convert auto slices to user slices. *Table slices* contain nested tables.

User slices, layer-based slices, and auto slices look different—user slices and layer-based slices are defined by a solid line, while auto slices are defined by a dotted line. In addition, each type of slice displays a distinct icon. You can choose to show or hide auto slices, which can make your work with user- and layer-based slices easier to view.

A *subslice* is a type of auto slice that is generated when you create overlapping slices. Subslices indicate how the image will be divided when you save the optimized file. Although subslices are numbered and display a slice symbol, you cannot select or edit them separately from the underlying slice. Subslices are regenerated every time you arrange the stacking order of slices.

Slices are created using different methods:

- Auto slices are automatically generated by ImageReady.

- User slices are created with the Slice tool. (See "Creating user slices" on page 474.)

- Layer-based slices are created with the Layers palette. (See "Creating layer-based slices" on page 475.)

- Table slices are created with the Web Content palette. (See "Creating tables" on page 487.)

Creating user slices

You can create user slices with the Slice tool or from guides.

To create a slice with the Slice tool:

1 Select the Slice tool ⟋ . Any existing slices automatically display in the document window.

2 Choose a style setting in the options bar:

- Normal to determine slice proportions by dragging.

- Fixed Aspect Ratio to set a height-to-width ratio. Enter whole numbers or decimals for the aspect ratio. For example, to create a slice twice as wide as it is high, enter 2 for the width and 1 for the height.

- Fixed Size to specify the slice's height and width. Enter pixel values in whole numbers.

3 Drag over the area where you want to create a slice. Shift-drag to constrain the slice to a square. Alt-drag (Windows) or Option-drag (Mac OS) to draw from the center. Use View > Snap To align a new slice to a guide or another slice in the image. (See "Moving and resizing user slices" on page 480.)

To create slices from guides:

1 Add guides to an image. (See "Using guides and the grid" on page 43.)

2 Do one of the following:

- (Photoshop) Select the Slice tool, and click Slices From Guides in the options bar.

- (ImageReady) Choose Slices > Create Slices from Guides.

When you create slices from guides, any existing slices are deleted.

To create a slice from a selection (ImageReady):

1 Select a portion of the image.

2 Choose Select > Create Slice from Selection.

ImageReady creates a user slice based on the selection marquee. If the selection is feathered, the slice covers the full selection (including the feathered edges). If the selection is nonrectangular, the slice covers a rectangular area large enough to enclose the full selection.

Creating layer-based slices

When you create a slice from a layer, the slice area encompasses all the pixel data in the layer. If you move the layer or edit the layer's content, the slice area automatically adjusts to encompass the new pixels.
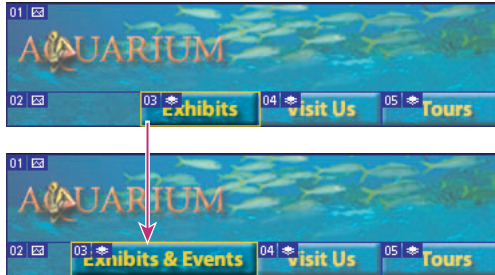
A layer-based slice is updated when the source layer is modified.

Layer-based slices are especially useful when working with rollovers. If you apply an effect to the layer—such as a drop shadow or glow—to create a rollover state, the slice automatically adjusts to encompass the new pixels. However, do not use a layer-based slice when you plan to move the layer over a large area of the image during an animation, because the slice dimension may exceed a useful size.

To create a slice from a layer:

1 Select a layer in the Layers palette.

2 Choose Layer > New Layer Based Slice.

Converting auto slices to user slices

You can move, duplicate, combine, divide, resize, delete, arrange, align, and distribute user slices. You can also apply different optimization settings to user slices. In contrast, all auto slices in an image are linked and share the same optimization settings. This is because auto slices are regenerated every time you create or edit a user slice or layer-based slice.

If you select an auto slice and link it to a user slice, the user slice will take on the optimization settings from the auto slice. If you select the user slice first, however, the auto slice is *promoted* to a user slice. Unlinking promotes auto slices to user slice status. (See "Linking slices (ImageReady)" on page 486.)

To convert an auto slice to a user slice:

1 Select an auto slice. In ImageReady, you can select multiple slices. (See "Selecting slices" on page 478.)

2 Do one of the following:

• (Photoshop) With the Slice Select tool selected, click Promote to User Slice in the options bar.

• (ImageReady) Choose Slices > Promote to User-slices.

Converting layer-based slices to user slices

Because a layer-based slice is tied to the pixel content of a layer, the only way to move, combine, divide, resize, and align it is to edit the layer. You can convert a layer-based slice to a user slice to unlink it from the layer.

To convert a layer-based slice to a user slice:

1 Select a layer-based slice. In ImageReady, you can select multiple slices. (See "Selecting slices" on page 478.)

2 Do one of the following:

• (Photoshop) Click Promote to User Slice in the options bar.

• (ImageReady) Choose Slices > Promote to User-slices.

Viewing slices

You can view slices in Photoshop, the Photoshop Save for Web dialog box, and ImageReady. The following characteristics can help you identify and differentiate between slices:

Slice lines Define the boundary of the slice. Solid lines indicate that the slice is a user slice or layer-based slice; dotted lines indicate that the slice is an auto slice.

Slice colors Differentiate user slices and layer-based slices from auto slices. By default, user slices and layer-based slices have blue symbols, while auto slices have gray symbols.

In addition, ImageReady and the Photoshop Save for Web dialog box use color adjustments to dim unselected slices. These adjustments are for display purposes only and do not affect the final image's color. By default, the color adjustment for auto slices is twice the amount of that for user-slices.

Slice numbers Slices are numbered ▣ from left to right and top to bottom, beginning in the upper left corner of the image. If you change the arrangement or total number of slices, slice numbers are updated to reflect the new order.

Slice badges The Web Content palette uses a number of *badges*, or icons, to indicate certain conditions, and these icons also appear in the document itself:

• ▣ User slice has Image content

• ▣ User slice has No Image content

• ▣ Slice is a layer-based slice

• ▣ Slice is linked

• ▣ Slice includes a rollover effect

• ▣ Slice contains the active rollover state

• ▣ Slice is a nested table

• ▣ Slice is a remote trigger

• ▣ Slice is a remote target

To show or hide slice badges (ImageReady):

1 In the Web Content palette, open the palette menu and choose palette options.

2 Check the Show Slice Badges box.

To show or hide slice boundaries:

Do one of the following:

- Choose View > Show > Slices. To hide and show slices along with other items, use the Extras command. For more information, see "Working with Extras" on page 45.
- (ImageReady) Click the Visibility icon 👁, located to the left of the slice in the Web Content palette.

Note: If you've turned off a slice's visibility with the Slices Visibility icon, ImageReady doesn't output that slice when you choose Save Optimized. This is similar to layer visibility functionality.

To show or hide auto slices:

Do one of the following:

- Select the Slice Select tool, and click Show Auto Slices or Hide Auto Slices in the options bar.
- Choose View > Show > Slices. Auto slices appear with the rest of your slices.
- (ImageReady) Choose View > Show > Auto Slices.

To show or hide slice numbers (Photoshop):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Guides, Grid, & Slices.
- In Mac OS, choose Photoshop > Preferences > Guides, Grid, & Slices.

2 Under Slices, click Show Slice Numbers.

To show or hide slice numbers and slice symbols (ImageReady):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Slices.
- In Mac OS, choose ImageReady > Preferences > Slices.

2 Under Numbers and Symbols, select a size for display symbols:

- None to display no numbers or symbols
- The small icon to display small numbers and symbols
- The large icon to display large numbers and symbols

3 For Opacity, enter a value, or choose a value from the pop-up slider to change the opacity (transparency level) of the numbers and symbols display.

To show slice lines only (ImageReady):

1 Do one of the following:

- In Windows, choose Edit > Preferences > Slices.
- In Mac OS, choose ImageReady > Preferences > Slices.

2 Under Slice Lines, select Show Lines Only.

To change the color of slice lines:

1 Do one of the following:

• (Photoshop) In Windows, choose Edit > Preferences > Guides, Grid, & Slices; in Mac OS, choose Photoshop > Preferences > Guides, Grid, & Slices.

• (ImageReady) In Windows, choose Edit > Preferences > Slices; in Mac OS, choose ImageReady > Preferences > Slices.

2 Under Slice Lines, choose a color from the Line Color pop-up menu.

Changing the color of slice lines automatically changes the color of selected slice lines to a contrasting color.

To change slice color adjustments (ImageReady):

1 Do one of the following:

• In Windows, choose Edit > Preferences > Slices.

• In Mac OS, choose ImageReady > Preferences > Slices.

2 Enter a value, or choose a value from the Color Adjustments pop-up slider for User slices, Auto slices, or both. (The User slices option controls color adjustments for both user slices and layer-based slices.)

The value determines by how much the brightness and contrast of unselected slices are dimmed.

Selecting and modifying slices

You can move, duplicate, combine, divide, resize, delete, arrange, align, and distribute user slices. There are fewer options for modifying layer-based slices and auto slices; however, you can promote a layer-based slice or an auto slice to a user slice at any time.

In Photoshop, you cannot combine, align, or distribute slices. Edit your document in ImageReady to access these slice-editing capabilities.

Selecting slices

You select a slice or multiple slices with the Slice Select tool. You can then modify the selected slices.

In ImageReady, you can save, load, and delete slice selections. Using slice selections lets you reselect specific slices quickly and accurately.

To select a slice:

Do one of the following:

• Select the Slice Select 🖋 tool and click the slice in the image. When working with overlapping slices, click the visible section of an underlying slice to select it.

• (Photoshop) Choose File > Save For Web. In the dialog box, use the Slice tool to select a slice.

💡 When using either the Slice tool or the Slice Select tool, toggle between them by holding down Ctrl (Windows) or Command (Mac OS).

• (ImageReady) Select a slice in the Web Content palette.

To select multiple slices (ImageReady):

With the Slice Select tool �, do one of the following:

- Shift-click to add slices to the selection.
- Click in an auto slice or outside the image area, and drag across the slices you want to select. (Clicking in a user slice and dragging moves the slice.)
- In the Web Content palette, shift-click multiple slices.

To select all the user slices in a document (ImageReady):

Choose Slices > Select All User Slices. This actually selects all nonauto slices, and includes layer-based slices in the selection.

To save a slice selection (ImageReady):

1 Select one or more slices.

2 Choose Slices > Save Slice Selection.

3 Enter a name in the Selection Name text box, and click OK.

To load a slice selection (ImageReady):

Choose Slices > Load Slice Selection, and select the name of the slice selection you want to load from the submenu.

Note: *You must save a slice selection before you can load it.*

To delete a slice selection (ImageReady):

Choose Slices > Delete Slice Selection, and select the name of the slice selection you want to delete from the submenu. Deleting a slice selection does not delete the slices themselves.

Using slice sets (ImageReady)

In ImageReady, you can combine slices into sets, and toggle the visibility of those sets. This lets you create different configurations for your Web page, which is especially powerful when you combine this feature with layer comps. You can create unique slice sets to match your various layer comps. See "Working with layer comps" on page 405.

Note: *You can only place a slice in one slice set at a time.*

You work with slice sets in the Web Content palette.

To create a slice set:

1 Select one or more slices.

2 Do one of the following:

- Choose Slices > New Slice Set.

- Click the New Slice Set button in the Web Content palette.

ImageReady Web Content palette with slice set

To toggle the visibility of a slice set:

In the Web Content palette, click the Visibility icon 👁 to show or hide slice sets.

To delete a slice set:

1 In the Web Content palette, select the slice set you want to delete.

Note: If the slice set is not visible in the palette, expand the Slices section of the palette by clicking the arrow next to the Slices section header.

2 Click the Delete Slice button 🗑 to remove the slice set.

3 Choose one of the following:

- Set Only deletes just the set itself.
- Set and Contents deletes the set and all its slices.

Moving and resizing user slices

You can move and resize user slices in Photoshop and ImageReady, but not in the Photoshop Save for Web dialog box. You can also move and resize slices using numeric coordinates. (See "Resizing and moving slices using numeric coordinates" on page 481.)

To move or resize a user slice:

1 Select a user slice. In ImageReady, you can select and move multiple slices.

2 Do one of the following:

- To move a slice, move the pointer inside the slice selection border, and drag the slice to a new position. Press Shift to restrict movement to a vertical, horizontal, or 45° diagonal line.
- To resize a slice, grab a side or a corner handle of the slice, and drag to resize the slice. If you select and resize adjacent slices, common edges shared by the slices are resized together.

To snap slices to a guide, user slice, or other object:

1 Select the options you want from the View > Snap To submenu, and choose to snap to grid, guides, layers, slices (ImageReady), image maps, document bounds (ImageReady), all, or none.

2 Choose View > Snap. (See "Using the Snap command" on page 246.) A check mark indicates that the option is turned on.

3 Move your selected slices as desired. The slices snap to any of your chosen objects within 4 pixels.

Note: *For more information on moving objects with smart guides, see "Using guides and the grid" on page 43.*

Resizing and moving slices using numeric coordinates

You can set the exact position and dimensions for a user slice using the Dimensions options of the Slice palette. In ImageReady, you can also set the exact position and dimensions for a layer-based slice using the Layer Based Dimensions Pad options.

In ImageReady, if the Dimensions or Layer Based Dimensions Pad options aren't showing, choose Show Options from the Slice palette menu, or click the Show Options button ◆ on the palette tab to view them, and click the triangle to the left of the options you want displayed (such as the Layer Based Dimensions).
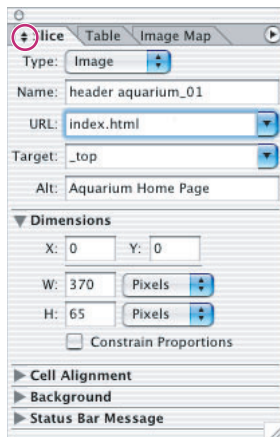
ImageReady Slice palette with Dimension options displayed

To resize or move a user slice using numeric coordinates (Photoshop):

1 Double-click the slice in the image with the Slice Select tool, and choose Slice Options from the menu bar.

2 In the Dimensions area of the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), change one or more of the following options:

• X to specify the distance in pixels between the left edge of the slice and the origin point of the ruler in the document window

• Y to specify the distance in pixels between the top edge of the slice and the origin point of the ruler in the document window

Note: *The default origin point of the ruler is the upper left corner of the image. (See "Using guides and the grid" on page 43.)*

- W to specify the width of the slice
- H to specify the height of the slice
- Constrain Proportions to preserve the current proportions of the slice

To resize a layer-based slice using numeric dimensions (ImageReady):

1 Select a layer-based slice.

2 In the Slice palette, in the Layer Based Dimensions options area, change one or more of the following Pad options:

- L to specify the distance in pixels between the left edge of the slice and the left edge of the layer's content
- T to specify the distance in pixels between the top edge of the slice and the top edge of the layer's content
- R to specify the distance in pixels between the right edge of the slice and the right edge of the layer's content
- B to specify the distance in pixels between the bottom edge of the slice and the bottom edge of the layer's content

Dividing user slices and auto slices

The Divide Slice dialog box lets you divide slices horizontally, vertically, or both. In Photoshop, you can divide only one slice; in ImageReady, you can divide multiple slices at the same time. Divided slices are always user slices, regardless of whether the original is a user slice or an auto slice.

Note: *You cannot divide layer-based or nested table slices.*

To divide slices:

1 Select a slice. In ImageReady, you can select multiple slices.

2 Do one of the following:

- (Photoshop) With the Slice Select tool selected, click Divide Slice in the options bar.
- (ImageReady) Choose Slices > Divide Slice.
- (ImageReady) Choose Divide Slice from the Slice palette menu.

3 Select Preview in the Divide Slice dialog box to preview the changes.

4 In the Divide Slice dialog box, select one or both of the following options:

- Divide Horizontally Into to divide the slice lengthwise.
- Divide Vertically Into to divide the slice widthwise.

5 Define how you want to divide each selected slice:

- Select and enter a value for slices down or slices across to divide each slice evenly into the specified number of slices.
- Select and enter a value for pixels per slice to divide each slice based on the specified number of pixels. Any section of a slice that is left over is made into another slice. For example, if you divide a slice that is 100 pixels wide into three new slices each 30 pixels wide, the remaining 10-pixel-wide area becomes a new slice.

6 Click OK.

Duplicating slices

You can create a duplicate slice with the same dimensions and optimization settings as the original. If the original slice is a linked user slice, the duplicate is linked to the same collection of linked slices. For more information, see "Linking slices (ImageReady)" on page 486. Duplicate slices are always user slices, regardless of whether the original is a user slice, a layer-based slice, or an auto slice.

In ImageReady, you can also copy and paste slices within or between documents.

To duplicate a slice:

1 Select a slice. (In ImageReady, you can select multiple slices.)

2 Alt-drag (Windows) or Option-drag (Mac OS) from inside the selection.

To duplicate a slice using the Web Content palette (ImageReady)

1 Select a slice in the Web Content palette.

2 Choose Slices > Duplicate Slice or Duplicate Slice from the palette menu. (See "Using the Web Content palette" on page 510.)

3 In the Duplicate Slice dialog box, select from the following options:

• Duplicate Rollover States to maintain any rollover states associated with the original slice

• Duplicate Layers for Layer-Based Slices to duplicate a layer associated with a layer-based slice

4 From the position menu, choose an option for the position of the duplicate slice. The duplicate slice will adjoin the original slice in the position indicated. If the duplicate slice extends beyond the edge of the document, it will be truncated.

5 Click OK.

To copy and paste a slice (ImageReady):

1 Select one or more slices with the Slice Select tool.

2 Choose Copy Slice from the Edit menu.

3 If you want to paste into another image, open and display that image.

4 Choose Paste Slice from the Edit menu. If you paste the slice into the same image as you copied it from, the pasted slice appears on top of the original.

The Copy Slice and Paste Slice commands have the same keyboard shortcuts as the regular Copy and Paste commands.

Combining slices (ImageReady)

In ImageReady, you can combine two or more slices into a single slice. The resulting slice takes its dimensions and position from the rectangle created by joining the outer edges of the combined slices. If the combined slices are not adjacent or are of different proportions or alignments, the newly combined slice may overlap other slices.

Optimization settings for the combined slice are those of the first slice selected before the Combine Slices operation. A combined slice is always a user slice, regardless of whether the original slices include auto slices.

Note: You cannot combine layer-based slices.

To combine slices:

1 Select two or more slices.

2 Choose Slices > Combine Slices.

Arranging user slices and layer-based slices

When slices overlap, the last slice you create is the top slice in the stacking order. You can change the stacking order to gain access to underlying slices. You can specify which slice is on the top and bottom of the stack and move slices up or down in the stacking order.

Note: *You cannot arrange the stacking order of auto slices.*

To change the stacking order of slices:

1 Select a slice. In ImageReady, you can select multiple slices.

2 Do one of the following:

• With the Slice Select tool active, click a stacking order option in the options bar: Bring to Front 🥞, Bring Forward 🥞, Send Backward 🥞, or Send to Back 🥞.

• (ImageReady) Choose Edit > Arrange Slices and choose a stacking order command from the submenu.

• (ImageReady) Drag the slice up or down in the Web Content palette. See "Using the Web Content palette" on page 510.

Aligning user slices (ImageReady)

In ImageReady, you can align user slices with the top, bottom, left, right, or middle. Aligning user slices can eliminate unneeded auto slices and generate a smaller, more efficient HTML file.

Note: *To align layer-based slices, align the contents of the layers. (See "Aligning layers" on page 378.)*

To align user slices:

1 Select the user slices you want to align.

2 Do one of the following:

• With the Slice Select tool active, click an alignment option in the options bar: Align Top Edges 🔲, Align Vertical Centers 🔲, Align Bottom Edges 🔲, Align Left Edges 🔲, Align Horizontal Centers 🔲, or Align Right Edges 🔲.

• Choose Edit > Align Slices, and choose a command from the submenu.

Distributing user slices (ImageReady)

In ImageReady, you can distribute user slices evenly along the vertical or horizontal axis. Distributing user slices can eliminate unneeded auto slices and generate a smaller, more efficient HTML file.

Note: *To distribute layer-based slices, distribute the contents of the layers. (See "Aligning layers" on page 378.)*

To distribute user slices:

1 Select three or more user slices you want to distribute.

2 Do one of the following:

• With the Slice Select tool active, click a distribution option in the options bar: Distribute Top Edges ⬒, Distribute Vertical Centers ⬓, Distribute Bottom Edges ⬓, Distribute Left Edges ⬔, Distribute Horizontal Centers ⬕, or Distribute Right Edges ⬖.

• Choose Edit > Distribute Slices, and choose a command from the submenu.

Deleting user slices and layer-based slices

When you delete a user slice or layer-based slice, auto slices are regenerated to fill the document area.

Deleting a layer-based slice does not delete the associated layer; however, deleting the layer associated with a layer-based slice does delete the layer-based slice.

Note: You cannot delete auto slices. If you delete all user slices and layer-based slices in an image, one auto slice layer will remain.

To delete a slice:

1 Select a slice. In ImageReady, you can select multiple slices.

2 Do one of the following:

• Choose the Slice or Slice Select tool and press the Backspace key or the Delete key.

• (ImageReady) Choose Slices > Delete Slices, or choose Delete Slices from the Slice palette menu.

• (ImageReady) Choose Delete Slice from the Web Content palette menu or click the Delete Slice button 🗑 in the Web Content palette.

To delete all user slices and layer-based slices:

Do one of the following:

• (Photoshop) Choose View > Clear Slices.

• (ImageReady) Choose Slices > Delete All.

Locking slices (Photoshop)

Locking slices prevents you from making changes accidentally, such as resizing or moving slices.

To lock all slices:

Choose View > Lock Slice.

Optimizing slices

You can optimize image slices using the Save for Web dialog box (Photoshop) or the Optimize palette (ImageReady).

All image slices use the optimization settings of the entire image until you apply new settings. If you select multiple slices with different optimization settings, only the controls that are relevant to all of the selected slices are visible. If settings for a control differ among slices, the control is blank. Any settings you choose are applied to all selected slices.

In ImageReady, you can also copy optimization settings from one slice to another within a document, or from a slice in one view to a slice in another view in 2-Up or 4-Up view.

To optimize a slice:

Select one or more image slices. Do one of the following:

• Specify options in the Optimize palette. (See "Optimizing images" on page 531.)

• From the Optimize palette pop-up menu, choose Optimize to File Size. Enter a desired file size, and choose Slice to Start With (Current Settings or Auto Select GIF/JPEG), and Slice to Use (Current, Each, or Total of All).

To copy optimization settings between slices (ImageReady):

1 Select the slice that uses the optimization settings you want to copy.

2 Drag the Droplet icon ⬇ from the Optimize palette onto the slice to which you want to apply the optimization settings.

Linking slices (ImageReady)

Linking slices lets you share optimization settings between slices. When you apply optimization settings to a linked slice, all slices in the set are updated.

Linked slices in GIF and PNG-8 format share a color palette and dither pattern. The dither pattern is applied across adjacent slice boundaries to prevent the appearance of seams between the slices. (See "Optimizing colors in GIF and PNG-8 images" on page 548.)

Note: *You can also link slices in the Photoshop Save for Web dialog box. (See "Working with slices in the Save for Web dialog box (Photoshop)" on page 534.)*

To link slices:

1 Select two or more slices or slice sets you want to link.

Note: *If the first slice you select is a user slice, any auto slices you link to the first slice become user-slices. If the first slice you select is an auto slice, any user slices you select are linked to the auto slice group.*

2 Choose Slices > Link Slices for Optimization.

Each linked set of user slices is assigned a different color for the slice display graphics in the upper left corner of the slice. This helps to identify which slices are linked.

To unlink user slices:

Do one of the following:

• To unlink a user slice, select the slice, and then choose Slices > Unlink Slices.

• To unlink all of the slices linked to a particular slice, select one of the slices in the Web Content palette, and choose Slices > Unlink Shared Links.

• To unlink all user slices in an image, choose Slices > Unlink All.

Working with tables (ImageReady)

When you convert a document containing slices to HTML, it is output as a single table; each individual slice is placed inside separate table cells. Slices are actually table cells.

Optionally, you can choose to group slices into tables themselves, which are then *nested* inside the main table. You can only nest one level down, however; slices grouped into tables cannot be nested again inside other slice group tables.

A slice of type Table Slice is a slice that contains a table you've created, or a nested table.

You can resize tables to fit layer-based elements. See "Resizing tables" on page 488.

Creating tables

You can select and group slices for output as separate, nested tables when converting a document to HTML.

To create a table:

Do one of the following:

• Select multiple slices (see "Selecting and modifying slices" on page 478) and then click the Group Slice Into Table button ⊞ in the Web Content palette.

• Select multiple slices (see "Selecting and modifying slices" on page 478) and then choose Slices > Group Slices Into Table.

• Select a slice, and change the slice type from "Image" to "Table" in the Slice palette. Switch to the Table palette to set its attributes. ImageReady automatically creates a user slice to fill the table.

Note: *Certain slice layouts require ImageReady to generate spacer cells (spacer.gif images) to render the image properly in certain browsers. If this happens to your table, a yellow warning icon shows in the table's header in the Web Content palette.*
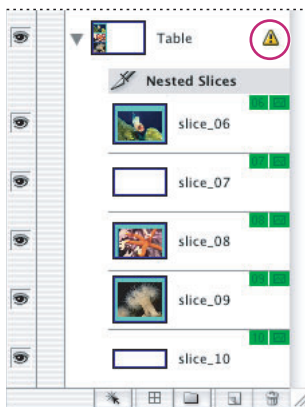
A table showing spacer cell warning

Viewing tables

In the Web Content palette, slices grouped as nested tables are indicated with the table icon ⊞. This same icon appears in your document window, with the borders of the slice table outlined in color.
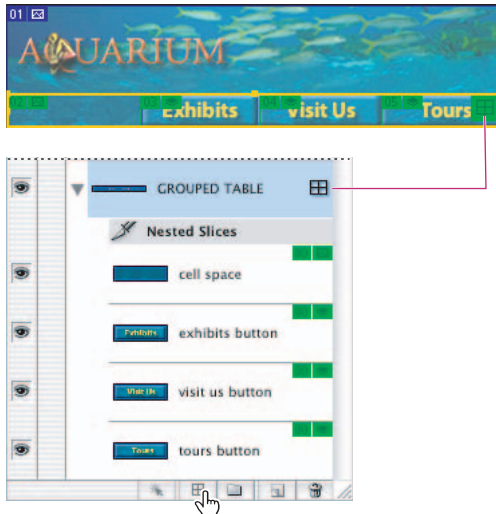
You can see tables in ImageReady's Web Content palette or in the image in your document.

You can also see your table in the Table palette. It has option areas for the table's Dimensions, Auto Slicing method, and Cell Options.

Note: *In order to edit the table, you need to select the table or one of its slices.*

Selecting tables

You can select tables via the document window or the Web Content palette.

To select a table:

Do one of the following:

• In a document, select the table icon ⊞ in a slice with the Slice Select tool.

• In the Web Content palette, select the table directly by clicking its name.

• In a document, select a slice with the Slice Select tool. (See "Selecting and modifying slices" on page 478.)

Note: *To select the outermost table in a document, you must use the Slice Select tool.*

Resizing tables

You can resize a table by grabbing the side or corner handles or by making adjustments to their dimensions (pixel or percentage).

To resize a table:

Select a table. Do one of the following:

• In the document window, grab a side or corner handle and drag to resize the table.

- In the Table palette, in the Dimensions options area, enter the dimensions in pixels (the default method). Press Enter (Windows) or Return (Mac OS) to make the change. If you enter a width dimension, the height changes automatically, and vice-versa.

- In the Table palette, in the Dimensions options area, change the Pixels method to Percentage and add a value to any of the dimensions. Press Enter (Windows) or Return (Mac OS) to make the change.

- Choose Slices > Resize Table to Slices. If your table is larger than the slices, this command will shrink the table to fit the slices. If the slice area exceeds that of the table, it will expand the table to reveal all of the child slices.

Deleting nested tables slices

You can delete tables you've nested inside slices with or without deleting the slices that comprise them. In other words, you can ungroup the slices so they are no longer a table.

To delete a nested table:

1 In the Web Content palette, select the nested table slice.

2 Do one of the following:

- Choose Delete Slice from the palette menu

- Choose Slices > Delete Slice.

3 Choose one of the following:

- Choose Table only to delete only the table and keep the slices intact.

- Choose Table and Contents to delete both the table and all its slices.

Setting HTML output options

Photoshop and ImageReady provide precise control over both preparation of images for the Web and the way in which the images are presented on a Web page. Slices and slice table structure can be specified within both applications to ensure proper functionality in an exported HTML or XHTML file. (See "Setting slice table export options (ImageReady)" on page 493.)

Setting and viewing slice options

Setting slice options lets you specify how the slice data will appear in a Web browser when exported with an HTML file. The available options vary according to the application and the slice type you select. You can only set options for one slice at a time.

Note: *Setting options for an auto slice promotes the slice to a user slice.*

You specify slice options in the Slice Options dialog box (Photoshop) and the Slice palette (ImageReady).

To display the Slice Options dialog box (Photoshop):

Do one of the following:

- Double-click a slice with the Slice Select tool.

- With the Slice Select tool active, click the Slice Options button in the options bar. This method is available only in the main Photoshop application, not in the Photoshop Save for Web dialog box.

To display the Slice palette (ImageReady):

Choose Window > Slice, or select the Slice Select tool and click the palette button 🔲 in the options bar.

Choosing a content type

Formatting and display options for a slice vary according to its content type. There are three types of slice content:

• Image slices contain image data, including rollover states. This is the default content type.

• No Image slices let you create empty table cells that can be populated with text or a solid color. You can enter HTML text in a No Image slice, and if you have the "Text is HTML" flag set, it will be interpreted as HTML when viewed in a browser. No Image slices are not exported as images, and can be previewed in a browser. (See "Previewing an image in a browser" on page 51.)

• (ImageReady) Table slices act as containers for a subset of slices that, upon export, will be written into the HTML text file as a nested table.

To specify a content type:

1 Select a slice. If you are working in Photoshop, double-click the slice with the Slice Select tool to display the Slice Options dialog box.

2 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), select a slice type from the Type pop-up menu.

Specifying slice names

As you add slices to an image, you may find it helpful to rename slices based on their content. By default, user slices are named according to the settings in the Output Options dialog box. (See "Setting slice output options" on page 560.) Layer-based slices are given the name of the layer from which they are derived.

To change the name of a slice:

Do one of the following:

• Select a slice. If you are working in Photoshop, double-click the slice with the Slice Select tool to display the Slice Options dialog box. In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), type a new name in the Name text box.

Note: The Name text box is not available for No Image slice content.

• Double-click the slice's name in the Web Content palette (ImageReady), and enter a new name. See "Using the Web Content palette" on page 510.

Specifying slice background colors

The background color option lets you select a color to fill the transparent area (for Image slices) or entire area (for No Image slices) of the slice.

Photoshop and ImageReady do not display the selected background color—you must preview the image in a browser to view the effect of selecting a background color. (See "Previewing an image in a browser" on page 51.)

To choose a background color:

1 Select a slice. If you are working in the Photoshop Save for Web dialog box, double-click the slice with the Slice Select tool to display the Slice Options dialog box.

2 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), select a background color from the Background/BG pop-up menu:

- (Photoshop) Select None, Matte, Eyedropper (to use the color in the eyedropper sample box), White, Black, or Other (using the color picker).

- (ImageReady) Select None, Matte, Foreground Color, Background Color, or Other (to use the color picker), or select a color from the pop-up palette.

Assigning a URL to an Image slice

Assigning a URL to a slice makes the entire slice area a link in the resulting Web page. When a user clicks in the link, the Web browser navigates to the specified URL and target frame. This option is only available for Image slices.

To assign link information to an Image slice:

1 Select a slice. If you are working in Photoshop, double-click the slice with the Slice Select tool to display the Slice Options dialog box.

2 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), enter a URL in the URL text box, or choose a previously created URL from the pop-up menu. You can enter a relative URL or a full URL. If you enter an absolute URL, be sure to include the proper protocol (for example, enter http://www.adobe.com, not www.adobe.com for an HTML link). For more information on using relative URLs and full URLs, see an HTML reference (either printed or on the Web).

3 If desired, enter the name of a target frame in the Target text box, or choose an option from the pop-up menu. A frame name must match a frame previously defined in the HTML file for the document. When a user clicks the link, the specified file displays in the new frame:

- _blank to display the linked file in a new window, leaving the original browser window open.

- _self to display the linked file in the same frame as the original file.

- _parent to display the linked file in its own original parent frameset. Use this option if the HTML document contains frames and the current frame is a child. The linked file displays in the current parent frame.

- _top to replace the entire browser window with the linked file, removing all current frames.

Note: For more information on frames, see an HTML reference (either printed or on the Web).

Specifying browser messages

You can specify what messages appear in the browser. In Photoshop, use the Message Text and Alt Tag areas of the Slice Options dialog box. (See "To display the Slice Options dialog box (Photoshop):" on page 489.) In ImageReady, use the Status Bar Message and Alt options of the Slice palette. (If the Message and Alt options aren't showing in ImageReady, choose Show Options from the Slice palette menu, or click the Show Options button ◆ on the palette tab.)

These options are only available for Image slices, and only appear in exported HTML files.

Message Text/Status Bar Message Lets you change the default message in the browser's status area for a selected slice or slices. By default, the slice's link URL, if any, is displayed.

Alt Tag/Alt Lets you specify an Alt tag for a selected slice or slices. The Alt text appears in place of the slice image in nongraphical browsers. It also appears in place of the image while the image is downloading and as a tool tip in some browsers. Specifying Alt tags is a critical aspect of ensuring the accessibility of your page for visitors whose browsers do not display images.

To specify a browser message:

1 Select a slice. If you are working in Photoshop, double-click the slice with the Slice Select tool to display the Slice Options dialog box.

2 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), type the desired text in the Message text box, Alt text box, or both.

Adding HTML text to a slice

Choosing the No Image type for a slice lets you enter text that will appear in the slice area of the resulting Web page. This text is HTML text—you can format it using standard HTML tags. You can also select vertical and horizontal alignment options. For more information on specific HTML tags, see an HTML reference (either printed or on the Web).

Photoshop and ImageReady do not display HTML text in the document window; you must use a Web browser to preview the text. (See "Setting and viewing slice options" on page 489.) Keep in mind that the appearance of text is affected by the browser settings and operating system it is viewed on. Be sure to preview HTML text in different browsers, with different browser settings, and on different operating systems to see how text will appear on the Web.

Note: *The amount of text in a No Image slice can affect the layout of an exported page. Be sure to experiment with your design in several browsers to ensure consistency.*

To add HTML text to a slice:

1 Select a slice. If you are working in Photoshop, double-click the slice with the Slice Select tool to display the Slice Options dialog box.

2 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), select No Image from the Type pop-up menu.

3 Type the desired text in the text box.

4 (Photoshop Save for Web dialog box and ImageReady) If the text includes HTML formatting tags, select the Text is HTML option. When this option is deselected, all the text you enter (including formatting tags) will be displayed in the resulting Web page.

5 (Photoshop Save for Web dialog box and ImageReady) If desired, select options in the Cell Alignment section of the dialog box.

Horizontal alignment options:

• Default to use the browser's default for horizontal alignment

• Left to align the text to the left side of the slice area

- Center to align the text to the center of the slice area
- Right to align the text to the right side of the slice area

Vertical alignment options:

- Default to use the browser's default for vertical alignment.
- Top to align the text to the top of the slice area.
- Baseline to set a common baseline for the first line of text in cells in the same row (of the resulting HTML table). Each cell in the row must use the Baseline option.
- Middle to center the text vertically in the slice area.
- Bottom to align the text to the bottom of the slice area.

Setting slice table export options (ImageReady)

When exporting slices for use on the Web, Photoshop and ImageReady can optionally export an HTML file providing instructions for a browser in how to display the slices in the proper layout. By default, this exported HTML uses tables to ensure consistent appearance with the original sliced composition. (See "Working with tables (ImageReady)" on page 487.) The Table palette in ImageReady provides an additional level of control over how this formatting table is exported.

Note: Changes you make to the structure of an exported HTML file don't affect the appearance of the image in your work area; they only modify what it looks like in a browser.

To set table export options with the Table palette:

1 Choose Window > Table.

2 Select the table for which you want to set options. (See "Selecting tables" on page 488.) By default, the selected table is the top-level table encompassing the entire composition area.

3 Enter a name for the table in the ID input box of the Table palette. Specifying a name for an exported table allows for increased conformity with standards for Web accessibility.

4 Choose a preferred formatting for table export from the Auto Slicing pop-up menu:

Note: Changing this preference may affect how auto slices are generated.

- Default maintains the default table formatting.
- As Columns (rowspan) favors the creation of vertical columns in an exported HTML table.
- As Rows (colspan) favors the creation of horizontal rows in an exported HTML table.

To set table dimensions:

1 Select the table for which you want to set options using the Slice Select tool. By default, the selected table is the top-level table encompassing the entire composition area.

2 If it is not visible, show the Dimensions options section of the Table palette by clicking the Dimensions arrow.

3 Determine the width and height of the exported table by choosing Pixels or Percent from the appropriate pop-up menu. Specifying the width or height as a percent will allow the exported table to dynamically adjust in size, based on the size of a Web page visitor's browser window.

Note: *The current X and Y coordinates of the table's upper left corner are displayed in this section for reference. They cannot be changed.*

To set table HTML attributes:

It's best to set the table HTML attributes only for tables that contain No Image slices. Changing these settings with Image slices can break your tables up in undesirable ways.

1 Select the table for which you want to set options. (See "Selecting tables" on page 488.) By default, the selected table is the top-level table encompassing the entire composition area.

2 If it is not visible, show the Cell options section of the Table palette by clicking the Cell arrow.

3 Choose a value for each of the optional attributes:

• Border determines the width in pixels of the border around the table on export.

• Pad determines the amount of padding in pixels for each table cell. Padding is the amount of space between the edge of a table cell and its contents.

• Space determines the amount of spacing in pixels between each table cell. Spacing is the distance between the edges of any two table cells.

Working with image maps (ImageReady)

Image maps link an area of an image to a URL. You can set up multiple linked areas—called image map areas—in an image, with links to other Web pages or multimedia files.

When choosing between using slices or image maps to create hyperlinks, consider the following.

• Using image maps keeps the exported image intact as a single file, while using slices causes the image to be exported as separate files (one per slice).

• Image maps enable you to link circular, polygonal, or rectangular areas in an image, while slices enable you to link only rectangular areas.

• Image maps do not allow as much flexibility in optimization as slices.

Note: *To avoid unexpected results, do not create image map areas in slices that contain URL links—either the image map links or the slice links may be ignored in some browsers.*

Creating image maps

You can create image map areas using an Image Map tool or a layer, and then set options for the image map sections in the Image Map palette.

Tool-based image map areas Create these using an Image Map tool; drag in the image to define the image map area.

Layer-based image map areas Create these from a layer; the layer's content defines the shape of the image map area. If you edit the layer's content, the image map area automatically adjusts to encompass the new pixels.

Note: Adding a rollover effect to an image map area will cause the area to become a new slice.

Layer-based rectangle image map compared to polygonal image map

Important: If you overlap image map areas, the topmost area is active.

To create an image map area using an image map tool:

1 Select the Rectangle Image Map tool ⟨⟩, the Circle Image Map tool ⟨⟩, or the Polygon Image Map tool ⟨⟩ in the toolbox.

2 If you create a layer-based image map, when using the Rectangle or Circle Image Map tool, select Fixed Size to specify set values for the image map area's dimensions. Enter pixel values in whole numbers. For the Polygon tool, enter a value or choose a value from the Quality pop-up slider to set the number of segments in the polygon.

3 Do one of the following to define the image map area:

*   With the Rectangle or Circle Image Map tool, drag over the area you want to define. Shift-drag to constrain the area to a square or circle. Alt-drag (Windows) or Option-drag (Mac OS) to drag an image map area from its center.

*   With the Polygon Image Map tool, click in the image to set the starting point. Position the pointer where you want the first straight segment to end, and click. Continue clicking to set endpoints for subsequent segments. Hold down Shift to constrain the segment to 45° increments. Shift + Option-drag (Mac OS) to constrain and draw from the center. To close the border, double-click, or position the pointer over the starting point (a closed circle appears next to the pointer) and click.

💡 To add points to a polygon image map area, select the Image Map Select tool, and Shift-click where you want to add a point. To remove points from a polygon image map area, select either the Image Map Select or the Polygon tool, and Alt-click (Windows) or Option-click (Mac OS) the points you want to remove.

To create an image map area from a layer:

1 In the Layers palette, choose a layer from which to create an image map area. (To use multiple layers in one image map area, first merge the layers.)

2 Choose Layer > New Layer Based Image Map Area or choose Promote Layer Based Image Map Area from the Image Map palette menu.

To change the shape of a layer-based image map area:

1 Select a layer-based image map area by clicking it in the Web Content palette or by using the Image Map Select tool ✋ . (See "Selecting image maps" on page 498.)

2 In the Layer Based Settings section of the Image Map palette, choose an option from the shape pop-up list: Rectangle, Circle, or Polygon. If you choose Polygon, enter a value or choose a value from the Quality pop-up slider to set the number of segments in the polygon.

To convert a layer-based image map area to a tool-based image map area:

1 Select a layer-based image map area by clicking it in the Web Content palette or by using the Image Map Select tool ✋ . (See "Selecting image maps" on page 498.)

2 Choose Promote Layer Based Image Map Area from the Image Map palette menu. If the layer contains multiple, non-overlapping areas of pixel content, multiple tool-based image map areas are produced.

Viewing image maps

When you select the Image Map Select tool, image map areas show automatically. You can also show or hide image map areas using the Image Map Visibility button.

Image map preferences determine how image map areas appear in the document window. You can set preferences for image map lines, line color, and color adjustments.

To show or hide image map areas:

Do one of the following:

• Click the Image Map Visibility button 🖐 in the toolbox.

• Choose View > Show > Image Maps.

• Choose View > Extras. This command also shows or hides selection edges, slices, text bounds, text baseline, and text selections. (See "Working with Extras" on page 45.)

To set image map display preferences:

1 Do one of the following:

• In Window, choose Edit > Preferences > Image Maps.

• In Mac OS, choose ImageReady > Preferences > Image Maps.

2 To display image map lines only and deselect color adjustment display, select Show Lines Only.

3 To show a bounding box for circular image map areas, select Show Bounding Box.

4 To change the color of image map lines, choose a color from the Line Color pop-up menu. Changing the color of image map lines also changes the line color of selected image map areas to a contrasting color.

5 To change the strength of image map color adjustments, enter a value, or choose a value from the Image Map Overlay pop-up slider. The value determines the extent of color adjustments that dim the brightness and contrast of unselected image map areas.

Specifying image map options

You can specify a name, a URL, a target frame, and Alt text for an image map area in the Image Map palette.

To display the Image Map palette:

Choose Window > Image Map, or click the palette button 🗎 on the right side of the options bar for the Image Map Select tool 👆.

To change the name of an image map area:

1 Select an image map area.

2 In the Image Map palette, enter a new name in the Name text box.

To specify link options for an image map area:

1 Select an image map area.

2 In the Image Map palette, enter a URL for the link, or choose a previously created URL from the URL pop-up menu. You can enter a relative URL or an absolute URL. If you enter a n absolute URL, be sure to include the proper protocol (for example, enter http://www.adobe.com, not www.adobe.com for an HTML link). For more information on using relative URLs and full URLs, see an HTML reference (either printed or on the Web).

3 In the Image Map palette, enter the name of a target frame in the Target text box, or choose an option from the pop-up menu. A frame name must match a frame previously defined in the HTML file for the document. When a user clicks the link, the specified file displays in the new frame:

- _blank to display the linked file in a new window, leaving the original browser window open.

- _self to display the linked file in the same frame as the original file.

- _parent to display the linked file in its own original parent frameset. Use this option if the HTML document contains frames and the current frame is a child. The linked file displays in the current parent frame.

- _top to replace the entire browser window with the linked file, removing all current frames.

Note: For more information on frames, see an HTML reference (either printed or on the Web).

4 In the Image Map palette, enter text for an Alt tag in the Alt text box. The Alt text appears in place of the image map area in nongraphical browsers. In many browsers, it also appears if the user positions the mouse over the image map area.

Selecting image maps

You select image map areas with the Image Map Select tool or by using the Web Content palette.

To select an image map area

Do one of the following:

*   In the Web Content palette, click the image map name. Shift-click to select multiple images.

*   With the Image Map Select tool ✋, click an image map area in the image. Shift-click to add areas to the selection. You can also select multiple image map areas by clicking outside an image map area and dragging across the image map areas you want to select.

Moving and resizing tool-based image maps

You can move and resize tool-based image map areas by dragging. You can also move and resize rectangular and circular image map areas using numeric coordinates.

Note: To move or resize a layer-based image map area, move or edit the layer.

To move a tool-based image map area:

1 Select one or more image map areas you want to move

2 Position the pointer inside the image map area, and drag it to a new position. Press Shift to restrict movement to a vertical, horizontal, or 45° diagonal line.

To resize a tool-based image map area:

1 Select an image map with the Image Map Select tool ✋ or in the Web Content palette.

Note: If you select a polygonal image map, the cursor changes to a white arrow ▷ to show you where to point on the handle. The other tools use the standard resize cursor ↘.

2 Grab a handle of the boundary box by holding the mouse button down over it.

3 Drag a handle on the image map border to resize the image map area.

To resize and move a tool-based image map area using numeric coordinates:

1 Select a rectangular or circular image map area.

2 In the Dimensions area of the Image Map palette, change one or more of the following options:

*   X to specify the distance in pixels between the left edge of a rectangular image map area, or the center point of a circular image map area, and the origin point of the ruler in the document window.

*   Y to specify the distance in pixels between the top edge of a rectangular image map area, or the center point of a circular image map area, and the origin point of the ruler in the document window.

Note: The default origin point of the ruler is the upper left corner of the image. (See "Using guides and the grid" on page 43.)

*   W to specify the width of a rectangular image map area.

*   H to specify the height of a rectangular image map area.

*   R to specify the radius of a circular image map area.

Duplicating image maps

You can create a duplicate image map area with the same dimensions and settings as the original image map area.

To duplicate an image map area:

Do one of the following:

• Select one or more image map areas, and choose Duplicate Image Map Areas from the Image Map palette menu.

• Select one or more image map areas, and Alt-drag (Windows) or Option-drag (Mac OS) from inside the image map area.

• Select a image map in the Web Content palette, and choose Duplicate Image Map from the palette menu. (See "Using the Web Content palette" on page 510.)

• Select a number of image maps with the Image Map Select tool. Either right-click or Control-click with the cursor in one of the image maps. This brings up the context menu for image maps. Select Duplicate Image Map Areas.

The duplicate image map area appears on top of the original (offset 10 pixels down and to the right), and becomes the current selection. You can move, resize, or otherwise modify it.

Arranging image maps

The Web Content palette displays the stacking order of image maps. The image map on the top of your stack takes precedence, so it's helpful to be able to arrange them. You can specify which image map area is on the top and bottom of the stack and move image map areas up or down in the stacking order. To change the stacking order of image map areas:

Do one of the following:

• Select one or more image map areas you want to arrange. You can select a combination of tool-based image map areas and layer-based image map areas. Then, with the Image Map Select tool active, click a stacking order option in the options bar: Bring to Front 🥞, Bring Forward 🥞, Send Backward 🥞, Send to Back 🥞. Alternately, choose a stacking order command from the Image Map palette menu.

• Drag an image map up or down in the Web Content palette. (See "Using the Web Content palette" on page 510.)

• Select a number of image maps with the Image Map Select tool. Either right-click or Control-click with the cursor in one of the image maps. This brings up the context menu for image maps. Select from the Align choices: Top Edges, Vertical Centers, Bottom Edges, Left Edges, Horizontal Centers, Right Edges. See "Aligning and distributing tool-based image maps" on page 499.

Aligning and distributing tool-based image maps

You can align and distribute tool-based image map areas to the top, bottom, left, right, and middle.

Note: To align layer-based image map areas, first select the layers, and then choose an alignment option from the Edit > Align Linked submenu.

To align tool-based image map areas:

1 Select the tool-based image map areas you want to align or distribute.

2 With the Image Map Select tool active, click an alignment option in the options bar: Align Image Map Top Edges ⊞, Align Image Map Vertical Centers ⊪, Align Image Map Bottom Edges ⊞, Align Image Map Left Edges ⊞, Align Image Map Horizontal Centers ⊞, or Align Image Map Right Edges ⊞.

3 With the Image Map Select tool active, click a distribution option in the options bar: Distribute Image Map Top Edges ⊞, Distribute Image Map Vertical Centers ⊞, Distribute Image Map Bottom Edges ⊞, Distribute Image Map Left Edges ⊞, Distribute Image Map Horizontal Centers ⊞, Distribute Image Map Right Edges ⊞.

Deleting image maps

You can delete selected image map areas by doing one of the following:

- Pressing the Backspace key or the Delete key

- Choosing Delete Image Map Areas from the Image Map palette menu

- Selecting the image map in the Web Content palette and dragging it to the trash icon.

- Selecting a number of image maps with the Image Map Select tool. Either right-click or Control-click with the cursor in one of the image maps. This brings up the context menu for image maps. Select Delete Image Map Areas.

Selecting an image map type

ImageReady can create client-side and server-side image maps. In client-side image maps, the links are interpreted by the browser itself. In server-side image maps, the links are interpreted by the server. Because client-side image maps don't need to contact the server to function, they are often significantly faster to navigate. By default, ImageReady saves image maps as client-side image maps.

Important: *Server-side image maps do not work in images that have multiple slices.*

You select an image map type in the Output Settings dialog box. (See "Setting HTML output options" on page 560.) If you select a server-side image map, ImageReady generates a separate map file based on the server option you select. However, you'll need to update the path to the map file in your HTML file.

Creating Web photo galleries (Photoshop)

You use the Web Photo Gallery command to automatically generate a Web photo gallery from a set of images. A Web photo gallery is a Web site that features a home page with thumbnail images and gallery pages with full-size images. Each page contains links that allow visitors to navigate the site. For example, when a visitor clicks a thumbnail image on the home page, a gallery page with the associated full-size image loads.
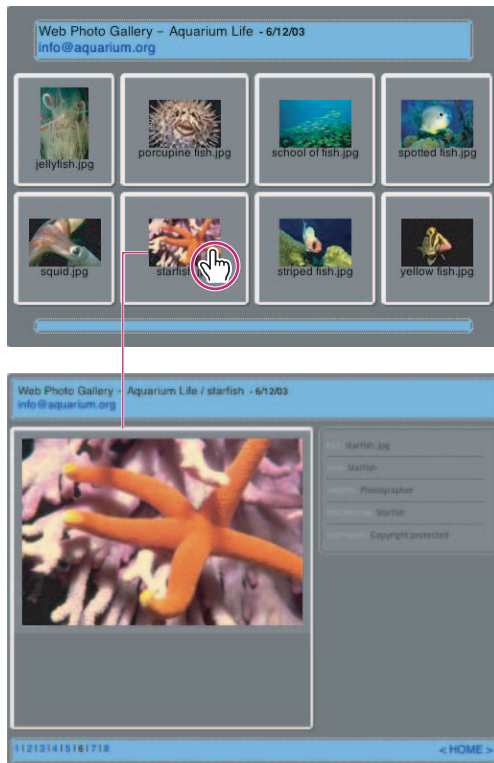
Web photo gallery home page and loaded gallery page

Photoshop provides a variety of styles for your gallery, which you can select using the Web Photo Gallery command. If you are an advanced user who has knowledge of HTML, you can also customize a style by editing a set of HTML template files or create a new style.

Each template for gallery styles comes with different options. If you're using a preset style, some options may be dimmed, or unavailable in that particular style. (See "Customizing and creating Web photo gallery styles (Photoshop)" on page 503.)

To create a Web photo gallery:

When making a gallery from images in the file browser, your images will be presented in the order in which they're displayed in the file browser. If you'd rather see a different order, change the order in the file browser, then select Web Photo Gallery.

1 Select the files or folder you want to use from the file browser.

2 Choose File > Automate > Web Photo Gallery.

3 Under Site, do the following:

• Choose a style for the gallery from the Styles pop-up menu. A preview of the home page for the chosen style appears in the dialog box.

• Enter the email address that you want to display as the contact for the gallery.

• Choose an extension for the generated files from the Extension pop-up menu.

4 Under Source Images, do the following:

- In the Use pop-up menu, choose Folder or Selected Images From Web Browser.

- If you chose Folder, click Browse (Windows) or Choose (Mac OS). Then select the folder containing the images that you want to appear in the gallery, and click OK (Windows) or Choose (Mac OS). Your folder name appears in the dialog box next to the Browse/ Choose button. Then check Include All Subfolders to include images inside any subfolders of the selected folder.

- Click Destination, select the destination folder that you want to contain the images and HTML pages for the gallery, and click OK (Windows) or Choose (Mac OS).

5 To set general options for the gallery photos, choose General from the Options pop-up menu. Then do the following:

- Choose an extension for the files (.htm, .html).

- Check Use UTF 8 Encoding for URL if you want that encoding.

- Check Add Width and Height Attributes for images to increase download speed.

- Check Preserve All Metadata to maintain metadata info.

6 To set options for the banner that appears on each page in the gallery, choose Banner from the Options pop-up menu. Then do the following:

- For Site Name, enter the title of the gallery.

- For Photographer, enter the name of the person or organization that deserves credit for the photos in the gallery.

- For Contact Info, enter the contact information for the gallery, such as a telephone number or a business address.

- For Date, enter the date that you want to appear on each page of the gallery. By default, Photoshop uses the current date.

7 If available, for Font and Font Size, choose options for the banner text.

8 To set options for the gallery pages, choose Large Images from the Options pop-up menu. Then do the following:

- To have Photoshop resize the source images for placement on the gallery pages, select Resize Images. Then choose an option for the image size from the pop-up menu or enter a size in pixels. For Constrain, choose which dimensions of the image you want to constrain during resizing. For JPEG Quality, choose an option from the pop-up menu, enter a value between 0 and 12, or drag the slider. A higher value results in better image quality but larger file size.

- For Border Size, enter the width of the border around the image in pixels.

- For Titles Use, specify options to display caption information under each image. Select Filename to display the filename, or select Description, Credits, Title, and Copyright to display description text drawn from the File Info dialog box. For more information, see "Adding file information (Photoshop)" on page 590.

- For Font and Font Size, choose options for the caption text.

9 To set options for the home page, choose Thumbnails from the Options pop-up menu. Then do the following:

• For Size, choose an option for the thumbnail size from the pop-up menu or enter a value in pixels for the width of each thumbnail.

• For Columns and Rows, enter the number of columns and rows that you want to be used to display the thumbnails on the home page. This option doesn't apply to galleries that use the Horizontal Frame Style or Vertical Frame Style.

• For Border Size, enter the width of the border around each thumbnail in pixels.

• For Titles check either Filename, Description, Credits, Title or Copyright.

• For Font and Font Size, choose options for the caption text.

10 To set options for colors of elements in the gallery, choose Customize Colors from the Options pop-up menu. To change the color of a particular element, click its color swatch, and then select a new color using the Color Picker. The Background option lets you change the background color of each page. The Banner option lets you change the background color of the banner.

11 To set options to display text to appear over each image as an antitheft deterrent, choose Security from the Options pop-up menu. Then do the following:

• For Content, select Custom Text to enter customized text. Select Filename, Description, Credits, Title, or Copyright to display text drawn from the File Info dialog box. For more information, see "Adding file information (Photoshop)" on page 590.

• Specify font, color, and text alignment options. To place the text on the image at an angle, choose a rotation option.

Photoshop places the following HTML and JPEG files in your destination folder:

• A home page for your gallery named index.htm or index.html depending on the Extension options. Open this file in any Web browser to preview your gallery.

• JPEG images inside an images subfolder.

• HTML pages inside a pages subfolder.

• JPEG thumbnail images inside a thumbnails subfolder.

Customizing and creating Web photo gallery styles (Photoshop)

Photoshop provides a variety of styles for your Web photo gallery, which you can select using the Web Photo Gallery command. If you are an advanced user who has knowledge of HTML, you can also customize a style by editing a set of HTML template files or create a new style.

About Web photo gallery styles

The Web photo gallery styles provided by Photoshop are stored in individual folders in the following locations:

Windows Program Files/Adobe/Photoshop CS/Presets/Web Photo Gallery.

Mac OS Adobe Photoshop CS/Presets/Web Photo Gallery.

The name of each folder in this location appears as an option in the Styles pop-up menu in the Web Photo Gallery dialog box. Each folder contains the following HTML template files, which Photoshop uses to generate the gallery:

Caption.htm　Determines the layout of the caption that appears below each thumbnail on the home page.

FrameSet.htm　Determines the layout of the frame set for displaying pages.

IndexPage.htm　Determines the layout of the home page.

SubPage.htm　Determines the layout of the gallery pages with full-size images.

Thumbnail.htm　Determines the layout of the thumbnails that appear on the home page.

Each template file contains HTML code and tokens. A *token* is a text string that is replaced by Photoshop when you set its corresponding option in the Web Photo Gallery dialog box. For example, a template file may contain the following TITLE element that uses a token as its enclosed text:

<TITLE>%TITLE%</TITLE>

When Photoshop generates the gallery using this template file, it replaces the token %TITLE% with the text that you entered for Site Name in the Web Photo Gallery dialog box.

To better understand an existing style, you can open and study its HTML template files using an HTML editor. Because only standard ASCII characters are required to create HTML documents, you can open, edit, and create these documents using a plain-text editor such as Notepad (Windows) or TextEdit (Mac OS).

Customizing Web photo gallery styles

You can customize an existing Web photo gallery style by editing one or more of its HTML template files. When customizing a style, you need to follow these guidelines so that Photoshop can generate the gallery correctly:

- The style folder must contain these files: Caption.htm, IndexPage.htm, SubPage.htm, Thumbnail.htm, and FrameSet.htm.

- You can rename the style folder but not the HTML template files in the folder.

- You can have an empty Caption.htm file, and place the HTML code and tokens determining the layout of the caption in the Thumbnail.htm file.

- You can replace a token in a template file with the appropriate text or HTML code, so that an option is set through the template file rather than through the Web Photo Gallery dialog box. For example, a template file may contain a BODY element with the following bgcolor attribute that uses a token as its value:

bgcolor=%BGCOLOR%

To set the background color of the page to red, you can replace the token %BGCOLOR% with "FF0000."

- You can add HTML code and tokens to the template files. All tokens must be in uppercase characters, and begin and end with the percent (%) symbol. For information on the tokens that you can use in the template files, see "Using tokens in Web photo gallery styles" on page 505.

To customize an existing Web photo gallery style:

1 Locate the folder for the Web photo gallery style that you want to customize. For the location of style folders, see "About Web photo gallery styles" on page 503.

2 If you don't want to overwrite an existing style, create a copy of the style folder, and store it in the same location on your hard drive as the existing style folders.

3 Using an HTML editor, open one of the HTML template files located inside the style folder.

4 Customize the HTML template file using the guidelines for customization outlined in this section, and save the file.

5 Repeat steps 2, 3, and 4 to customize other HTML template files in the style folder.

When you have finished, you can create a gallery using the customized style. The customized style appears as an option in the Styles pop-up menu in the Web Photo Gallery dialog box.

Creating new Web photo gallery styles

You can create a new Web photo gallery style by creating the necessary HTML template files that are used by Photoshop to generate a gallery.

To create a new Web photo gallery style:

1 Locate the folder that stores the existing Web photo gallery styles. For the location of style folders, see "About Web photo gallery styles" on page 503.

2 Create a new folder for the new style, and store it in the same location on your hard drive as the existing style folders.

3 Using an HTML editor, create the necessary HTML template files and store them inside the style folder. When creating the template files, make sure that you follow the guidelines for customization outlined in "Customizing Web photo gallery styles" on page 504.

When you have finished, you can create a gallery using the new style. The new style appears as an option in the Styles pop-up menu in the Web Photo Gallery dialog box.

Using tokens in Web photo gallery styles

Photoshop uses tokens in the HTML template files that are used to define a default Web photo gallery style. The tokens enable Photoshop to generate a gallery based on user input in the Web Photo Gallery dialog box.

When customizing or creating a gallery style, you can add any token to any HTML template file, with the exception of %THUMBNAILS% and %THUMBNAILSROWS%, which can only appear in the IndexPage.htm file. When adding a token, keep in mind that you may also need to add HTML code to the file so that the token is used correctly.

You can use the following tokens in the HTML template files:

%ALINK% Determines the color of active links.

%ALT% Determines the name of an image file.

%ANCHOR% Provides the ability to return to the thumnail of the image the user is viewing, rather than the beginning of the index. This takes effect when the user clicks the Home button.

%BANNERCOLOR% Determines the color of the banner.

%BANNERFONT% Determines the font of the banner text.

%BANNERFONTSIZE% Determines the font size for the banner text.

%BGCOLOR% Determines the background color.

%CAPTIONFONT% Determines the font for the caption below each thumbnail on the home page.

%CAPTIONFONTSIZE% Determines the font size for the caption.

%CHARSET% Determines the character set used on each page.

%CONTENT_GENRATOR% Expands to "Adobe Photoshop CS Web Photo Gallery."

%CURRENTINDEX% Determines the link for the current home page.

%CURRENTINDEXANCHOR% Resides in the subpage.htm and points to the first index page.

%DATE% Determines the date that appears on the banner.

%FILEINFO% Determines the image file information for a caption.

%FILENAME% Determines the filename of an image. Use this for metadata that appears as HTML text.

%FILENAME_URL% Determines the URL filename of an image. Use this for URL filenames only.

%FIRSTPAGE% Determines the link for the first gallery page that appears in the right frame of a frame set.

%FRAMEINDEX% Determines the link for the home page that appears in the left frame of a frame set.

%HEADER% Determines the title of the gallery.

%IMAGEBORDER% Determines the border size of the full-size image on a gallery page.

%IMAGE_HEIGHT% Enables "Add width and height attributes for images" check box. This allows the user to download the attributes, producing faster downloads.

%IMAGE_HEIGHT_NUMBER% This token is replaced by a numeral (only) representing the width of the image.

%IMAGEPAGE% Determines the link to a gallery page.

%IMAGE_SIZE% If the "Resize Images" box is checked, this token has the image pixel value in the "Large Images" panel. If the box is not checked, this token contains an empty string. This is useful for JavaScript in the templates, as it can show the maximum height and width values for all images for the generated site.

%IMAGESRC% Determines the URL for a full-size image on a gallery page.

%IMAGE_WIDTH% Enables "Add width and height attributes for images" check box. This allows the user to download the attributes, producing faster downloads.

%IMAGE_WIDTH_NUMBER% This token is replaced by a numeral (only) representing the width of the image.

%LINK% Determines the color of links.

%NEXTIMAGE% Determines the link for the next gallery page.

%NEXTIMAGE_CIRCULAR% Sets the link from large preview image to next large preview image.

%NEXTINDEX% Determines the link for the next home page.

%NUMERICLINKS% Inserts numbered links on subpages to all large preview images.

%PAGE% Determines the current page location (for example, page 1 of 3).

%PHOTOGRAPHER% Determines the name of the person or organization that deserves credit for the photos in the gallery.

%PREVIMAGE% Determines the link for the previous gallery page.

%PREVINDEX% Determines the link for the previous home page.

%SUBPAGEHEADER% Determines the title of the gallery.

%SUBPAGETITLE% Determines the title of the gallery.

%TEXT% Determines the text color.

%THUMBBORDER% Determines the border size for the thumbnails.

%THUMBNAIL_HEIGHT% Enables "Add width and height attributes for images" check box. This allows the user to download the attributes, producing faster downloads.

%THUMBNAIL_HEIGHT_NUMBER% This token is replaced with a numeral (only) representing the height of the thumbnail.

%THUMBNAILS% This token is replaced with thumbnails using the Thumbnail.htm file for the frame styles. You must place this token alone in a single, nonbreaking line in the HTML file.

%THUMBNAIL_SIZE% Contains the thumbnail pixel value in the "Thumbnails" panel. This is useful for JavaScript in the templates, as it can show the maximum height and width values for all thumbnails for the generated site.

%THUMBNAILSRC% Determines the link to a thumbnail.

%THUMBNAILSROWS% This token is replaced with rows of thumbnails using the Thumbnail.htm file for the nonframe styles. You must place this token alone in a single, nonbreaking line in the HTML file.

%THUMBNAIL_WIDTH% Enables "Add width and height attributes for images" check box. This allows the user to download the attributes, producing faster downloads.

%THUMBNAIL_WIDTH_NUMBER% This token is replaced by a numeral (only) representing the width of the thumbnail.

%TITLE% Determines the title of the gallery.

%VLINK% Determines the color of visited links.

Important: *When customizing or creating a template for a gallery style, you should place each of the following tokens on a separate line in the HTML file: %CURRENTINDEX%, %NEXTIMAGE%, %NEXTINDEX%, %PAGE%, %PREVIMAGE%, and %PREVINDEX%. When generating specific pages of a gallery, Photoshop skips lines in a template that contain tokens that don't apply to those pages. For example, when Photoshop generates the first gallery page, it skips any line in the template that contains the %PREVIMAGE% token, which determines the link to the previous gallery page. By keeping the %PREVIMAGE% token on a separate line, you ensure that Photoshop doesn't ignore other tokens in the template.*

Creating Complex Web Graphics (ImageReady)

About rollovers and states

A *rollover* is a Web effect in which different states of an image appear when a viewer performs a mouse action—such as rolling or clicking—over an area of the Web page. A *state* is defined by a specific configuration of the Layers palette, including layer location, styles, and other formatting options.

By default, every image has one state—the Normal state. The Normal state corresponds to the appearance of an image when it is first loaded into a Web browser and no rollover effects have occurred. You can add states to an image that will occur when a viewer performs a mouse action—such as rolling or clicking—over an area of the Web page.

About working with layers in rollovers and animations

You work with layers in ImageReady to create rollover buttons and animations. Placing the image content for a rollover on its own layer allows you to make changes to the layer's style, visibility, and position to create rollover effects. Likewise, placing each element of an animation on its own layer establishes it as an independent object and enables you to change the position and appearance of the object across a series of frames.

You can also work with rollover effects for layer slices other than the one you have selected. You can use these *remote rollovers* to create effects such as launching an application or running an animation in the Over state. See "Creating remote rollovers" on page 514.
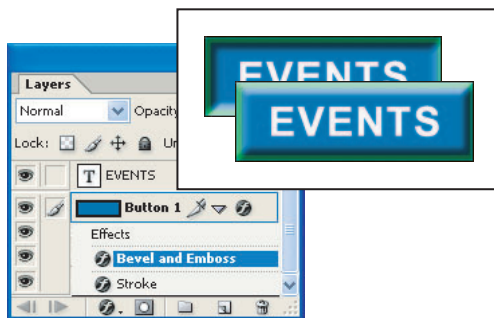
Illustration of a rollover. The button is on its own layer; effects are added to the layer to create a new appearance of the button for the Over state. The text for the word "EVENTS" is also on a separate layer.
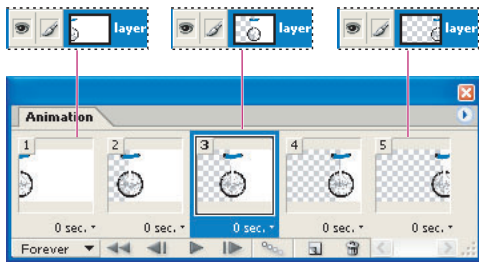
Illustration of an animation. The bicycle image is on its own layer; the position of the layer changes in each frame of the animation.

Editing layers in rollover states and animation frames

Some changes you make to layers affect only the active rollover state or animation frame, while others affect every state and frame in which the layers are included.

State and frame-specific changes Affect only the active animation frame or rollover state. By default, changes you make to layers using Layers palette commands and options—including layer opacity, blending mode, visibility, position, and style—are state and frame-specific. However, you can apply layer changes to all states in a rollover and all frames in an animation using the unify buttons in the Layers palette. (See "Unifying and matching layer rollovers and animations" on page 509.)

Important: *Changes you make to layers in the Normal state or Frame 1—including layer opacity, blending mode, visibility, position, and style—affect all states or frames in which the layers are identical. For example, consider a slice that has a Normal state, an Over state, and a Down state. If the layers in the Normal and Over states are identical, and you apply a layer style in the Normal state, the layer style will also be applied in the Over state.*

Inclusive changes Affect every state and frame in which the layers are included. Changes you make to layer pixel values, using painting and editing tools, color and tone adjustment commands, filters, type, and other image-editing commands, are inclusive.

Unifying and matching layer rollovers and animations

By default, changes you make to layers using Layers palette commands and options—including layer visibility, position, and style—apply only to the frame or state (unless you are working with the Normal state or Frame 1). However, you can use the unify buttons in the Layers palette and the Match command to apply changes to all states in a rollover and all frames in an animation:

- The unify buttons determine how the changes you make to a layer in the active state or frame apply to the other states in a rollover or frames in an animation. When a unify button is selected, changes apply to all states and frames; when a button is deselected, changes apply to only the active state or frame.

- The Layer > Match command lets you apply the layer attributes for an existing state or frame to other states in a rollover and frames in an animation.

To unify layers in rollover states and animation frames:

Select one or more unify buttons in the Layers palette:

- Unify Layer Position button ⬚ to apply changes you make to a layer's position to all states in a rollover and all frames in an animation.

Note: *The Unify Layer Position button places the contents of the selected layer in the same place on every frame in your animation. If you're trying to show the layer contents moving in the animation, do not use this button.*

- Unify Layer Visibility button ⬚ to apply changes you make to a layer's visibility to all states in a rollover and all frames in an animation.

- Unify Layer Style button ⬚ to apply changes you make to a layer's style to all states in a rollover and all frames in an animation.

To match an existing layer across rollover states and animation frames:

1 In the Web Content palette, select the state or frame with the layer attributes you want to use.

2 Select the layer you want to match in the Layers palette.

3 Choose Layer > Match, or choose Match from the Layers palette menu.

4 Select one of the following from the Match Layer dialog:

- Current Animation to apply layer attributes for the selected frame to all frames in the animation.

- Current Slice/Image Map's States to apply layer attributes for the selected state to all states in the rollover.

- All Rollovers to apply layer attributes for the selected state to all states in all rollovers (in the image) that include the layer.

5 Select the layer attributes you want to match, and click OK.

Note: *The default setting Propagate Frame 1 Changes dynamically updates all rollover states and animation frames, based on a change in the first frame's position, visibility, or layer style. If you want the changes in Frame 1 to remain only in Frame 1, turn off this option by toggling it in the Layers palette pop-up menu.*

Using the Web Content palette

The Web Content palette lets you create, view, and set options for the rollover states in an image. In addition to rollover states, the Web Content palette can display slices, image maps, and animation frames. Displaying slices and image maps helps you keep track of the elements in an image that contain rollover effects. Displaying animation frames makes it easy to see which states of an image contain animations.
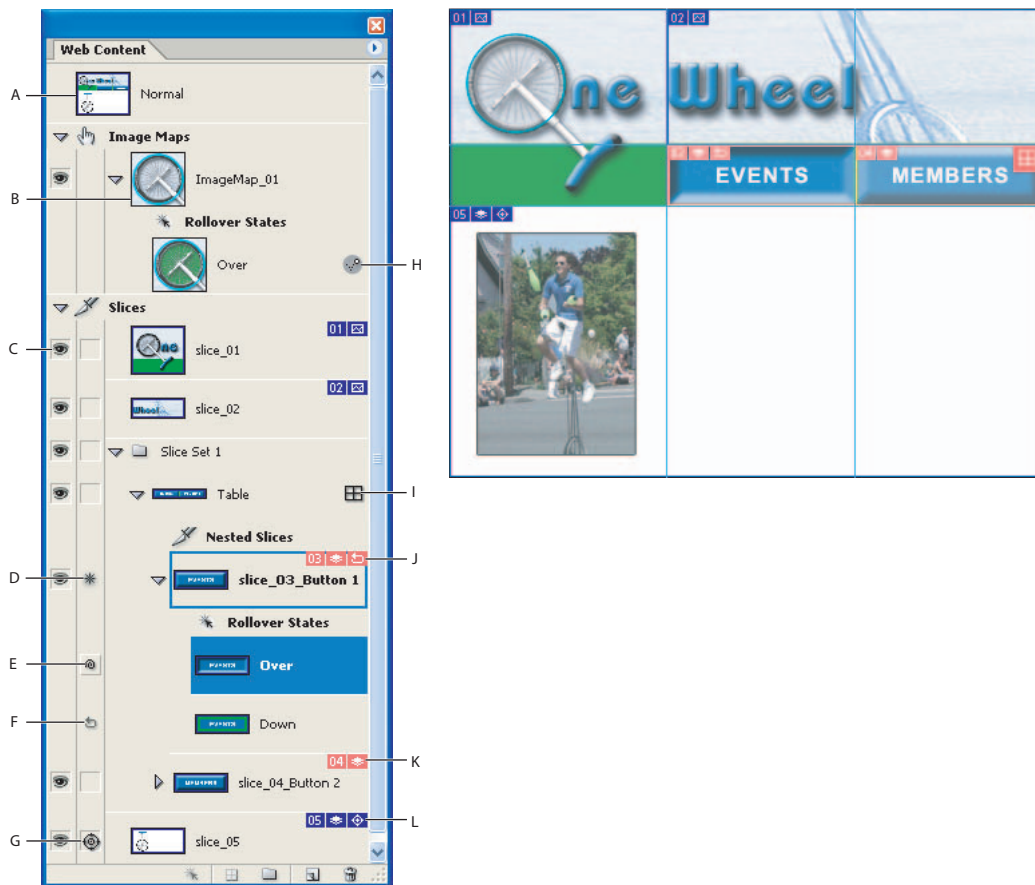
The Web Content palette with slices, image maps, and animation frames
A. Normal state **B.** Image map with Over state **C.** Slice visibility icon **D.** Indicates this slice has an active rollover state **E.** Drag the pickwhip to the image window to make the targeted slice remote for this rollover state **F.** Indicates that the down state has a remote slice associated with it **G.** Indicates that this slice has a remote target associated with it **H.** Indicates that this state has animation associated with it **I.** Indicates that this slice is a nested table **J.** Nested Slice info: slice number, layer-based indicator, remote-trigger badge **K.** Individual slice info: slice number, layer-based indicator **L.** Remote slice info: slice number, layer-based indicator, remote-target badge

Displaying the Web Content palette Choose Window > Web Content. A check mark indicates that the palette is showing.

Using the Web Content palette menu Click the triangle ⊙ in the upper right corner of the palette to access commands for working with rollovers.

Displaying slices and image maps in the Web Content palette In the Web Content palette, there are sections for Image Maps 🖑 and Slices ✄. Click the disclose triangle to view or hide them. An option in the Palette Options area of the Web Content palette menu toggles the display of slice badges, which are small icons on each slice that display the slice's current properties.

Displaying animation frames in the Web Content palette Choose Palette Options from the Web Content palette menu. Select or deselect Include Animation Frames, and click OK.

Changing the size of rollover thumbnails Choose Palette Options from the Web Content palette menu, and select a thumbnail size. For sizes other than None, select Object Bounds or Entire Document to determine the contents of thumbnails.

Expanding and collapsing states, slices, and image maps Click the triangle to the left of an item in the Web Content palette. Alt-click (Windows) or Option-click (Mac OS) expands or contracts all options.

Creating and editing rollovers

You use the Web Content palette, in conjunction with the Layers palette, to add rollover effects to an image. When you save the image as a Web page, ImageReady adds JavaScript code to the resulting HTML file to specify rollover states.

Creating rollovers

You use a slice or image map area to define the active area for a rollover. When you add a new state to the image, you capture a snapshot of the slice or image map area in the previous state. You can then use the Layers palette to make changes to the image in the new state. When you save an image with rollover states and an HTML file, each rollover state is saved as a separate image file. (See "Saving selected rollover states to Web pages" on page 518.)
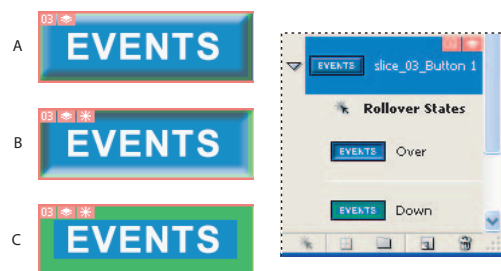
An image with three rollover states
A. Normal state **B.** Over state **C.** Down state

To create a rollover:

1 Create a layer-based slice for the rollover. (See "Creating slices for rollovers" on page 513.) You can also use a layer-based image map to contain the rollover.

2 Create rollover states. (See "Creating and changing rollover states" on page 513.)

3 Select a state in the Web content palette and then edit the layer content for the state to create the rollover effect. (See "State and frame-specific changes" on page 509.)

💡 You can use layer styles to create instant rollover effects. When working with layer-based slices, you can also save the series of states as a rollover style. (See "Applying and creating rollover styles" on page 516.)

4 If you are creating a remote rollover, target the remote slice to the selected state. See "Creating remote rollovers" on page 514.

5 Preview the rollover. (See "Previewing rollover states" on page 515.)

Creating slices for rollovers

You can quickly create layer-based slices for rollovers using the Web Content palette. Layer-based slices are recommended when creating rollovers because the dimensions of a layer's content may change in the course of creating a rollover, and layer-based slices automatically adjust to encompass the new pixels. For more information on the different types of slices, see "Creating and viewing slices" on page 472.

To create a layer-based slice for a rollover:

1 Select the layer in the Layers palette, or choose Layer > New Layer-Based Slice from the main menu. The content of the layer will define the active area for the rollover.

2 Click the Create Layer-based Rollover button ✳ in the Web Content palette.

By default, ImageReady adds an Over state to the new slice.

Creating and changing rollover states

When you create a rollover state, ImageReady assigns the type of state by default; however, you can easily change the state.

To add a rollover state to a slice or image map:

1 In the Web Content palette or the image, select the slice or image map you want to add the rollover state to.

Note: If slices are not visible in the Web Content palette, select Include Slices and Image Maps in the Palette Options dialog box to display them. (See "Using the Web Content palette" on page 510.)

2 Do one of the following in the Web Content palette:

• Click the Create Rollover State button ▣.

• Choose New Rollover State from the palette menu.

3 Use the default rollover state assigned by ImageReady, or select a different rollover state.

To select a different rollover state:

1 Do one of the following:

• Double-click a rollover state in the Web Content palette.

• Select a rollover state in the Web Content palette, and choose Rollover State Options from the palette menu.

2 Select a state, and click OK.

Over Activates the image when the user rolls over the slice or image map area with the mouse while the mouse button is not pressed. (Over is automatically selected for the second rollover state.)

Down Activates the image when the user presses the mouse button on the slice or image map area. The state appears as long as the viewer keeps the mouse button pressed down on the area.

Click Activates the image when the user clicks the mouse on the slice or image map area. The state appears until the viewer moves the mouse out of the rollover area.

Note: *Different Web browsers, or different versions of a browser, may process clicks and double-clicks differently. For example, some browsers leave the slice in the Click state after a click, and in the Up state after a double-click; other browsers use the Up state only as a transition into the Click state, regardless of single- or double-clicking. To ensure your Web page will function correctly, be sure to preview rollovers in various Web browsers.*

Custom Activates the image of the specified name when the user performs the action defined in the corresponding JavaScript code. (You must create JavaScript code and add it to the HTML file for the Web page in order for the Custom rollover option to function. See a JavaScript manual for more information.)

Selected Activates the rollover state when the user clicks the mouse on the slice or image map area. The state appears until the viewer activates another selected rollover state, and other rollover effects can occur while the selected state is active. For example, a selected state for one button and an over state for another button can occur simultaneously. However, if a layer is used by both states, the layer attributes of the selected state override those of the over state.

Select Use as Default Selected State to activate the state initially when the document is previewed in ImageReady or loaded into a Web browser.

Out Activates the rollover state when the user rolls the mouse out of the slice or image map area. (The Normal state usually serves this purpose.)

Up Activates the rollover state when the user releases the mouse button over the slice or image map area. (The Normal state usually serves this purpose.)

None Preserves the current state of the image for later use, but does not output an image when the file is saved as a Web page.

Creating remote rollovers

You can set up a rollover to show or hide the content of a slice on another part of your Web page. ImageReady gives you control over which slices change on a rollover state, eliminating unwanted images and complexity.

Note: *In Photoshop 7.0 and earlier, all changes made to a document would appear when in a rollover state. This sometimes caused users to create state changes they didn't intend. In ImageReady CS, you have much more control over which slices change on a rollover state.*

To create a remote rollover:

1 Set up a rollover as you normally do. This becomes the button the user will click to display the remote content. See .

2 Add the remote content to the document and create one or more slices to contain it.

3 For each rollover state, set the desired visibility of the remote content layers in the Layers palette.

4 Specify which remote slices you want to include when you optimize output files in one of these ways:

- To manually mark the remote slices for an individual button, go to the Slice column of the Web Content palette and select the rollover state that will trigger the remote rollover (for example, Down or Click). Drag the Pickwhip icon ⊙ from the rollover state to the remote content slice in the document window.

A rollover state targeted to a remote slice

- To let ImageReady automatically find and mark all remote slices in the document, go to the Web Content palette menu and choose Find All Remote Slices.
- To let ImageReady automatically find and mark remote slices for a selected state, go to the Web Content palette menu and choose Find Remote Slices For State.

5 Preview the remote rollover in a browser. See "Previewing rollover states" on page 515.

Previewing rollover states

You can preview rollover effects directly in the ImageReady document window by switching to Document Preview Mode. To preview the rollover effect in your computer's default Web browser, click the Preview in Default Browser button in the toolbox. (See "Previewing an image in a browser" on page 51.)

All remote rollovers affect a previewed document. If a slice has a change that is ignored (not targeted), you can see it in an ImageReady preview, but not in a browser.

To use rollover preview mode:

1 Do one of the following:

- Click the Preview Document button 🕭 in the toolbox.
- Choose Image > Preview Document.

2 In the document window, perform the action that activates the rollover state. For example, position the mouse over the rollover slice or image map area to preview the Over state. Then click the slice or image map area to preview the Click state.

Note: If a document contains a Selected state, synthetic states are generated for the other states in the Web Content palette. The synthetic state represents the appearance of the document when the Selected state is active. Synthetic states are generated automatically and cannot be edited.

To exit rollover preview mode:

Do one of the following:

• Select any tool in the toolbox.

• Click the Cancel Preview button ⊘ in the options bar, or press Esc (Windows).

• Deselect Preview Document in the Image menu.

• Click the Preview Document button again to toggle it out of preview mode.

Adding animation to rollover states

You can add a multiple-frame animation to a state in an image. Adding an animation to the Normal state will cause the animation to play when the image is loaded in a Web browser. Adding an animation to another type of state will cause the animation to play when a user activates the state.

To add animation frames to a rollover state:

1 In the Web Content palette, select the state in which you want to display an animation. If necessary, expand the slice or image map to view its states. (See "Using the Web Content palette" on page 510.)

2 Make sure you can see the Create Animation Frame button and the New Animation Frame command. If they aren't visible, select Include Animation Frames in the Palette Options dialog box. (See "Using the Web Content palette" on page 510.)

3 Do one of the following to add frames to the animation:

• Click the Create Animation Frame button ⟐ in the Web Content palette or choose New Animation Frame from the palette menu.

• Create frames in the Animation palette. (See "Animations" on page 518.)

Applying and creating rollover styles

Rollover styles (indicated by a triangle in the upper left corner of the style thumbnail) simplify rollover creation by allowing you to turn a layer into a rollover effect with a single click. A rollover style includes all the attributes of a rollover, including its states and layer effects. When you apply a rollover style to a layer, the layer becomes a layer-based slice.

To apply a rollover style to a layer:

1 Select a layer in the Layers palette.

2 Choose Window > Styles, or click the Styles palette tab, to display the Styles palette.

3 Click the thumbnail for the rollover style you want to apply. Rollover style thumbnails have a triangle in the upper left corner.

To create a rollover style:

1 In the Web Content palette, create the desired rollover states. (See "Creating and changing rollover states" on page 513.)

Note: *You must use a layer-based slice in order to create a rollover style.*

2 Apply the effects to each state using predefined styles in the Styles palette or by manually setting layer effects in the Layers palette. (See "Using layer effects and styles" on page 391.)

3 In the Styles palette, click the Create New Style button ◩, or choose New Style from the palette menu.

4 Enter a name for the style, set style options, and click OK. The Include Rollover States option must be selected in order to create a rollover style.

The new rollover style appears in the Styles palette. The thumbnail preview displays the effects in the Normal state.

Copying and pasting rollover states

You can copy a rollover state and paste it into another state in the current rollover or into a state in another rollover. Layers in the source state replace layers in the destination state.

You can also copy frames from the Animation palette and paste them into the Web Content palette as states, or copy states from the Web Content palette and paste them into the Animation palette as frames.

Note: *Copy commands in the Animation palette and the Web Content palette use an internal clipboard available to these commands only. Copying frames or rollover states does not overwrite the primary ImageReady clipboard.*

To copy and paste rollover states:

1 Select a rollover state, and choose Copy Rollover State from the Web Content palette menu.

2 Select a rollover state in which to paste the copied state:

• Select a state in the current rollover.

• Open or display another rollover, and select a state.

3 Choose Paste Rollover State from the Web Content palette menu.

Duplicating rollover states

Duplicating a state is an easy way to add existing animation frames to a new state.

To duplicate a rollover state:

Select a rollover state, and do one of the following:

• Choose Duplicate Rollover State from the Web Content palette menu.

• Drag the state to the Create Rollover State button ◩.

The duplicate state and frames appear below the original state in the Web Content palette.

Rearranging and deleting rollover states

You can move states between slices and image maps by dragging them to a new location in the Web Content palette. You can also delete individual states or all states in a rollover.

To move states between slices and image maps:

Drag the state up or down in the Web Content palette. When the highlighted line appears in the desired position, release the mouse button.

To delete rollover states:

- To delete one state, select a rollover state, and either click the Trash button 🗑 on the Web Content palette or choose Delete Rollover State from the Web Content palette menu.

- To delete all states in a rollover, choose Delete Rollover from the Web Content palette menu.

Saving selected rollover states to Web pages

To choose which button is shown as the default selected button when you first view your page in a browser, double-click the selected state of that button in the Web Content palette, and check Use as Default Selected State. This removes the previously selected state and makes your new selection the default.

If you want to generate a unique HTML page for each selected state, choose Output Settings > Saving HTML and Output Multiple HTML Files.

Web page with Down state saved as Default Selected State. The button on the page gives a visual clue as to the location in the Website.

Animations

ImageReady supports animations in Web pages, and provides tools for creating, editing, and displaying animations.

About animation

An animation is a sequence of images, or *frames*, that is displayed over time. Each frame varies slightly from the preceding frame, creating the illusion of movement when the frames are viewed in quick succession.

An image can have multiple animations that are associated with different rollover states. For example, adding an animation to the Normal rollover state causes the animation to play when the Web page is first loaded by a Web browser. Adding an animation to another rollover state causes the animation to play only when the Web user performs the specified action (such as placing the mouse over the rollover or clicking the rollover).

Creating and editing animations

You use the Animation palette, in conjunction with the Layers palette and Web Content palette, to create animation frames from an original, multilayer image. Basically, you turn layers on and off per each animation frame to animate the data on those layers. You can assign a delay time to each frame, use the Tween command to generate new frames, and specify looping for the animation. The number of frames you can create is limited only by the amount of memory available to ImageReady on your system.
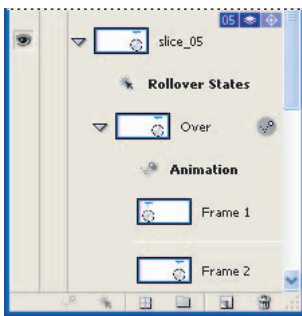
Slice with animation frames in the Over state

Using the Animation palette

The Animation palette lets you create, view, and set options for the frames in an animation. You can change the thumbnail view of frames in the Animation palette—using smaller thumbnails reduces the space required by the palette and displays more frames in a given palette width.

Displaying the Animation palette Choose Window > Animation. A check mark indicates that the palette is showing.

Using the Animation palette menu Click the triangle ⊙ in the upper right corner of the palette to access commands for working with animations.

Changing the size of animation thumbnails Choose Palette Options from the Animation palette menu, select a thumbnail size, and click OK.

Adding frames

Adding frames is the first step in creating an animation. If you have an image open in ImageReady, the Animation palette displays the image as the first frame in a new animation. Each frame you add starts as a duplicate of the preceding frame. You then make changes to the frame using the Layers palette.

Note: Always create and edit frames in Original view. While you can view frames in an optimized view, the editing options are very limited.

To add a frame to an animation:

1 In the Web Content palette, select the state in which you want to display an animation. (See "Using the Web Content palette" on page 510.)

Adding an animation to the Normal state will cause the animation to play when the image is loaded in a Web browser. Adding an animation to another type of state will cause the animation to play when a user activates the state.

2 Make sure you can see the Create Animation Frame button and the New Animation Frame command. If they aren't visible, select Include Animation Frames in the Palette Options dialog box. (See "Using the Web Content palette" on page 510.)

3 Do one of the following to add frames to the animation:

• Click the Duplicates Current Frame button ▣ in the Web Content palette or choose New Animation Frame from the palette menu.

4 Modify the image for the frame using the Layers palette. (See "Using the Layers palette" on page 370.)

Selecting frames

Before you can work with a frame, you must select it as the current frame. The contents of the current frame appear in the document window.

You can select multiple frames, either contiguous or discontiguous, to edit them or apply commands to them as a group. When multiple frames are selected, only the current frame appears in the document window.

In the Animation palette, the current frame is indicated by a narrow border (inside the shaded selection highlight) around the frame thumbnail. Selected frames are indicated by a shaded highlight around the frame thumbnails.

To select the current frame:

Do one of the following:

• Click a frame in the Animation palette.

• Click a frame in the Web Content palette. If necessary, expand the state that contains the animation to view its frames. (See "Using the Web Content palette" on page 510.)

• In the Animation palette or the Layers palette, click the Selects Next Frame button ▯▶ to select the next frame in the series as the current frame.

• In the Animation palette or the Layers palette, click the Selects Previous Frame button ◀▯ to select the previous frame in the series as the current frame.

• In the Animation palette, click the Selects First Frame button ◀◀ to select the first frame in the series as the current frame.

To select multiple frames:

In the Animation palette, do one of the following:

• To select contiguous multiple frames, Shift-click a second frame. The second frame and all frames between the first and second are added to the selection.

• To select discontiguous multiple frames, Ctrl-click (Windows) or Command-click (Mac OS) additional frames to add those frames to the selection.

• To select all frames, choose Select All Frames from the Animation palette menu.

To deselect a frame in a multiframe selection:

Ctrl-click (Windows) or Command-click (Mac OS) a frame to deselect it.

Editing frames

You can use the Animation palette or the Web Content palette to target the image content of a frame for editing.

To edit the image content of a frame:

1 Select a frame. (See "Selecting frames" on page 520.)

2 Modify the image for the frame using the Layers palette. (See "Using the Layers palette" on page 370.)

Rearranging and deleting frames

You can change the position of frames in an animation and reverse the order of selected contiguous frames. You can also delete selected frames or the entire animation.

To change the position of a frame:

1 Select the frame you want to move in the Animation palette or the Web Content palette.

2 Drag the selection to the new position.

Note: In the Animation palette, you can select and change the position of multiple frames. (See "Selecting frames" on page 520.) However, if you drag multiple discontiguous frames, the frames are placed contiguously in the new position.

To reverse the order of frames:

1 Select the frames you want to reverse. They do not have to be contiguous; you can reverse any selected frames.

2 Choose Reverse Frames from the Animation palette menu.

To delete selected frames:

Do one of the following in the Animation palette or the Web Content palette:

• Select Delete Frame from the palette menu.

• Click the Trash button 🗑, and click Yes to confirm the deletion.

• Drag the selected frame onto the Trash button.

To delete an entire animation:

Select Delete Animation from the Animation palette menu or the Web Content palette menu.

Copying and pasting frames

To understand what happens when you copy and paste a frame, think of a frame as a duplicate version of an image with a given layer configuration. When you copy a frame, you copy the configuration of layers (including each layer's visibility setting, position, and other attributes). When you paste a frame, you apply that layer configuration to the destination frame.

To copy and paste layers between frames:

1 Select the frame you want to copy in the Animation palette or the Web Content palette.

Note: In the Animation palette, you can select and copy multiple frames. (See "Selecting frames" on page 520.)

2 Choose Copy Frame(s) from the Animation palette menu or the Web Content palette menu.

3 Select a destination frame or frames in the current animation or another animation.

4 Choose Paste Frame(s) from the Animation palette menu or the Web Content palette menu.

5 Select a Paste method:

• Replace Frames to replace the selected frames with the copied frames. When you paste frames into the same image, no new layers are added to the image; rather, the attributes of each existing layer in the destination frames are replaced by those of each copied layer. When you paste frames between images, new layers are added to the image; however, only the pasted layers are visible in the destination frames (the existing layers are hidden).

• Paste Over Selection to add the contents of the pasted frames as new layers in the image. When you paste frames into the same image, using this option doubles the number of layers in the image. In the destination frames, the newly pasted layers are visible, and the original layers are hidden. In the nondestination frames, the newly pasted layers are hidden.

• Paste Before Selection or Paste After Selection to add the copied frames before or after the destination frame. When you paste frames between images, new layers are added to the image; however, only the pasted layers are visible in the new frames (the existing layers are hidden).

6 Select Link Added Layers if you want to link pasted layers in the Layers palette. Use this option when you need to reposition the pasted layers as a unit.

7 Click OK.

Tweening frames

You use the Tween command to automatically add or modify a series of frames between two existing frames—varying the layer attributes (position, opacity, or effect parameters) evenly between the new frames to create the appearance of movement. For example, if you want to fade out a layer, set the opacity of the layer in the starting frame to 100%; then set the opacity of the same layer in the ending frame to 0%. When you tween between the two frames, the opacity of the layer is reduced evenly across the new frames.

The term "tweening" is derived from "in betweening," the traditional animation term used to describe this process. Tweening significantly reduces the time required to create animation effects such as fading in or fading out, or moving an element across a frame. You can edit tweened frames individually after you create them.
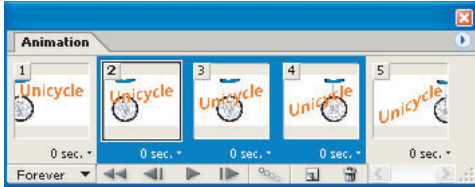
Using tweening to animate text position

To create frames using tweening:

1 To apply tweening to a specific layer, select it in the Layers palette.

2 Select a single frame or multiple contiguous frames.

If you select a single frame, you choose whether to tween the frame with the previous frame or the next frame. If you select two contiguous frames, new frames are added between the frames. If you select more than two frames, existing frames between the first and last selected frames are altered by the tweening operation. If you select the first and last frames in an animation, these frames are treated as contiguous, and tweened frames are added after the last frame. (This tweening method is useful when the animation is set to loop multiple times.)

Note: *You cannot select discontiguous frames for tweening.*

3 Do one of the following:

• Click the Tween button ⊶ in the Animation palette.

• Select Tween from the Animation palette menu.

4 Specify the layer or layers to be varied in the added frames:

• All Layers to vary all layers in the selected frame or frames.

• Selected Layer to vary only the currently selected layer in the selected frame or frames.

5 Specify layer attributes to be varied:

• Position to vary the position of the layer's content in the new frames evenly between the beginning and ending frames.

• Opacity to vary the opacity of the new frames evenly between the beginning and ending frames.

• Effects to vary the parameter settings of layer effects evenly between the beginning and ending frames.

6 If you selected a single frame in step 2, choose where to add frames from the Tween With menu:

• Next Frame to add frames between the selected frame and the following frame. This option is not available when you select the last frame in the Animation palette.

• First Frame to add frames between the last frame and first frame. This option is only available if you select the last frame in the Animation palette.

- Previous Frame to add frames between the selected frame and the preceding frame. This option is not available when you select the first frame in the Animation palette.

- Last Frame to add frames between the first frame and last frame. This option is only available if you select the first frame in the Animation palette.

7 Enter a value, or use the Up or Down Arrow key to choose the number of frames to add. (This option is not available if you selected more than two frames. In this case, the tweening operation alters the existing frames between the first and last frames in the selection.)

8 Click OK.

Specifying looping

You select a looping option to specify how many times the animation sequence repeats when played.

To specify looping:

1 Click the looping option selection box at the lower left corner of the Animation palette.

2 Select a looping option: Once, Forever, or Other.

3 If you selected Other, enter a value in the Set Loop Count dialog box, and click OK.

Specifying delay for frames

You can specify a *delay*—the time that a frame is displayed—for single frames or for multiple frames in an animation. Delay time is displayed in seconds. Fractions of a second are displayed as decimal values. For example, one-quarter second is specified as .25. If you set a delay on the current frame, every frame you create after that will remember and apply that delay value.

To specify a delay time:

1 Select one or more frames.

2 In the Animation palette, click the Delay value below the selected frame to view the Delay pop-up menu.

3 Specify the delay:

- Choose a value from the pop-up menu. (The last value used appears at the bottom of the menu.)

- Choose Other, enter a value in the Set Frame Delay dialog box, and click OK.

If you selected multiple frames, specifying a delay value for one frame applies the value to all frames.

Note: *Delay time may not be exactly accurate. Animations play differently on almost every browser or operating system. This feature is to set an approximate delay, and not meant to be exact. Browsers, however, do tend to preview a bit closer to actual delay time than ImageReady's previewing.*

Adding layers to frames

When you create a new layer, it is visible in all frames of an animation. To hide a layer in a specific frame, select the frame in the Animation palette, and then hide the desired layer in the Layers palette.

You can use the Create Layer for Each New Frame option to automatically add a new layer to the image every time you create a frame. The new layer is visible in the new frame but hidden in other frames. Using this options saves time when you are creating an animation that requires you to add a new visual element to each frame.

To add a new layer every time you create a frame:

Choose Create Layer for Each New Frame from the Animation palette menu. A check mark indicates that the option is turned on.

Setting the frame disposal method

The frame disposal method specifies whether to discard the current frame before displaying the next frame. You select a disposal method when working with animations that include background transparency in order to specify whether the current frame will be visible through the transparent areas of the next frame.

Frame disposal methods
A. Frame with background transparency with Restore to Background option
B. Frame with background transparency with Do Not Dispose option

The Disposal Method icon indicates whether the frame is set to Do Not Dispose 🐾 or Restore to Background ⛶. (No icon appears when disposal method is set to Automatic.)

To choose a disposal method:

1 Select a frame or frames for which you want to choose a disposal method.

2 Right-click (Windows) or Control-click (Mac OS) the frame thumbnail to view the Disposal Method context menu.

3 Choose a disposal method:

• Automatic to determine a disposal method for the current frame automatically, discarding the current frame if the next frame contains layer transparency. For most animations, the Automatic option yields the desired results and is, therefore, the default option.

Note: *Choose the Automatic disposal option when using the Redundant Pixel Removal optimization option, to enable ImageReady to preserve frames that include transparency.*

• Do Not Dispose to preserve the current frame as the next frame is added to the display. The current frame (and preceding frames) may show through transparent areas of the next frame. To accurately preview an animation using the Do Not Dispose option, preview the animation in a browser.

• Restore to Background to discard the current frame from the display before the next frame is displayed. Only a single frame is displayed at any time (and the current frame will not appear through the transparent areas of the next frame).

Flattening frames into layers

You can flatten animation frames into layers. A single, composite layer is created for each frame, containing all of the layers in the frame. The original layers in the frame are hidden but preserved (the original layers will be available if they are needed for another frame).

Note: *If you save an animation as a GIF, the animation frames are flattened and the original layers are lost. You should save the original file in Photoshop file format to preserve layers for reediting.*

To flatten frames into layers:

In the Animation palette, choose Flatten Frames into Layers from the palette menu.

Viewing animations

Viewing an animation lets you preview the frames in timed sequence. You can preview an animation in ImageReady or in a Web browser.

To view an animation in ImageReady:

1 Click the Play button ▶ in the Animation palette. The animation is displayed in the document window. The animation repeats indefinitely unless you specified another repeat value in the Play Options dialog box. (See "Specifying looping" on page 524.)

2 To stop the animation, click the Stop button ◼.

3 To rewind the animation, click the Selects First Frame button ◀◀.

To preview an animation in a browser:

1 Click the Preview in Default Browser button 🌐 in the toolbox or choose File > Preview In and select a browser from the submenu:

• System Default Browser opens the browser you've set as your chosen one.

• Other Browser lets you choose an application from your system.

• Edit Browser List lets you add browsers to the Other Browser list.

Note: *Once you select a browser, the Default Browser button changes to the browser icon.*

2 Use the browser's Stop and Reload commands to stop or replay the animation.

Optimizing animations

You can apply optimization settings to animated images just as you do to nonanimated images. You should always optimize an animation in GIF format because GIF is the only format in ImageReady that supports the display of animated images on the Web.

Note: *While you can optimize an image that includes animation in JPEG or PNG format, these formats do not support animation. The resulting Web page will display only the current frame of the animation.*

In addition to the standard optimization options for GIF format, you can optimize frames to include only areas that change from frame to frame. (This greatly reduces the file size of the animated GIF.) ImageReady also applies a special dithering technique to animations to ensure that dither patterns are consistent across all frames and to prevent flickering during playback. Due to these additional optimization functions, ImageReady may require more time to optimize an animated GIF than to optimize a standard GIF.

To optimize an animated image:

1 Choose Optimize Animation from the Animation palette menu.

2 Set the following options:

• Bounding Box to crop each frame to the area that has changed from the preceding frame. Animation files created using this option are smaller but are incompatible with GIF editors that do not support the option. (This option is selected by default and is recommended.)

• Redundant Pixel Removal to make transparent all pixels in a frame that are unchanged from the preceding frame. This option is selected by default and is recommended. The Transparency option in the Optimize palette must be selected for redundant pixel removal to work. (See "Optimization options for GIF and PNG-8 formats" on page 537.)

Important: *Set the frame disposal method to Automatic when using the Redundant Pixel Removal option. (See "Setting the frame disposal method" on page 525.)*

3 Click OK.

4 Apply optimization settings. (See "Optimizing images" on page 531.)

　　When optimizing the colors in an animation, use the Adaptive, Perceptual, or Selective palette. This ensures that the colors are consistent across frames. (See "Generating a color table" on page 549.)

Viewing animated images in Photoshop

When you open a file containing an animation in Photoshop, only the frame that was selected when you saved the file in ImageReady is displayed. You cannot edit the animation frames separately, play the animation, or save the animation as an animated GIF.

If you add a new layer to the file while in Photoshop, the layer is added to all frames of the animation. However, the new layer will only appear in the selected frame when you reopen the file in ImageReady. If you change the stacking order of layers while in Photoshop, the stacking order of layers will be changed when you reopen the file in ImageReady.

Saving animations

You can save an animation as an animated GIF file, a QuickTime® movie, or a SWF (Macromedia® Flash™) file. You can also save each frame in an animation as a separate file.

For information on saving animations and other ImageReady files in the SWF format, see "Saving files in SWF format (ImageReady)" on page 576.

Saving animation frames as separate files

You can export individual animation frames as separate files. Each file appears on a separate layer when imported into another program. See "Exporting animation frames as files" on page 528.

Saving animations as animated GIFs

Animations that you view in a Web browser are called *animated GIFs*. When you save an optimized document containing an animation, you can choose to generate an HTML file that contains code for displaying the animated GIF in a Web page. The resulting Web page can contain just the animated GIF or additional Web features, such as links and rollovers, depending on the source document.

To save an animation as an animated GIF:

1 Optimize the animation. (See "Optimizing animations" on page 526.)

2 Save the optimized image. (See "Saving optimized images" on page 558.)

Saving animations as QuickTime movies

You can save an animation as a QuickTime movie. The resulting file is viewable in the QuickTime player and can be opened in other applications that support QuickTime movie format.

To save an animation as a QuickTime movie:

1 Choose File > Export > Original Document.

2 Select QuickTime Movie from the format pop-up menu.

Note: *On Windows, QuickTime Movie format is only available when QuickTime is installed on your computer.*

3 Type a filename, and choose a location for the file.

4 Click Save.

5 If desired, adjust the compression settings, and click OK.

Exporting animation frames as files

You can export individual animation frames as files. You can export frames as Photoshop (PSD), GIF, JPEG, PNG 8, PNG 24, WBMP, or SWF.

ImageReady provides a number of preset formats for animation files. You can also develop your own formats and add them to the library of presets.

To export animation frames as files:

1 Choose File > Export > Animation Frames as Files.

2 In the File Options area of the dialog box, do the following:

• Enter a Base Name for new files. You may choose your own naming scheme if you wish.

• Click the Set button to set the file naming convention for new files. You can choose from a number of different conventions and postfixes.

• Click the Choose button to determine the location for saved files.

3 In the Save Options area, select the following options:

• Selected Frames Only to choose specific frames for export.

• Preview to display the current layer settings in the document. Use the forward and backward triangles to cycle through your selections.

• Apply to set the formatting preference.

4 In the Format Options area, select a format from the Preset menu. You can save sets of formats and place them in a directory that ImageReady can see; this lets you build a library of presets from which to choose. You can also use an "unnamed" Preset, and fill in the appropriate values.

5 Based on your chosen Preset, the Format item receives an automatic value, or you give it a value for "unnamed." The other options in the Format Options area are then filled in automatically to reflect the Preset/Format settings, or you can fill them in for your own unnamed Preset.

Opening and importing files as animations

You can use the animation features in ImageReady to edit animated GIFs, multilayered Photoshop files, and QuickTime movies.

Opening animated GIFs

You can open an existing animated GIF in ImageReady using the File > Open command. The file is opened as a stack of layers. Each layer corresponds to one frame. In each frame, the layer for that frame is visible, and the layers for the other frames are hidden.

Opening existing animated GIF files in ImageReady is useful primarily for applying optimization settings to the files. The one-layer-per-frame structure of imported animated GIF files may make it impractical to edit animation frames in other ways.

Opening Photoshop files as animations

You can easily create animated GIFs from existing one-layer-per-frame images in Adobe Photoshop file format or from a group of single-layer images.

You can make each layer in a multilayer Photoshop file a separate frame in the Animation palette. The layers are placed in the Animation palette in their stacking order, with the bottom layer becoming the first frame.

You can also import a folder of files and use each file as a frame in ImageReady. Files can be in any format that ImageReady supports. Each file becomes a frame in the Animation palette. The files are placed in the Animation palette in alphabetical order by image filename.

To open a multilayer Photoshop file as frames:

1 Choose File > Open, and select the Photoshop file to open.

2 Choose Make Frames From Layers from the Animation palette menu.

Each layer in the image appears as a frame in the Animation palette. The bottom layer in the Photoshop image is frame 1 in the Animation palette.

💡 Choose Reverse Frames from the Animation palette menu to reverse the order of frames.

To import a folder of files as frames:

1 Place the files to be used as frames into a folder. Make sure that the folder contains only those images that are to be used as frames. The resulting animation will display more successfully if all files are the same pixel dimensions.

To have frames appear in the correct order in the animation, name the files in alphabetical or numeric order, with the file to be used as frame 1 the first in order. (You can also change the order of the frames in the Animation palette after you import the files.)

2 Choose File > Import > Folder As Frames, and choose the folder to be imported.

The files appear in the Animation palette as frames and in the Layers palette as layers, with each layer assigned to a separate frame. The image that is first alphabetically or numerically by filename is frame 1 in the Animation palette and the bottom layer in the Layers palette.

Opening QuickTime movies as animations

You can open movies in MOV, AVI, and FLIC formats to view and edit in ImageReady.

To open QuickTime-compatible movies:

1 Choose File > Open, and select the movie to open.

2 Select the range of frames to import:

- From Beginning to End to open the full file.

- Selected Range Only to open selected frames. Drag the slider below the movie thumbnail to specify the starting point for the range, and then Shift-drag to specify the ending point. (A black bar on the slider indicates the range you select.)

3 Select Limit to Every *number* Frame to specify which frames to include from the selected range. (You can use this option with either Range option.)

4 Click Open.

Preparing Graphics for the Web

About optimization

Optimization is the process of fine-tuning the display quality and file size of an image for use on the Web or other online media. Adobe Photoshop and Adobe ImageReady give you an effective range of controls for compressing the file size of an image while optimizing its online display quality.

There are two methods of optimizing images:

- For basic optimization, the Photoshop Save As command lets you save an image as a GIF, JPEG, PNG, or WBMP file. Depending on the file format, you can specify image quality, background transparency or matting, color display, and downloading method. However, any Web features—such as slices, links, animations, and rollovers—that you've added to a file are not preserved.

For complete information on using the Save As command to save an image as a GIF, JPEG, or PNG file, see "Saving images" on page 564.

- For precise optimization, you can use the optimization features in Photoshop or ImageReady to preview optimized images in different file formats and with different file attributes. You can view multiple versions of an image simultaneously and modify optimization settings as you preview the image to select the best combination of settings for your needs. You can also specify transparency and matting, select options to control dithering, and resize the image to specified pixel dimensions or a specified percentage of the original size.

When you save an optimized file using the Save for Web (Photoshop) or Save Optimized (ImageReady) command, you can choose to generate an HTML file for the image. This file contains all the necessary information to display your image in a Web browser.

The Save for Web (Photoshop) or Save Optimized (ImageReady) commands are designed specifically to provide a more robust and intuitive set of options for saving an image file for use on the Web. This includes a refined sensitivity to file size and image color palette that is unavailable from the Save As command. When creating graphics for Web use, the Save for Web / Save Optimized commands are recommended.

Optimizing images

In Photoshop, you use the Save for Web dialog box to select optimization options and preview optimized artwork. In ImageReady, you can view and work with optimized images at any time in the document window.

Using the Save for Web dialog box (Photoshop)

You use the Save for Web dialog box to select optimization options and preview optimized artwork.
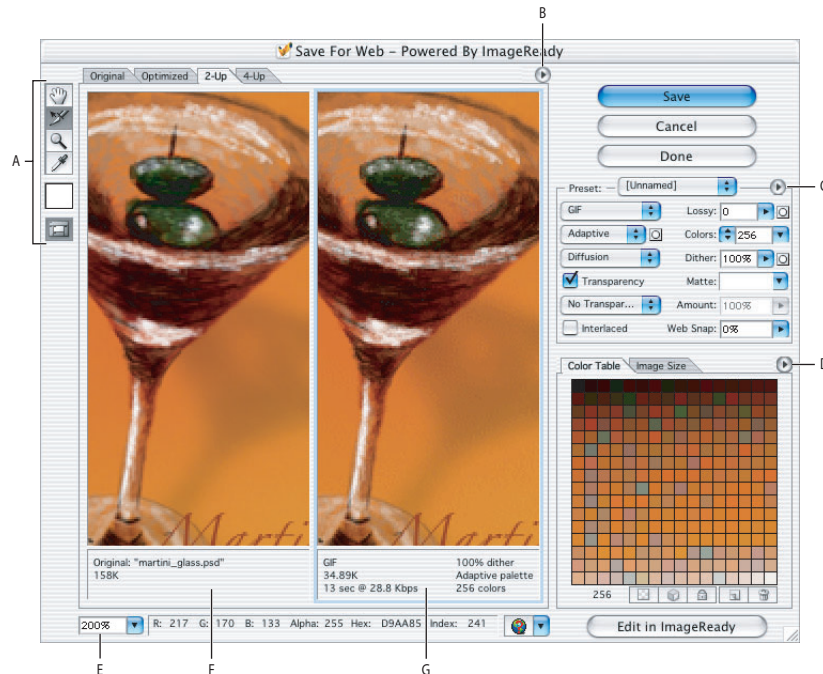
Save for Web dialog box
A. Toolbox **B.** Preview pop-up menu **C.** Optimize pop-up menu **D.** Color Table pop-up menu
E. Zoom text box **F.** Original image **G.** Optimized image

Displaying the Save for Web dialog box Choose File > Save for Web.

Previewing images Click a tab at the top of the image area to select a display option: Original to view the image with no optimization, Optimized to view the image with the current optimization settings applied, 2-Up to view two versions of the image side by side, or 4-Up to view four versions of the image side by side.

If the entire artwork is not visible in the Save for Web dialog box, you can use the Hand tool to bring another area into view. Select the Hand tool 🖐 (or hold down the spacebar), and drag in the view area to pan over the image. You can also use the Zoom tool to magnify or reduce the view. Select the Zoom tool 🔍, and click in a view to zoom in; hold down Alt (Windows) or Option (Mac OS), and click in a view to zoom out. Alternately, you can specify a magnification level in the Zoom text box/pop-up menu at the bottom of the Save for Web dialog box. You can type in a percentage or choose from one of the preset Zoom options.

Selecting a new version You can try different optimization settings in the Optimized pane or, to compare different optimizations side by side, use the 2-up or 4-up pane. If you're working in 2-Up or 4-Up view, you must select a version before you apply optimization settings. A black frame indicates which version is selected.

Viewing annotations The annotation area below each image in the Save for Web dialog box provides valuable optimization information. The annotation for the original image shows the filename and file size. The annotation for the optimized image shows the current optimization options, the size of the optimized file, and the estimated download time using the selected modem speed. You can choose a modem speed in the Preview pop-up menu.

Editing images in ImageReady To quickly transition to ImageReady for refined Web graphics preparation, click the Edit in ImageReady button at the bottom right of the dialog box.

Predicting final display in the Save for Web dialog box (Photoshop)

You can set the Save for Web dialog box to approximate color dithering and gamma in the viewer's Web browser and monitor.

Previewing browser dither If an image contains more colors than the monitor can display, the browser will *dither*, or approximate, the colors that it cannot display by blending colors that it can.

To show or hide preview of browser dither, choose Browser Dither from the Preview pop-up menu ⓥ. A check mark indicates that browser dithering is active. Activating Browser Dither will not affect final image output.

Previewing gamma shifts The default *gamma*, or the brightness of midtone values produced by a display device, varies between operating systems. A graphic that appears properly on a Mac OS system may appear much darker on a Windows OS system. (See "Adjusting color display for cross-platform variations" on page 154 and "Adjusting the gamma value of an image (ImageReady)" on page 197 for cross-platform color discussions.)

To preview the shifts in gamma within the Save For Web dialog box, choose one of the options below from the Preview pop-up menu. (A check mark indicates that option is active. Activating a preview option will not affect final image output.)

- Uncompensated Color preview makes no adjustments to image gamma. Uncompensated Color is the default setting.

- Standard Windows Color displays an adjustment based on the default Windows gamma.

- Standard Macintosh Color displays an adjustment based on the default Macintosh gamma.

- Use Document Color Profile will adjust the gamma to match any attached document color profile in a color managed document. (For more information about document color profiles, see "Embedding a profile in a document" on page 120 and "Changing the color profile of a document" on page 121.)

Working with slices in the Save for Web dialog box (Photoshop)

If your artwork contains multiple slices, you must specify the slices to be optimized. You can apply optimization settings to additional slices by linking the slices. Linked slices in GIF and PNG-8 format share a color palette and dither pattern to prevent the appearance of seams between the slices.

To show or hide all slices in the Save for Web dialog box:

Click the Toggle Slices Visibility button .

To show or hide auto slices in the Save for Web dialog box:

Choose Hide Auto Slices from the Preview pop-up menu. A check mark indicates that slices are hidden.

To select slices in the Save for Web dialog box:

1 Select the Slice Select tool .

2 Click a slice to select it. Shift-click or Shift-drag to select multiple slices.

Note: In the Save for Web dialog box, unselected slices are dimmed. This does not affect the color of the final image.

To view slice options in the Save for Web dialog box:

Select the Slice Select tool, and double-click a slice. (See "Working with image maps (ImageReady)" on page 494.)

To link slices:

1 Select two or more slices that you want to link.

2 Choose Link Slices from the Optimize pop-up menu .

The link icon appears on the linked slices.

To unlink slices:

Do one of the following:

- To unlink a slice, select the slice, and then choose Unlink Slice from the Optimize pop-up menu.
- To unlink all slices in an image, choose Unlink All Slices from the Optimize pop-up menu.

Using the Optimize palette (ImageReady)

You use the Optimize palette to select optimization options. This palette corresponds to the Optimize panel in the Photoshop Save for Web dialog box.

Displaying the Optimize palette Choose Window > Optimize. To show all the optimization options, click the Show Options control on the Optimize palette tab, or choose Show Options from the Optimize palette menu. To display one set of options, click the Show Options control for that set of options.

Using the Optimize palette menu Click the triangle in the upper right corner of the palette to display the menu.

Viewing optimized images (ImageReady)

In ImageReady, you view and work with optimized images directly in the document window. You can view up to four versions of an optimized image simultaneously, and easily switch between the optimized and original (non-optimized) versions of an image.
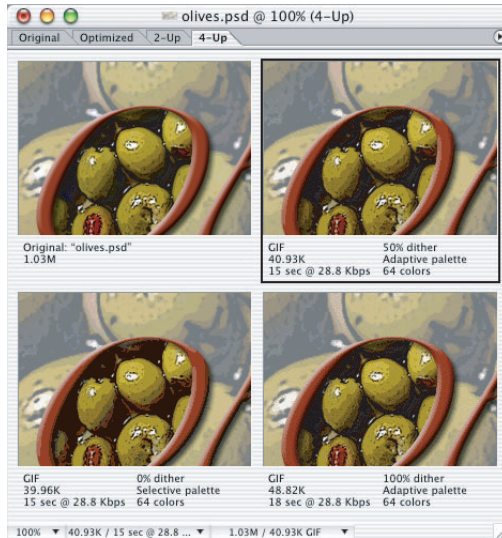
Document window in 4-Up mode

To preview optimized images:

Click a tab at the top of the document window to select a display option:

- Original to view the image with no optimization.
- Optimized to view the image with the current optimization settings applied.
- 2-Up to view two versions of the image side by side.
- 4-Up to view four versions of the image side by side.

You can switch between views by pressing Ctrl + Y (Windows) or Command + Y (Mac OS).

To select a view:

Click the view you want to select. A black frame indicates which view is selected.

Note: *If you're working in 2-Up or 4-Up view, you must select a view before you apply optimization settings.*

In 2-Up and 4-Up view, the annotation area below each view provides valuable optimization information. The annotation for the original image shows the filename and file size. The annotation for the optimized image shows the current optimization options, the size of the optimized file, and the estimated download time using the selected modem speed. You can choose a modem speed in the image information box at the bottom of the document window. (See "Displaying file and image information" on page 46.)

To hide or show optimization annotations in 2-Up and 4-Up mode:

Choose View > Hide Optimization Info or View > Show Optimization Info.

Applying optimization settings

You use the Optimize panel in the Save for Web dialog box (Photoshop) and the Optimize palette (ImageReady) to set optimization options. If you're working in 2-Up or 4-Up mode, you can repopulate the views to automatically generate lower-quality versions of the image based on the selected settings.

To apply optimization settings:

1 Select a view to which you want to apply optimization settings.

2 If your artwork contains multiple slices, select one or more slices to which you want to apply the optimization settings. (See "Working with slices in the Save for Web dialog box (Photoshop)" on page 534 and "Selecting slices" on page 478.)

3 Do one of the following:

• Choose a named optimization setting from the Preset menu. For information on creating custom named settings, see "Saving and resetting optimization settings" on page 542.

• Choose a file format from the File Format menu.

4 Set additional optimization options. The file format you chose in Step 3 determines which options are available to you.

For more information on specific optimization options, see "Optimization options for GIF and PNG-8 formats" on page 537, "Optimization options for JPEG format" on page 540, "Optimization options for PNG-24 format" on page 541, and "Optimization options for WBMP format" on page 542.

To apply optimization settings based on file size:

1 Choose Optimize to File Size from the Optimize pop-up menu (Photoshop) or the Optimize palette menu (ImageReady).

2 Choose a Start With option:

• Current Settings to use current optimization settings.

• Auto Select GIF/JPEG to automatically generate a GIF or JPEG file. (Photoshop or ImageReady selects GIF or JPEG format, depending on its analysis of colors in the image.)

3 Enter a value for file size.

4 In the Use area, choose which slices to affect: Current, Each, or Total of All Slices. Click OK.

To repopulate optimization settings:

1 Apply optimization settings to a view in 2-Up or 4-Up mode.

2 Choose Repopulate Views from the Optimize pop-up menu (Photoshop) or the Optimize palette menu (ImageReady).

The optimization settings for the selected view and the original view are not altered during repopulation.

To restore an optimized version of an image to the original version:

1 Select an optimized version of the image in 2-Up or 4-Up mode.

2 In the Optimize panel/palette, choose Original from the Settings pop-up menu.

Determining ideal image format

To determine your ideal image format, consider how your image is going to be used (for example, in Web or Print form) and what type of image it is (flat color vs. continuous tone). It's best to save images with large areas of flat color as GIF or PNG-8 images. Save other images, such as those with color gradients or other continuous tones, as JPEG or PNG-24 files.

Another consideration is where the image will be viewed. The WBMP format, for example, is specifically designed for display on mobile devices.

Optimization options for GIF and PNG-8 formats

GIF is the standard format for compressing images with flat color and crisp detail, such as line art, logos, or illustrations with type. You can lower the size of GIF images by reducing the number of colors in the file. Like the GIF format, the PNG-8 format efficiently compresses solid areas of color while preserving sharp detail; however, not all Web browsers can display PNG-8 files. PNG-8 settings are very similar to the GIF settings. (See "About file formats" on page 582.)
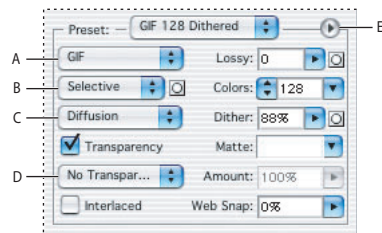
Photoshop Optimization panel for GIF format
A. File format menu **B.** Color Reduction Algorithm menu **C.** Dither Algorithm menu
D. Transparency dithering menu **E.** Optimize menu

In ImageReady, you can control which options show in the Optimize palette by clicking the Show Options control ⬍ on the Optimize palette tab. To show all options, choose Show Options from the Optimize palette menu.

Lossy (GIF only) Specify a Lossy value to allow for lossy compression. Lossy compression reduces file size by selectively discarding data—a higher Lossy setting results in more data being discarded. You can often apply a Lossy value of 5–10, and sometimes up to 50, without degrading the image. File size can often be reduced 5%–40% using the Lossy option.

You can use masks from type layers, shape layers, and alpha channels to vary lossy compression across an image. This technique produces higher-quality results in critical image areas without sacrificing file size. (See "Using weighted optimization" on page 545.)

Note: *You cannot use the Lossy option with the Interlaced option or with Noise or Pattern Dither algorithms.*

Color Reduction Algorithm and Colors Choose an algorithm for generating a color table from the Color Reduction Algorithm menu. (See "Generating a color table" on page 549.) Then specify the maximum number of colors in the Colors text box. If you choose Restrictive (Web) for the color reduction algorithm, the Auto option becomes active in the Colors pop-up menu. Use the Auto option if you want Photoshop or ImageReady to determine the number of colors in the color table based on the frequency of colors in the image. The Auto option is one of the presets available in ImageReady.

You can use masks from type layers, shape layers, and alpha channels to vary color reduction across an image. This technique produces higher-quality results in critical image areas without sacrificing file size. (See "Using weighted optimization" on page 545.)

Dithering Dithering refers to the method of simulating colors not available in the color display system of your computer. Images with primarily solid colors may work well with no dither. Images with continuous-tone color (especially color gradients) may require dithering to prevent color banding.
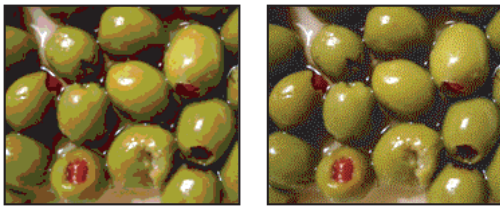
GIF image with 0% dither (left), and with 100% dither (right)

Choose a option from the Dither Algorithm menu:

*   No Dither applies no dither to the image.
*   Diffusion applies a random pattern that is usually less noticeable than Pattern dither. The dither effects are extended across adjacent pixels. If you select this algorithm, specify a Dither percentage to control the amount of dithering that is applied to the image. A higher dithering percentage creates the appearance of more colors and more detail in an image, but can also increase the file size. You can use masks from type layers, shape layers, and alpha channels to vary the Dither percentage across an image. This technique produces higher-quality results in critical image areas without sacrificing file size. (See "Using weighted optimization" on page 545.)

Note: *Diffusion dither may cause detectable seams to appear across slice boundaries. Linking slices diffuses the dither pattern across all linked slices, and eliminates the seams.*

*   Pattern applies a halftone-like square pattern to simulate any colors not in the color table.
*   Noise applies a random pattern similar to the Diffusion dither algorithm, but without diffusing the pattern across adjacent pixels. No seams appear with the Noise algorithm.

Transparency and Matte Select a combination of Transparency and Matte options to specify how transparent pixels in the image are optimized:

*   To make fully transparent pixels transparent and blend partially transparent pixels with a color, select Transparency and select a matte color.

- To make all pixels with greater than 50% transparency fully transparent and all pixels with 50% or less transparency fully opaque, select Transparency and choose None from the Matte menu.

- To fill fully transparent pixels with the selected color and blend partially transparent pixels with the same color, select a matte color and deselect Transparency.
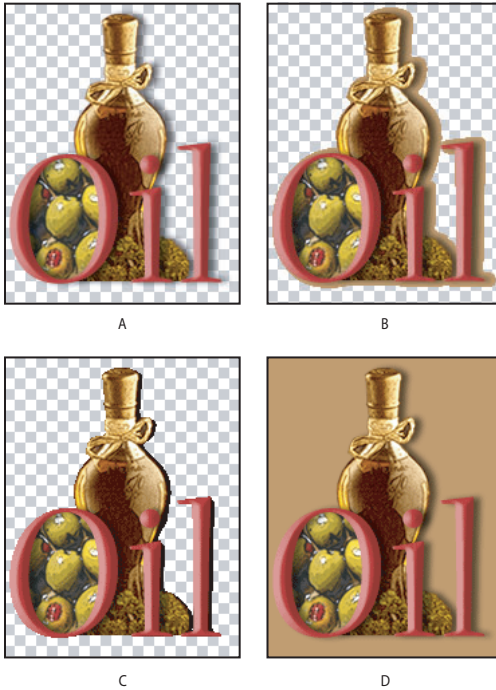
Examples of transparency and matting
A. Original image **B.** Transparency selected with a matte color **C.** Transparency selected with no matting **D.** Transparency deselected with a matte color

To select a matte color, click the Matte color swatch and select a color in the color picker. Alternately, choose an option from the Matte menu. The matte color should match the background color of the Web page.

Transparency Dithering When the Transparency option is selected, you can choose a method for dithering partially transparent pixels:

- No Transparency Dither applies no dither to partially transparent pixels in the image.

- Diffusion Transparency Dither applies a random pattern that is usually less noticeable than Pattern dither. The dither effects are diffused across adjacent pixels. If you select this algorithm, specify a Dither percentage to control the amount of dithering that is applied to the image.

- Pattern Transparency Dither applies a halftone-like square pattern to partially transparent pixels.

- Noise Transparency Dither applies a random pattern similar to the Diffusion algorithm, but without diffusing the pattern across adjacent pixels. No seams appear with the Noise algorithm.
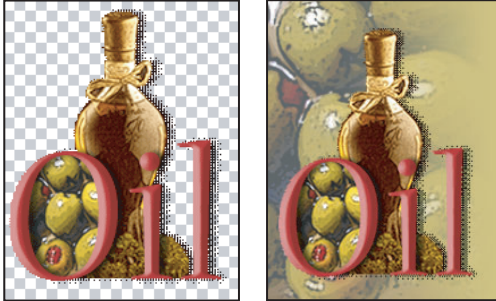
Example of Pattern Transparency dithering (left) and applied to a Web page background (right)

Interlaced Select Interlaced to download the image every other line with each pass.

Web Snap Specify a tolerance level for shifting colors to the closest Web palette equivalents (and prevent the colors from dithering in a browser). A higher value shifts more colors.

Use Unified Color Table (ImageReady) Select to use the same color table for all rollover states.

Add Metadata (ImageReady) Select to include image metadata with the image:

- Select either Add Custom ImageReady Metadata (Backward Compatible), Add EXIF Metadata (JPEG Only) or Add XMP Metadata.

- If you choose XMP, then choose an XMP Option: Write Minimal Set of XMP, Include Reference to Source File, or Write XMP to Separate Files.

Optimization options for JPEG format

JPEG is the standard format for compressing continuous-tone images such as photographs. Optimizing an image as a JPEG format relies on *lossy* compression, which selectively discards data. (See "About file formats" on page 582.)
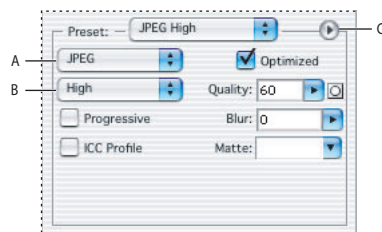
Optimization panel for JPEG format
A. File format menu **B.** Quality Level menu **C.** Optimize menu

Note: *In ImageReady, you can control which options show in the Optimize palette by clicking the Show Options control ⬍ on the Optimize palette tab. To show all options, choose Show Options from the Optimize palette menu.*

Quality Choose an option from the Quality Level menu, or specify a value in the Quality text box. The higher the Quality setting, the more detail the compression algorithm preserves. However, using a high Quality setting results in a larger file size than using a low Quality setting. View the optimized image at several quality settings to determine the best balance of quality and file size.

You can use masks from type layers, shape layers, and alpha channels to vary the quality level across an image. This technique produces higher-quality results in critical image areas without sacrificing file size. (See "Using weighted optimization" on page 545.)

Optimized Select Optimized to create an enhanced JPEG with a slightly smaller file size. The Optimized JPEG format is recommended for maximum file compression; however, some older browsers do not support this feature.

Progressive Select Progressive to create an image that displays progressively in a Web browser. The image will display as a series of overlays, enabling viewers to see a low-resolution version of the image before it downloads completely.

Note: Progressive JPEGs require more RAM for viewing, and are not supported by some browsers.

Blur Specify the amount of blur to apply to the image. This option applies an effect identical to that of the Gaussian Blur filter and allows the file to be compressed more, resulting in a smaller file size. A setting of 0.1 to 0.5 is recommended.

Preserve ICC Profile Select Preserve ICC Profile to preserve the ICC profile of the artwork with the file. ICC profiles are used by some browsers for color correction. (See "Using color management to produce consistent color" on page 117.)

Matte Specify a fill color for pixels that were transparent in the original image:

• Click the Matte color swatch and select a color in the color picker.

• Choose an option from the Matte menu.

Pixels that were fully transparent in the original image are filled with the selected color; pixels that were partially transparent in the original image are blended with the selected color.

Add Metadata (ImageReady) Select to include image metadata:

• Select either Add Custom ImageReady Metadata (Backward Compatible), Add EXIF Metadata (JPEG Only), or Add XMP Metadata.

• If you choose XMP, then choose an XMP Option: Write Minimal Set of XMP, Include Reference to Source File, or Write XMP to Separate Files.

Optimization options for PNG-24 format

PNG-24 is suitable for compressing continuous-tone images; however, it produces much larger files than JPEG format. (See "About file formats" on page 582.)

The advantage of using PNG-24 is that it can preserve up to 256 levels of transparency in an image. To save an image with multilevel transparency, select Transparency. For more information on the Interlaced, Transparency, and Matte options, see "Optimization options for GIF and PNG-8 formats" on page 537.

Optimization options for WBMP format

WBMP format is the standard format for optimizing images for mobile devices, such as cell phones. WBMP supports 1-bit color, which means that WBMP images contain only black and white pixels.

To set WBMP options:

1 In the Save For Web dialog box (Photoshop) or Optimize palette (ImageReady), choose WBMP from the Optimized File Format pop-up menu. Preset automatically turns to [Unnamed].

2 Specify the Dither Algorithm:

• No Dither applies no dithering at all and gives straight black and white pixels.

• Diffusion applies a random pattern that is usually less noticeable than Pattern dither. The dither effects are diffused across adjacent pixels. If you select this algorithm, specify a Dither percentage to control the amount of dithering that is applied to the image. You can use masks from type layers, shape layers, and alpha channels to vary the Dither percentage across an image. This technique produces higher-quality results in critical image areas without sacrificing file size. (See "Using weighted optimization" on page 545.)

Note: *Diffusion dither may cause detectable seams to appear across slice boundaries. Linking slices diffuses the dither pattern across all linked slices, and eliminates the seams.*

• Pattern applies a halftone-like square pattern to determine the value of pixels.

• Noise applies a random pattern similar to the Diffusion dithering, but without diffusing the pattern across adjacent pixels. No seams appear with the Noise algorithm.

Optimizing and saving images as SWF files (ImageReady)

In ImageReady, you can save image and animation files in the Macromedia Flash (SWF) format. Choose Export > Macromedia Flash (SWF) and set output options. See "Saving files in SWF format (ImageReady)" on page 576 for complete information on SWF exporting.

Saving and resetting optimization settings

You can save optimization settings as a named set and apply the settings to other images. Settings that you save appear in the Preset pop-up menu, together with the predefined named settings. If you edit a named set or a predefined set, the Preset menu displays the term "Unnamed."

In Photoshop, after you optimize an image, you can return to it without losing your settings. When you choose the Save for Web command again, the optimization settings are just as you left them.

To save a named set of optimization settings:

1 Set optimization options as desired, and choose Save Settings from the Optimize palette menu.

2 Name the settings, and save them in the Presets/Optimized Settings folder inside the Photoshop program folder.

Note: *If you save the settings in a location other than the Presets/Optimized Settings folder, they will not be available from the Preset pop-up menu.*

To edit a named set of optimization settings:

1 Choose the named set from the Preset pop-up menu.

2 Edit the optimization settings as desired. The Preset menu will display the term "Unnamed," since the settings no longer match a named set.

3 Choose Save Settings from the Optimize pop-up menu (Photoshop) or the Optimize palette menu (ImageReady), and save the settings with the name of the original set.

To delete optimization settings:

1 Choose a named set or predefined set of optimization settings from the Preset pop-up menu.

2 Choose Delete Settings from the Settings panel menu.

Note: You cannot restore deleted settings, so use the Delete Settings command with care.

To save the current optimization setting (Photoshop):

Do one of the following:

- To save the settings and close the Save for Web dialog box, click Done.

- To save the settings without closing the Save for Web dialog box, press Alt (Windows) or Option (Mac OS), and click Remember.

To reset optimization settings to the last saved version (Photoshop):

Press Alt (Windows) or Option (Mac OS), and click Reset.

Resizing the image during optimization (Photoshop)

When optimizing an image in the Photoshop Save For Web dialog box, you can resize the image to specified pixel dimensions or to a percentage of the original size.

To change the pixel dimensions of an image during optimization:

1 Click the Image Size tab in the Save For Web dialog box.

2 To maintain the current proportions of pixel width to pixel height, select Constrain Proportions.

3 Enter values for Width, Height, or Percent.

4 Choose an interpolation method from the Quality pop-up menu:

- Nearest Neighbor for the faster, but less precise, method. This method is recommended for use with illustrations containing non-anti-aliased edges, to preserve hard edges and produce a smaller file.

- Bilinear

- Bicubic for the slower, but more precise, method, resulting in smoother tonal gradations.

- Bicubic Smoother

- Bicubic Sharper

For more information on interpolation, see "About resampling" on page 66.

5 Click Apply.

Controlling optimization (ImageReady)

By default, Photoshop and ImageReady automatically regenerate the optimized image when you click the Optimized, 2-Up, or 4-Up tab at the top of the document (if you have modified the image since the last optimization), when you change optimization settings with the optimized image displayed, or when you edit the original image.

In ImageReady, you can turn off auto-regeneration so that the last version of the optimized image remains in the image window until you manually reoptimize the image or reactivate auto-regeneration. This feature is useful if you want to edit the image without pausing for reoptimization with each modification. You can also cancel optimization while it's in progress, and preserve the previous image.

When auto-regeneration is turned off, the Regenerate button ⚠ appears in the lower-right corner of each optimized image view. A regeneration alert symbol also appears in the Color Table palette if the optimized image is in GIF or PNG-8 format, indicating that the color table is out of date.

To turn Auto Regenerate on or off:

In the Optimize palette, choose Auto Regenerate from the palette menu. A check mark indicates that the option is turned on.

To manually optimize an image:

Choose a method for optimizing:

- Click the Regenerate button ⚠ in the lower right corner of the optimized image (if it appears).

- Choose Regenerate from the Optimize palette menu.

Note: *Manually optimizing an image does not turn auto-regeneration on.*

To cancel optimization:

Click the Stop button next to the progress bar at the bottom of the image window.

Setting optimization preferences (ImageReady)

You can set preferences in ImageReady to determine the default optimization settings and the default configuration of panels in 2-Up and 4-Up views.

To set optimization preferences:

1 Do one of the following:

- In Windows, choose Edit > Preferences > Optimization.

- In Mac OS, choose ImageReady > Preferences > Optimization.

2 Choose an option in the Default Optimization section:

- Previous Settings to automatically apply the last used optimization settings.

- Auto Selected GIF or JPEG to automatically optimize the image as a GIF or JPEG. ImageReady selects GIF or JPEG based on an analysis of the image.

- Named Setting and select an option from the Named Settings pop-up menu to apply that setting.

3 Under 2-Up Settings or 4-Up Settings, specify settings for the 1st, 2nd, 3rd, and 4th panes (3rd and 4th panes apply to 4-Up view only):

• Original to display the original image in the specified pane. (This option is available for the first pane only.)

• Current to display the image with current Optimize palette settings in the specified pane. (This option is available for all panes.)

• Auto to display a smaller optimized version of the image generated automatically by ImageReady, based on the current Optimize palette settings. (This option is available for the second, third, and fourth panes.)

• Select one of the named settings to display the optimized image with those settings. (This option is available for the second, third, and fourth panes.)

4 Click OK.

Using weighted optimization

Weighted optimization lets you smoothly vary optimization settings across an image using masks from text layers, shape layers, and alpha channels. This technique produces higher-quality results in critical image areas without sacrificing file size. With weighted optimization, you can produce gradual variations in GIF, PNG-8, and WBMP dithering, lossy GIF settings, and JPEG compression. Weighted optimization also lets you favor colors in selected image areas when you generate a color table.

Image without weighted optimization (left), and with weighted optimization on text layers and vector shapes (right)

About masks and weighted optimization

Photoshop and ImageReady automatically generate masks when you create a type layer or a shape layer. You can also manually create masks and store them in alpha channels. When you use a mask to apply optimization settings, the white areas of the mask describe the highest level of image quality, while the black areas for the mask describe the lowest level of image quality. (The level of optimization in gray areas of the mask decreases by a linear scale.)

Weighted optimization is available for specific settings in the Optimize panel/palette, as indicated by the Mask button ▣. To access the weighted optimization dialog box, simply click the mask button.

Note: *For the Lossy setting, a higher number actually means greater compression, as opposed to greater quality (as in most other settings).*

To create masks for use during optimization:

Do one or more of the following:

- Create a type layer. (See "Creating type" on page 438.)

- Create a shape layer. (See "Creating shapes" on page 291.)

- (Photoshop) Save a selection as a mask, or create a new alpha channel and use the painting and editing tools to modify it. (See "Storing masks in alpha channels" on page 254.)

- (ImageReady) Use a selection tool to select an area of the image. (See "About selections" on page 229.) Either save the selection using the Select > Save Selection command, or choose the Save Selection command from the Channel pop-up menu in the weighted optimization dialog box.

Using masks to modify JPEG quality

When you use masks to optimize the range of quality in a JPEG image, white areas of the masks yield the highest quality, and black areas of the masks yield the lowest quality. You can adjust the maximum and minimum level of quality in the Modify Quality Setting dialog box.

To use masks to modify JPEG quality:

1 In the Optimize panel/palette, choose a JPEG setting from the Preset menu, or choose JPEG from the file format menu.

2 Click the Mask button ◉ to the right of the Quality text box.

3 Choose which masks to use:

- All Text Layers to use the masks from all text layers in the image.

- All Vector Shape Layers to use the masks from all shape layers in the image.

- Channel to choose an alpha channel from the menu. In ImageReady, you can choose Save Selection to create a new alpha channel based on the current selection.

4 To preview the results of the weighted optimization, select the Preview option.

5 Define the quality range:

- To set the highest level of quality, drag the right (white) tab on the slider, enter a value in the Maximum text box, or use the arrows to change the current value.

- To set the lowest level of quality, drag the left (black) tab on the slider, enter a value in the Minimum text box, or use the arrows to change the current value.

6 Click OK.

Using masks to modify GIF lossiness

When you use masks to optimize the amount of lossiness (or quality reduction) in a GIF image, white areas of the masks yield the highest quality, and black areas of the masks yield the lowest quality. You can adjust the maximum and minimum level of quality reduction in the Modify Lossiness Setting dialog box.

To use masks to modify GIF lossiness:

1 In the Optimize panel/palette, choose a GIF setting from the Preset menu, or choose GIF from the file format menu.

2 Click the Mask button ▣ to the right of the Lossy text box.

3 Choose which masks to use:

• All Text Layers to use the masks from all text layers in the image.

• All Vector Shape Layers to use the masks from all shape layers in the image.

• Channel to choose an alpha channel from the menu. In ImageReady, you can choose Save Selection to create a new alpha channel based on the current selection.

4 To preview the results of the weighted optimization, select the Preview option.

5 Define the quality range:

• To set the highest level of quality, drag the left (white) tab on the slider, enter a value in the Minimum text box, or use the arrows to change the current value.

• To set the lowest level of quality, drag the right (black) tab on the slider, enter a value in the Maximum text box, or use the arrows to change the current value.

Note: Lossiness is a reduction in quality; therefore, the highest level of image quality is defined by the Minimum value, and the lowest level of image quality is defined by the Maximum value. This is the opposite of the JPEG quality setting.

6 Click OK.

Using masks to modify dithering

When you use masks to optimize the amount of dithering in a GIF, PNG-8, or WBMP image, white areas of the masks yield the most dithering, and black areas of the masks yield the least dithering. You can adjust the maximum and minimum levels of dithering in the Modify Quality Setting dialog box.

To use masks to modify dithering:

1 In the Optimize panel/palette, choose a GIF or PNG-8 setting from the Preset menu, or choose GIF or PNG-8 from the file format menu.

2 Click the Mask button ▣ to the right of the Dither text box.

3 Choose which masks to use:

• All Text Layers to use the masks from all text layers in the image.

• All Vector Shape Layers to use the masks from all shape layers in the image.

• Channel to choose an alpha from the menu. In ImageReady, you can choose Save Selection to create a new alpha channel based on the current selection.

4 To preview the results of the weighted optimization, select the Preview option.

5 Define the dithering range:

• To set the highest percentage of dithering, drag the right (white) tab on the slider, enter a value in the Maximum text box, or use the arrows to change the current percentage.

• To set the lowest percentage of dithering, drag the left (black) tab on the slider, enter a value in the Minimum text box, or use the arrows to change the current percentage.

6 Click OK.

Using masks to modify color reduction

When you use mask to optimize the colors in a GIF or PNG-8 image, the white areas of the masks indicate to the color reduction algorithm which pixels are highly important, whereas black areas of the masks indicate which pixels are less important.

To use masks to modify color reduction:

1 In the Optimize panel/palette, choose a GIF or PNG-8 setting from the Preset menu, or choose GIF or PNG-8 from the file format menu.

2 Choose a color reduction algorithm and specify the maximum number of colors.

3 Click the Mask button ◎ to the right of the Color Reduction Algorithm pop-up menu.

4 Choose which masks to use:

• All Text Layers to use the masks from all text layers in the image.

• All Vector Shape Layers to use the masks from all shape layers in the image.

• Channel to choose an alpha channel from the menu. In ImageReady, you can choose Save Selection to create a new alpha channel based on the current selection.

5 To preview the results of the weighted optimization, select the Preview option.

6 Click OK.

Optimizing colors in GIF and PNG-8 images

Decreasing the number of colors in an image is a key factor in optimizing GIF and PNG-8 images. A reduced range of colors will often preserve good image quality while dramatically reducing the file space required to store extra colors.

The color table gives you precise control over the colors in optimized GIF and PNG-8 images (as well as original images in indexed color mode). With a maximum of 256 colors, you can add and delete colors in the color table, shift selected colors to other colors or to transparency, and lock selected colors to prevent them from being dropped from the palette.

Viewing a color table

The color table for a slice appears in the Color Table panel in the Save for Web dialog box (Photoshop) or the Color Table palette (ImageReady).

Note: In ImageReady, be careful not to confuse the Color Table palette with the Color palette or Swatches palette. You use the Color Table palette to optimize colors; you use the Color palette and Swatches palette to select colors.

To view the color table for an optimized slice:

1 (ImageReady) Choose Window > Color Table.

2 Select a slice that is optimized in GIF or PNG-8 format. (See "Selecting slices" on page 478.) The color table for the selected slice appears in the Color Table palette.

Note: In ImageReady, the color table for the selected slice will not appear if Auto Regenerate is off. For more information, see "Controlling optimization (ImageReady)" on page 544.

If an image has multiple slices, the colors in the color table may vary between slices (you can link the slices first to prevent this from happening). If you select multiple slices that use different color tables, the color table is empty and its status bar displays the message "Mixed."

Generating a color table

You can change the palette—or set of colors—in the color table by selecting a color reduction option in the Optimize palette. There are three categories of options:

- Dynamic options use a color reduction algorithm to build a palette based on the colors in the image and the number of colors specified in the optimization setting. The colors in the palette are regenerated every time you change or reoptimize the image. Perceptual, Selective, and Adaptive are dynamic options.

- Fixed options use a set palette of colors. In other words, the set of available colors is constant, but the actual colors in the palette will vary depending on the colors in the image. Web, Mac OS, Windows, Black & White, and Grayscale tables are fixed options.

- The Custom option uses a color palette that is created or modified by the user. If you open an existing GIF or PNG-8 file, it will have a custom color palette.

To select a color reduction algorithm:

Choose an option from the Color Reduction Algorithm pop-up menu (below the file format menu in the Optimize panel/palette):

Perceptual Creates a custom color table by giving priority to colors for which the human eye has greater sensitivity.

Selective Creates a color table similar to the Perceptual color table, but favoring broad areas of color and the preservation of Web colors. This color table usually produces images with the greatest color integrity. Selective is the default option.

Adaptive Creates a custom color table by sampling colors from the spectrum appearing most commonly in the image. For example, an image with only the colors green and blue produces a color table made primarily of greens and blues. Most images concentrate colors in particular areas of the spectrum.

Restrictive (Web) Uses the standard 216-color table common to the Windows and Mac OS 8-bit (256-color) palettes. This option ensures that no browser dither is applied to colors when the image is displayed using 8-bit color. (This palette is also called the Web-safe palette.) If your image has fewer colors than the total number specified in the color palette, unused colors are removed.

Using the Web palette can create larger files and is recommended only when avoiding browser dither is a high priority.

Custom Preserves the current color table as a fixed palette that does not update with changes to the image.

Black and White Creates a color table with only black and white pixels.

Grayscale Creates a color table with only grayscale pixels.

Mac OS Uses the Mac OS system's default 8-bit (256-color) color table, which is based on a uniform sampling of RGB colors. If your image has fewer colors than the total number specified in the color palette, unused colors are removed.

Windows Uses the Windows system's default 8-bit (256-color) color table, which is based on a uniform sampling of RGB colors. If your image has fewer colors than the total number specified in the color palette, unused colors are removed.

Other color tables appear in the menu if you have saved them previously. (See "Loading and saving color tables" on page 555.)

💡 You can use an alpha channel to influence the generation of color tables. (See "Using masks to modify color reduction" on page 548.)

To regenerate a color table (ImageReady):

Choose Rebuild Color Table from the Color Table palette menu. Use this command to generate a new color table when the Auto Regenerate option is off. (See "Controlling optimization (ImageReady)" on page 544.)

Changing the display of the color table

You can sort colors in the color table by hue, luminance, or popularity, making it easier to see an image's color range and locate particular colors. In ImageReady, you can also change the size of the color swatches in the color table.

To sort a color table:

Choose a sorting order from the Color Table palette menu:

- Unsorted restores the original sorting order.

- Sort By Hue or by the location of the color on the standard color wheel (expressed as a degree between 0 to 360). Neutral colors are assigned a hue of 0 and located with the reds.

- Sort By Luminance or by the lightness or brightness of a color.

- Sort By Popularity or by the colors' frequency of occurrence in the image.

To change the size of the color swatches (ImageReady):

Choose Small Swatches or Large Swatches from the Color Table palette menu.

Adding new colors to the color table

You can add colors that were left out in building the color table. Adding a color to a dynamic table shifts the color in the palette closest to the new color. Adding a color to a fixed or Custom table adds an additional color to the palette. (See "Generating a color table" on page 549.)

To add a new color:

1 Deselect all colors in the color table (see "Selecting colors" on page 551).

2 Choose a color by doing one of the following:

- Click the color selection box in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady), and choose a color from the color picker.

- Select the Eyedropper tool 🖋 in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady) and click in the image.

- Select the Eyedropper tool 🖋, click in the image, hold the mouse down, and drag anywhere on the desktop. You can use this option to select a color displayed in another application, such as a color in a Web page displayed in a browser.

- (ImageReady) Select a color from the Color palette or the Swatches palette.

3 Do one of the following:

- Click the New Color button ⬜ in the Color Table palette.

- Select New Color from the Color Table palette menu.

- (ImageReady) Drag the color from the color selection box, Color palette, or Swatches palette to the Color Table palette.

💡 To switch the color table to a Custom palette, hold down Ctrl (Windows) or Command (Mac OS) when you add the new color.

The new color appears in the color table with a small white square in the lower right corner, indicating that the color is locked. (See "Locking colors in the color table" on page 554.) If the color table is dynamic, the original color is displayed in the upper left and the new color is displayed in the lower right.

Including black and white in a color table

You can add black and white to the color table when the image does not include these colors. Including black and white is useful when preparing files for multimedia authoring applications, such as Adobe After Effects.

To add black or white to the color table for an image:

1 Choose black or white as the foreground color. (See "Choosing foreground and background colors" on page 351.)

2 Add the color to the color table. (See "Adding new colors to the color table" on page 550.)

Selecting colors

You select colors directly in the optimized image or in the color table. In ImageReady, you can select a color from another application, such as a Web page displayed in a browser.

To select a color from the optimized image:

1 Select the Eyedropper tool 🖊 in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady).

2 Click a color in the image. A white border ⬛ appears around that color in the color table. Shift-click to select additional colors.

To select a color from another application (ImageReady):

(ImageReady) Select the Eyedropper tool, click in the image, hold the mouse down, and drag anywhere on the desktop. You can use this option to select a color displayed in another application, such as a color in a Web page displayed in a browser.

To select a color directly in the color table:

Click the color in the Color Table palette.

To select a contiguous group of colors, press Shift and click another color. All colors in the rows between the first and second selected colors are selected.

To select a discontiguous group of colors, press Ctrl (Windows) or Command (Mac OS) and click each color that you want to select.

To select colors based on a selection in the image (ImageReady):

1　Make a selection in the image using the selection tools or the Select menu commands.

2　Choose Select All From Selection from the Color Table palette menu.

To select all colors:

Choose Select All Colors from the Color Table palette menu.

To select all Web-safe colors:

Choose Select All Web Safe Colors from the Color Table palette menu.

To select all non-Web-safe colors:

Choose Select All Non-Web Safe Colors from the Color Table palette menu.

To view selected colors in an image (ImageReady):

Select the optimized image. Then click and hold a selected color in the Color Table palette to temporarily invert the color in the optimized image, enabling you to see which areas of the image contain the color.

To view a contiguous group of colors, press Shift and click and hold another color. All colors in the rows between the first and second selected colors are inverted.

To view a discontiguous group of colors, press Ctrl (Windows) or Command (Mac OS) and click each color that you want to select, and hold the mouse button down on any color in the group.

To deselect all colors:

Choose Deselect All Colors from the Color Table palette menu.

Shifting colors

You can change a selected color in the color table to any other RGB color value. When you regenerate the optimized image, the selected color changes to the new color wherever it appears in the image.

To shift a color:

1　Double-click the color in the color table to display the default color picker.

2　Select a color.

The original color appears at the upper left of the color swatch and the new color at the lower right. The small square at the lower right of the color swatch indicates that the color is locked. If you shift to a Web-safe color, a small white diamond appears at the center of the swatch.

To revert shifted colors to their original colors:

Do one of the following:

- Double-click the swatch for the shifted color. The original color is selected in the color picker. Click OK to restore the color.

- To revert all shifted colors in a color table (including Web-shifted colors), choose Unshift All Colors from the Color Table palette menu.

Shifting to Web-safe colors

To protect colors from dithering in a browser, you can shift the colors to their closest equivalents in the Web palette. This ensures that the colors won't dither when displayed in browsers on either Windows or Macintosh operating systems capable of displaying only 256 colors.

To shift colors to the closest Web palette equivalent:

1 Select one or more colors in the optimized image or color table. (See "Selecting colors" on page 551.)

2 Do one of the following:

• Click the Web Shift button ⬡ in the Color Table palette.

• Choose Shift Selected Colors to Web Palette from the Color Table palette menu.

The original color appears at the upper left of the color swatch and the new color at the lower right. The small white diamond ◈ in the center of the color swatch indicates that the color is Web-safe; the small square at the lower right of the color swatch indicates that the color is locked.

To revert Web-shifted colors to their original colors:

Do one of the following:

• Select a Web-shifted color in the color table and click the Web Shift button ⬡ in the Color Table palette.

• To revert all Web-shifted colors in the color table, choose Unshift All Web Shifted Colors from the Color Table palette menu.

To specify tolerance for shifting colors automatically to the closest Web palette equivalents:

In the Optimize panel/palette, enter a value for Web Snap or drag the pop-up slider. A higher value shifts more colors.

(In ImageReady, click the Show Options control ⬍ on the Optimize palette tab or choose Show Options from the Preset pop-up menu in the Optimize palette to view the Web Snap option.)

Mapping colors to transparency

You can add transparency to an optimized image by mapping existing colors to transparency.

To map colors to transparency:

1 Select one or more colors in the optimized image or color table. (See "Selecting colors" on page 551.)

2 Do one of the following:

• Click the Map Transparency button ⬚ in the Color Table palette.

• Choose Map Selected Colors to Transparent from the Color Table palette menu.

The transparency grid ◩ appears in half of each mapped color. The small square at the lower right of the color swatch indicates that the color is locked.

To revert transparency to its original colors:

Do one of the following:

- Select the colors you want to revert and click the Map Transparency button ⊠ or choose Unmap Selected Colors from Transparent from the Color Table palette menu.

- To revert all transparency-mapped colors, choose Unmap All Transparent Colors.

Locking colors in the color table

You can lock selected colors in the color table to prevent them from being dropped when the number of colors is reduced and to prevent them from dithering in the application.

Note: *Locking colors does not prevent them from dithering in a browser.*

To lock a color:

1 Select one or more colors in the color table. (See "Selecting colors" on page 551.)

2 Lock the color by doing one of the following:

- Click the Lock button 🔒.

- Choose Lock/Unlock Selected Colors from the Color Table palette menu.

A white square ◳ appears in the lower right corner of each locked color.

Note: *If the selected colors include both locked and unlocked colors, all colors will be locked.*

To unlock a color:

1 Click the locked color to select it.

2 Unlock the color by doing one of the following:

- Click the Lock button 🔒.

- Choose Lock/Unlock Selected Colors from the Color Table palette menu.

The white square disappears from the color swatch.

Deleting colors from the color table

You can delete selected colors from the color table to decrease the image file size. When you delete a color, areas of the optimized image that previously included that color are rerendered using the closest color remaining in the palette.

When you delete a color, the color table automatically changes to a Custom palette. This is because the Adaptive, Perceptual, and Selective palettes automatically add the deleted color back into the palette when you reoptimize the image—the Custom palette does not change when you reoptimize the image.

To delete selected colors:

1 Select one or more colors in the color table. (See "Selecting colors" on page 551.)

2 Delete the color by doing one of the following:

- Click on the Trash button 🗑.

- Choose Delete Color from the Color Table palette menu.

Loading and saving color tables

You can save color tables from optimized images to use with other images and to load color tables created in other applications. Once you load a new color table into an image, the colors in the optimized image are changed to reflect the colors in the new color table.

To save a color table:

1 Select Save Color Table from the Color Table palette menu.

2 Name the color table and choose a location where it will be saved. By default, the color table file is given the extension .act (for Adobe Color Table).

If you want to access the color table when selecting Optimization options for a GIF or PNG image, save the color table in the Presets/Optimized Colors folder inside the Photoshop program folder.

3 Click Save.

Important: *When you reload the table, all shifted colors will appear as full swatches and will be unlocked.*

To load a color table:

1 Select Load Color Table from the Color Table palette menu.

2 Navigate to a file containing the color table you want to load—either an Adobe Color Table (.act) file, an Adobe Color Swatch (.aco) file, or a GIF file (to load the file's embedded color table).

3 Click Open.

Using master palettes (ImageReady)

You can create a master palette to use with a group of GIF or PNG-8 images that will be placed on a CD-ROM or other multimedia storage medium. When you include the master palette with a batch of images, all images display using the same colors.

To build a master palette, add colors from a set of images and then build and save the master palette. To create a master palette for a batch of images, add colors to the palette from other optimized images.

To create and apply a master palette:

1 With an image displayed, choose Image > Master Palette > Clear Master Palette (if available). Clearing the master palette ensures that colors from previous images are not included in the new palette.

2 Open an image whose colors you want to include in a master palette.

3 Choose Image > Master Palette > Add To Master Palette. All color information for the current image is added to the master palette.

4 Repeat steps 2 and 3 for all images whose colors you want to include in the master palette.

5 In the Optimize palette, select optimization settings for the master palette.

6 Choose Image > Master Palette > Build Master Palette to create a new color table from the color information of images used in steps 2, 3, and 4.

7 Choose Image > Master Palette > Save Master Palette.

8 Name the master palette and choose a location where it will be saved. By default, the master palette file is given the extension .act (for Adobe Color Table).

If you want to access the color table when selecting Optimization options for a GIF or PNG image, save the master palette in the Optimized Colors folder, inside the Presets folder in the Adobe Photoshop folder.

9 Click Save.

10 To apply the master palette to the image or images for which it was created, open the image or images and select the master palette:

*   If the master palette appears in the Color Reduction Algorithm menu in the Optimize palette, select the master palette from this menu. (The Color Reduction Algorithm menu includes all palettes saved in the Optimized Colors folder, inside the Presets folder in the Adobe Photoshop folder.)

*   Load the master palette. (See "Loading and saving color tables" on page 555.)

Working with hexadecimal values for color

You can view colors as hexadecimal values in the Info palette. In addition, you can copy colors as hexadecimal values to the Clipboard and paste them into an HTML document.

Viewing hexadecimal values for colors in the Info palette

In Photoshop, hexadecimal values for colors are displayed in the Info palette when you select Web Color Mode for one or both color readouts. In ImageReady, hexadecimal values for colors are displayed automatically in the right side of the Info palette, next to RGB color values. The Photoshop and ImageReady Info palettes also display other information, depending on the tool being used.

To view hexadecimal color values in the Info palette:

1 Choose Window > Info or click the Info palette tab to view the palette.

2 (Photoshop) Choose Palette Options from the palette menu. Under First Color Readout or Second Color Readout, choose Web Color from the Mode menu and click OK.

3 Position the pointer over the color you want to view hexadecimal values for.

Copying colors as hexadecimal values

You can copy colors as hexadecimal values from files in Photoshop or ImageReady, using the context menu with the Eyedropper tool, or using menu commands. In Photoshop, you copy a color as a hexadecimal value while in the main work area (not the Save for Web dialog box).

To copy a color as a hexadecimal value using the Eyedropper tool:

1 Select the Eyedropper tool 🖉 in the toolbox.

2 Select a color to copy:

*   Right-click (Windows) or Control-click (Mac OS) a color in the image to select the color and view the Eyedropper tool context menu.

*   (ImageReady) Click the color in the image that you want to copy. The color you click becomes the foreground color. With the Eyedropper tool still over the image, right-click (Windows) or Control-click (Mac OS) to view the Eyedropper tool context menu.

3 Choose Copy Color as HTML (Photoshop) or Copy Foreground Color as HTML (ImageReady) from the Eyedropper tool context menu.

The selected color is copied to the Clipboard as the HTML COLOR attribute with the hexadecimal value (COLOR=#XXYYZZ). To paste the color into an HTML file, choose Edit > Paste with the HTML file displayed in your HTML editing application.

To copy a color as a hexadecimal value using menu commands:

1 Select a color to copy.

2 Copy the color by doing one of the following:

• Choose Copy Color As HTML from the Color palette menu.

• (ImageReady) Choose Edit > Copy Foreground Color as HTML.

The foreground color is copied to the Clipboard as the HTML COLOR attribute with the hexadecimal value (COLOR=#XXYYZZ). To paste the color into an HTML file, open a destination application and choose Copy > Paste with the HTML file displayed.

To copy a color as a hexadecimal value by dragging (ImageReady):

Drag the Foreground Color from the toolbox, or a selected color from the Color Table palette or the Swatches palette, into the HTML file in the destination application.

Note: *This feature is not supported by all text and HTML editing applications.*

Using a droplet to automate optimization settings (ImageReady)

You can save Optimize palette settings for use on individual images or batches of images by creating a *droplet*, a small application that applies the optimization settings to an image or batch of images that you drag over the droplet icon. You can drag a droplet to the desktop or save it to a location on disk. When you create the droplet, you can choose where the images will be saved. When you drag an image over it, the droplet launches ImageReady if the program is not currently running.

Note: *You can also drag a droplet onto the ImageReady Actions palette to create an action step. Or you can drag a droplet from the Optimize palette onto a slice to apply the optimization settings to the slice. You cannot, however, drag a droplet from the desktop onto a slice.*

To create a droplet for automating Optimize palette settings:

1 With an image displayed in the image window, choose a compression format and compression options in the Optimize palette.

2 Create a droplet by doing one of the following:

• Drag the droplet icon ⬇ from the Optimize palette onto the desktop.

The droplet is named with a brief description of the compression settings, including file format and color palette, or quality setting information. You can rename the droplet as you do other desktop icons.

- Click the droplet icon on the Optimize palette. Name the droplet, choose a location where the droplet will be saved, and click Save.

- Choose Create Droplet from the Optimize palette menu. Name the droplet, choose a location where the droplet will be saved, and click Save.

To use a droplet:

1 Drag a single image or a folder of images onto the droplet icon.

As the images are processed, a progress bar appears.

2 Do any of the following to control the processing:

- To temporarily pause the processing, click Pause. You can then click Resume to continue the processing.

- To cancel the processing, click Stop.

- Let the process finish on its own.

For more information on working with droplets, see "Using droplets" on page 644.

Saving optimized images

When you've applied a combination of settings that achieve a balance between quality and file size, you're ready to save the optimized image.

To save an optimized image:

1 Select the view with the desired optimization settings, and do one of the following:

- (Photoshop) Click Save in the Save For Web dialog box.

- (ImageReady) Choose File > Save Optimized to save the file in its current state. If you previously saved the optimized file using the File > Save Optimized command, applying the command again saves the file with the filename and Save options specified in the first save operation. The Save dialog box does not appear.

- (ImageReady) Choose File > Save Optimized As to save an alternate version of the file with a different filename.

2 Type a filename, and choose a location for the resulting file or files.

3 Choose a Format option:

- HTML and Images to generate all files required to use your artwork as a Web page. This includes an HTML file and separate image files for the slices in the artwork. The HTML file includes code for any links, image maps, and other effects in the document.

- Images Only to save your artwork with the specified optimization settings. If the artwork contains multiple slices, each slice is saved as a separate file.

- HTML Only to generate an HTML file but not save any image files.

4 To set preferences for saving image files and HTML files, choose predefined output options from the Settings pop-up menu, or choose Other to set different options. (See "Setting output options" on page 559.)

5 Choose an option for slices from the pop-up menu:

- All Slices to save all slices in the image.

- Selected Slices to save only the selected slices. If you select this option in conjunction with the HTML and Images option, ImageReady or Photoshop generates the HTML code based on the outermost bounds of the selected slices, and generates auto-slices as needed to create a complete HTML table.

- All User Slices to save only the slices that are user slices.

Note: *You must select the desired slices before starting this procedure.*

- (ImageReady) A slice selection to save only the slices in the selection. You must save a slice selection in order for this option to appear in the menu. (See "Selecting slices" on page 478.)

6 Click Save.

Setting output options

When you save an optimized image as a Web page, you can specify how HTML files are formatted, how slices are named, how files are named, and how background images are handled. You set these options in the Output Settings dialog box.

Using the Output Settings dialog box

The Output Settings dialog box displays different sets of options. In ImageReady, you can save your output settings and apply them to other files.

Displaying the Output Settings dialog box Do one of the following:

- When you save an optimized image, choose Other from the Settings pop-up menu in the Save Optimized or Save Optimized As dialog box. The Save and Load options are not available when you use this method to access the Output Settings dialog box.

- (ImageReady) Choose the desired preferences set from the File > Output Settings submenu or from the document window menu. Use this method if you want to load and save settings.

- (Photoshop) Choose Edit Output Settings from the Optimize pop-up menu in the Save For Web dialog box. Use this method if you want to load and save settings.

Displaying predefined output options Choose an option from the Preset pop-up menu.

Switching to a different set of options Choose an options set from the pop-up menu below the Preset menu. Alternately, click Next to display the next set in the menu list; click Prev to display the previous set.

Saving output settings Set the options as desired, and click Save. Type a filename, choose a location for the saved file, and click Save.

You can save the output settings anywhere. However, if you place the file in the Presets/Optimized Output Settings folder inside the Photoshop program folder, the file will appear in the Settings pop-up menu in both Photoshop and ImageReady.

Loading output settings Click Load, select a file, and click Open.

Setting HTML output options

You can set the following options in the HTML set:

Output XHTML　Creates tags meeting the XHTML standard on export. Choosing Output XHTML will make other output options that might conflict with this standard unavailable. Selecting this option will automatically set the Tags Case and Attribute Case options.

Tags Case　Specifies the capitalization for tags.

Attribute Case　Specifies the capitalization for attributes.

Indent　Specifies a method for indenting lines of code: using the authoring application's tab settings, using a specified number of spaces, or using no indentation.

Line Endings　Specifies a platform for line ending compatibility.

Encoding　Specifies a default character encoding for the Web page.

Include Comments　Adds explanatory comments to the HTML code. In ImageReady, this option is required when you plan to update the resulting file using the File > Update HTML command.

Always Add Alt Attribute　Adds the ALT attribute to IMG elements to comply with government Web accessibility standards.

Always Quote Attributes　Places quotation marks around all tag attributes. Placing quotation marks around attributes is required for compatibility with certain early browsers and for strict HTML compliance.

Close All Tags　Adds close tags for all HTML elements in the file for XHTML compliance.

Include Zero Margins on Body Tag　Removes default internal margins within a browser window.

Saving HTML files (ImageReady)

Use Long Filename Extension (.html)　Uses .html rather than .htm as the file extension for Web pages.

Output Multiple HTML files　Generates a unique HTML page for each slice containing a selected state.

HTML File Naming　Sets naming conventions when multiple HTML files are generated.

Setting slice output options

You can set the following options in the Slices set:

Generate Table　Aligns slices using an HTML table, rather than a Cascading Style Sheet.

Empty Cells　Specifies how empty slices are converted to table cells. Select GIF, IMG W&H to use a 1-pixel GIF with width and height values specified on the IMG tag. Select GIF, TD W&H to use a 1-pixel GIF with width and height values specified on the TD tag. Select NoWrap, TD W&H to place a nonstandard NoWrap attribute on the table data and also place width and height values specified on the TD tags.

TD W&H　Specifies when to include width and height attributes for table data: Always, Never, or Auto (the recommended setting).

Spacer Cells　Specifies when to add one row and one column of empty spacer cells around the generated table: Auto (the recommended setting), Auto (Bottom), Always, Always (Bottom), or Never. For table layouts in which slice boundaries do not align, adding spacer cells can prevent the table from breaking apart in some browsers.

Generate CSS Generates a Cascading Style Sheet, rather than an HTML table.

Referenced Specifies how slice positions are referenced in the HTML file when using CSS:

- By ID to position each slice using styles that are referenced by a unique ID

- Inline to include style elements in the declaration of the block element <DIV> tag

- By Class to position each slice using classes that are referenced by a unique ID

Default Slice Naming Choose elements from the pop-up menus or enter text into the fields to create default names for slices. Elements include document name, the word *slice*, numbers or letters designating slices or rollover states, slice creation date, punctuation, or none.

Setting image map output options (ImageReady)

You can set the following options in the Image Maps set:

Image Map Type Specifies what type of image map is created:

- Client-Side to include all required code for the image map in the image's HTML file

- NCSA Server-Side to create a separate .map file in addition to the HTML file, using NCSA specifications

- CERN Server-Side to create a separate .map file in addition to the HTML file, using CERN specifications

Important: Photoshop and ImageReady cannot generate server-side image maps for images that contain slices.

- Client-Side & NCSA Server-Side to create both a client-side and server-side compatible image map, using NCSA specifications

- Client-Side & CERN Server-Side to create both a client-side and server-side compatible image map, using CERN specifications

Note: Contact your Internet service provider to find out whether to use NCSA or CERN specification for server-side image maps.

Image Map Placement Specifies the location of the image map declaration (the <MAP> tag) in the HTML file:

- Top to place the image map declaration at the top of the HTML body section

- Body to place the image map declaration above the <IMG SRC> tag for the associated slice

- Bottom to place the image map declaration at the bottom of the HTML body section

Setting background options

You can set the following options in the Background set:

View Document As Select Image if you want the Web page to display an image or a solid color as a background behind the current image. Select Background if you want the Web page to display the optimized image as a tiled background.

Background Image Enter the location of an image file, or click Choose and select an image. The file you specify will be tiled behind the optimized image on the Web page.

BG Color Click the Color box and choose a background color using the color picker, or choose an option from the pop-up menu.

Setting file saving options

You set the following options in the Saving Files set:

File Naming Choose elements from the pop-up menus or enter text into the fields to be combined into the default names for all files. Elements include document name, slice name, rollover state, trigger name, trigger number, file creation date, slice number, punctuation, and file extension. Some options are relevant only if the file contains slices or rollover states.

The fields let you change the order and formatting of the filename parts (for example, letting you indicate rollover state by an abbreviation instead of the full word).

Filename Compatibility Select one or multiple options to make the filename compatible with Windows (permits longer filenames), Mac OS 9 (filenames may be truncated after 31 characters), and UNIX operating systems.

Optimized Files Choose from the following:

- Put Images In Folder specifies a folder name where optimized images are saved (available only with documents containing multiple slices).

- Use Long Filename Extensions (ImageReady) saves files using four-letter extensions for JPEG and WBMP files, if desired.

- Copy Background Image When Saving copies the background image file specified in the Background set into the images folder for the Web page.

- Include Copyright (Photoshop) includes copyright information with the image. (See "Adding file information (Photoshop)" on page 590.)

Adding title and copyright information to Web pages

You can add title and copyright information to a Web page by entering information in the File Info dialog box. Title information displays in the Web browser's title bar when the image is exported with an HTML file. Copyright information is not displayed in a browser; however, it is added to the HTML file as a comment and to the image file as metadata.

To enter information about an image:

1 Choose File > File Info.

2 Enter a title that will appear in the Web browser's title bar:

- (Photoshop) In the General section of the File Info dialog box, enter the desired text in the Description text box.

- (ImageReady) Enter the desired text in the Description text box.

3 Enter copyright information:

- (Photoshop) In the General section of the File Info dialog box, enter the desired text in the Copyright Notice text box.

- (ImageReady) Enter the desired text in the Copyright Notice text box.

4 Click OK.

Including image metadata (ImageReady)

ImageReady allows the quick and easy inclusion of metadata, or data describing an image, when the image is saved for Web use in the GIF, JPEG, or PNG formats. This data can be copyright information or information about the author, for example.

To include metadata with a saved image:

1 In the Optimize palette, open the Options section by clicking the swing-down arrow.

2 Select the Add Metadata check box.

To specify metadata options:

1 Do one of the following:

• Choose File > Output Settings > Metadata.

• In the Optimize palette, open the Options section by clicking the swing-down arrow. Click the Settings button.

2 Specify the metadata that should be included by clicking the box next to any of the options listed.

• Add Custom ImageReady Metadata includes simple copyright and description information from the File Info dialog. (See "Adding file information (Photoshop)" on page 590.)

• Add EXIF Metadata includes information stored with digital photographs, including camera type, date and time of photo, and file size.

Note: *To view the complete EXIF information for a file, view the file in the File Browser (Photoshop).*

• Add XMP Metadata adds an Adobe-specific set of information that both provides information about the file and facilitates the use of files between Adobe applications. XMP metadata can be included with a file in one of three ways:

Write minimal set of XMP Includes only a small subset of the complete XMP metadata set, including file modification and output times, file dimensions, and format.

Include Reference to Source File Adds to the XMP a block of information that points to the original document—in other words, a path to that file.

Write XMP to separate files XMP data for the file is written to a separate file, instead of being embedded in the image file.

Saving and Exporting Images

Saving images

The saving options vary between Photoshop and ImageReady. The primary focus of ImageReady is producing images for the Web. If ImageReady doesn't provide the file format or option you need, you can edit in Photoshop. For more information on saving an image for the Web, see "About optimization" on page 531 and "Optimizing images" on page 531.

To preserve all the Photoshop features in your edited image (layers, effects, masks, styles, and so forth), it's best to save a copy of your image in Photoshop format (PSD). (See "Photoshop format (PSD)" on page 583.) Like most file formats, PSD can only support files up to 2 GB in size. In Photoshop, if you are working with documents larger than 2 GB in file size, you can save your image in the new Large Document Format (PSB), Photoshop Raw (flattened image only), and TIFF (up to 4 GB in size only). For more information on saving large documents, see "Saving large documents (Photoshop)" on page 567.

About the save commands

You can use the following commands to save images:

- Save to save changes you've made to the current file. In Photoshop, the file is saved in the current format; in ImageReady, the Save command always saves to PSD format.

- Save As to save an image with a different location or filename. In Photoshop, the Save As command lets you save an image in a different format and with different options. In ImageReady, the Save As command always saves to PSD format.

- Export Original Document (ImageReady) to flatten the layers in a copy of the original image and save the copy in a variety of file formats. Some information (such as slices and optimization settings) is not preserved when an original image is saved to file formats other than Photoshop.

- Save a Version (Photoshop). This command is available for an image that is managed by a Version Cue Workspace. Versioning lets you save different versions of a file and comment on each. For more information, see "Working with Adobe Version Cue managed projects" on page 59.

  💡 If you're working with a file from an Adobe Version Cue project, the document title bar provides additional information about the status of the file. (See "Working with Adobe Version Cue managed projects" on page 59.)

- Save for Web (Photoshop), Save Optimized (ImageReady), and Save Optimized As (ImageReady) to save an optimized image for the Web. See "Optimizing images" on page 531 and "Saving optimized images" on page 558.

Note: *16-bit-per-channel images can only be saved in the following formats using the Save As command: Photoshop, Photoshop PDF, Photoshop Raw, Large Document Format (PSB), Cineon, PNG, and TIFF. When using the Save for Web command with a 16-bit-per-channel image, Photoshop automatically converts the image from 16-bits per channel to 8-bits per channel.*

Saving files

You can save a file with its current filename, location, and format or with a different filename, location, format, and options. You can also save a copy of a file while leaving the current file open on your desktop.

To save changes to the current file:

Choose File > Save.

To save a file with a different name and location:

1 Choose File > Save As.

2 Type a filename, and choose a location for the file.

3 Click Save.

To save a file in a different file format:

1 Do one of the following:

• (Photoshop) Choose File > Save As.

• (ImageReady) Choose File > Export > Original Document.

2 Do one of the following:

• In Photoshop, choose a format from the Format menu.

• In ImageReady, choose from the Save as Type (Windows) or Format (Mac OS) menu.

Note: *In Photoshop, if you choose a format that does not support all features of the document, a warning appears at the bottom of the dialog box. If you see this warning, it is recommended that you save a copy of the file in Photoshop format or in another format that supports all of the image data.*

3 Specify a filename and location.

4 (Photoshop) In the Save As dialog box, select saving options. For more information, see "Setting the file saving options (Photoshop)" on page 566.

5 Click Save.

In both Photoshop and ImageReady, a dialog box appears when saving in some image formats. For more information, see one of the following:

• "Saving files in Photoshop EPS format (Photoshop)" on page 570.

• "Saving files in BMP format" on page 571.

• "Saving files in GIF format (Photoshop)" on page 572.

• "Saving files in JPEG format (Photoshop)" on page 572.

• "Saving files in JPEG 2000 format (Photoshop optional plug-in)" on page 573. (The JPEG 2000 format is only available if the optional JPEG 2000 plug-in is installed.)

• "Saving files in Photoshop PDF format (Photoshop)" on page 567.

- "Saving files in PNG format (Photoshop)" on page 575.
- "Saving files in the QuickTime Movie format (ImageReady)" on page 576. (The QuickTime Movie format is only available if QuickTime® is installed on the computer.)
- "Saving files in SWF format (ImageReady)" on page 576.
- "Saving files in Targa format" on page 578.
- "Saving files in TIFF format" on page 578.

💡 To copy an image without saving it to your hard disk, use the Duplicate command. (See "Duplicating images" on page 39.) To store a temporary version of the image in memory, use the History palette to create a snapshot. For more information, see "Making a snapshot of an image (Photoshop)" on page 37.

Setting the file saving options (Photoshop)

You can set a variety of file saving options in the Save As dialog box. The availability of options depends on the image you are saving and the selected file format. For example, if an image doesn't contain multiple layers, or if the selected file format doesn't support layers, the Layers option is dimmed. For file saving options in ImageReady, see "Optimizing images" on page 531 and "Saving optimized images" on page 558.

As a Copy Saves a copy of the file while keeping the current file open on your desktop.

Alpha Channels Saves alpha channel information with the image. Disabling this option removes the alpha channels from the saved image.

Layers Preserves all layers in the image. If this option is disabled or unavailable, all visible layers are flattened or merged (depending on the selected format).

Annotations Saves annotations with the image.

Spot Colors Saves spot channel information with the image. Disabling an option removes spot colors from the saved image.

Use Proof Setup, ICC Profile (Windows), or Embed Color Profile (Mac OS) Creates a color-managed document. For more information, see "Embedding a profile in a document" on page 120.

Important: The following image preview and file extension options are only available if the Ask When Saving option is chosen for Image Previews and Append File Extension in the File Handling Preferences dialog box. For more information, see "Setting preferences for saving files (Photoshop)" on page 593.

Thumbnail (Windows) Saves thumbnail data for the file.

Image Previews options (Mac OS) Saves thumbnail data for the file. Thumbnails display in the Open dialog box. You can set these image preview options: Icon to use the preview as a file icon on the desktop, Full Size to save a 72-ppi version for use in applications that can only open low-resolution Photoshop images, Macintosh Thumbnail to display the preview in the Open dialog box, and Windows Thumbnail to save a preview that can display on Windows systems.

Use Lower Case Makes the file extension lowercase.

File Extension options (Mac OS) Specifies the format for file extensions. Select Append to add the format's extension to a filename and Use Lower Case to make the extension lowercase.

Saving large documents (Photoshop)

Photoshop supports documents up to 300,000 pixels in either dimension and offers three file formats for saving documents with images greater than 30,000 pixels in either dimension. Keep in mind that most other applications, including older versions of Photoshop, can only support files up to 2 GB in size or images up to 30,000 pixels in either dimension.

To save a document with a file size larger than 2 GB:

Choose File > Save As and choose one of the following file formats:

Large Document Format (PSB) Supports documents of any pixel size and any file size. All Photoshop features are preserved in PSB files. Currently, PSB files are only supported by Photoshop CS. In Preferences under File Handling, the Enable Large Document Format option must be selected before you can save files in PSB format. For more information about the PSB format, see "Large Document Format (PSB)" on page 586.

Photoshop Raw Supports documents of any pixel dimension or file size, but does not support layers. Large documents saved in the Photoshop Raw format are flattened. For more information about the Photoshop Raw format, see "Photoshop Raw (Photoshop)" on page 588.

TIFF Supports files up to 4 GB in size. Documents larger than 4 GB cannot be saved in TIFF format. For more information about the TIFF format, see "TIFF" on page 589.

To enable the Large Document Format in Photoshop:

1 Do one of the following:

- (Windows) Choose Edit > Preferences > File Handling.

- (Mac OS) Choose Photoshop > Preferences > File Handling.

2 Select the Enable Large Document Format (.psb) option.

Saving files in Photoshop PDF format (Photoshop)

You can use the Save As command to save RGB, indexed-color, CMYK, grayscale, Bitmap-mode, Lab color, and duotone images in Photoshop PDF format. You can also use the PDF format to save multiple images in a multipage document or slide show presentation. (See "Creating a PDF presentation" on page 598.) Saving in Photoshop PDF format lets you specify security options for restricting access to the PDF document. The new 128-bit RC4 (Acrobat 6) encryption has an option for letting users view metadata and thumbnails in a secure PDF document using the File Browser. For more information about the PDF format including the differences between Photoshop PDF and generic PDF, see "PDF" on page 586.

To save a file in Photoshop PDF format:

1 Choose File > Save As and choose Photoshop PDF from the Format menu. You can select a Color option if you want to embed a color profile or use the profile specified with the Proof Setup command. Click Save.

2 In the PDF Options dialog box, select the options you want, and click OK.

Encoding   Determines the compression method (Zip or JPEG). For more information, see "About file compression" on page 582.

Note: *Bitmap-mode images are automatically encoded using CCITT compression—the PDF Options dialog box does not appear.*

Save Transparency   Preserves transparency when the file is opened in another application. (Transparency is always preserved when the file is reopened in Photoshop or ImageReady.) This option is not available if the file contains a spot color channel or does not contain transparency.

Image Interpolation   Anti-aliases the printed appearance of a low-resolution image.

Downgrade Color Profile   If you selected ICC Profile (Windows) or Embed Color Profile (Mac OS) for a version 4 profile in the Save dialog box, this option downgrades the profile to version 2. Select this option if you plan to open the file in an application that does not support version 4 profiles.

PDF Security   Specifies security options such as password protection and restricted access to a file's content. Select PDF Security and then click the Security Settings button to open the PDF Security dialog box. Specify the security options that you want and then click OK.

Include Vector Data   Preserves any vector graphics (such as shapes and type) as resolution-independent objects, ensuring smoother output. When it is selected, you can select the following options:

- Embed Fonts ensures that all fonts used in the file are displayed and printed, even on computers that do not have the fonts installed. Bitmap fonts, fonts that don't allow PDF embedding, substitute fonts, type that uses the faux bold style, and warped type cannot be embedded. Selecting Embed Fonts increases the size of the saved file.

- Use Outlines for Text saves text as paths. Select this option if embedding fonts results in a file that is too large, if you plan to open the file in an application that cannot read PDF files with embedded fonts, or if a font fails to display or print correctly. Text saved as outlines is not searchable or selectable in a PDF viewer. You can, however, edit the text when you reopen the file in Photoshop.

Note: *The PDF viewer may display a substitute font if both Embed Fonts and Use Outlines for Text are deselected.*

To specify PDF Security options:

1 In the PDF Options dialog box, select PDF Security and then click the Security Settings button to open the PDF Security dialog box.

2 In the PDF Security dialog box, select Password Required to Open Document and specify a Document Open Password to prevent users from opening the document unless they type the password you specify. Passwords are case-sensitive.

3 Select Password Required to Change Permission and Passwords and specify a Permissions Password to restrict users from printing and editing the file. Users cannot change these security settings unless they type the passwords that you specify. You cannot use the same password used for the Document Open Password. Users are required to enter the Permissions Passwords when opening the PDF file in Photoshop.

4 Use the Compatibility menu to choose the type of encryption for opening a password-protected document:

40-bit RC4 (Acrobat 3.x,4.x) Specifies a low encryption level.

128-bit RC4 (Acrobat 5) Specifies a high encryption level, but users of Acrobat 3 and Acrobat 4 cannot open PDF documents set with high encryption.

128-bit RC4 (Acrobat 6) Specifies a high encryption level, but users of Acrobat 3, Acrobat 4, and Acrobat 5 cannot open PDF documents set with this encryption. This encryption lets you enable plaintext metadata and thumbnails, an option not available in versions earlier than Acrobat 6.

5 In the Compatibility area of the PDF Security dialog box, specify the following options:

For 40-bit RC4 (Acrobat 3.x,4.x) encryption:

No Printing Prevents users from printing the document.

No Changing the Document Prevents the user from making any changes to the document, including filling in signature and form fields.

No Content Copying or Extraction, Disable Accessibility Prevents users from selecting and copying contents of the PDF document.

No Adding or Changing Comments and Form Fields Prevents the user from adding or making changes to comments and form fields.

For 128-bit RC4 (Acrobat 5) or 128-bit RC4 (Acrobat 6) encryption:

Enable Content Access for the Visually Impaired Lets visually impaired users use screen readers to read the document's contents.

Allow Content Copying and Extraction Lets users select and copy the contents of the PDF document. It also lets utilities that need access to the contents of a PDF file, such as Acrobat Catalog, get to those contents.

No Encryption for Metadata and Thumbnail (Acrobat 6 only) Lets metadata and thumbnails in a secure PDF document be viewed in the File Browser. Among the many uses of this feature, you can let clients read information (metadata) and preview images without the need to give them the password for full access to the secure PDF document.

Changes Allowed Define which editing actions are allowed in the PDF document:

• None prevents the user from making any changes to the document, including filling in signature and form fields.

• Only Document Assembly lets users insert, delete, and rotate pages, as well as create bookmarks and thumbnail pages.

• Only Form Field Fill-in or Signing lets users fill in forms and add digital signatures. This option doesn't let users add comments or create form fields.

• Comment Authorizing, Form Field Fill-in or Signing lets users fill in forms and add digital signatures, and comments.

• General Editing, Comment and Form Field Authoring lets users change the document using any method listed in the Changes Allowed menu, except remove pages.

Printing Specify the quality of printing for the PDF document:

• Not Allowed prevents users from printing the document.

• Low Resolution lets users print the document at no higher than 150-dpi resolution. Printing may be slower because each page is printed as a bitmapped image.

• Fully Allowed lets users print at any resolution, directing high-quality vector output to PostScript and other printers that support advanced high-quality printing features.

6 Click OK.

Saving files in Photoshop EPS format (Photoshop)

Virtually all page layout, word processing, and graphic applications accept imported or placed EPS (Encapsulated PostScript) files. To print EPS files, you should use a PostScript printer. Non-PostScript printers will only print the screen-resolution preview. For more information about the Photoshop EPS format, see "Photoshop EPS" on page 584.

To save a file in Photoshop EPS format:

1 Choose File > Save As and choose Photoshop EPS from the Format menu.

2 In the EPS Options dialog box, select the options you want, and click OK:

Preview Creates a low-resolution image to view in the destination application. Choose TIFF to share an EPS file between Windows and Mac OS systems. An 8-bit preview delivers better display quality but larger file size than a 1-bit preview.

Encoding Determines the way image data is delivered to a PostScript output device:

• Choose ASCII or ASCII85 if you're printing from a Windows system, or if you experience printing errors or other difficulties.

• Binary produces a smaller file and leaves the original data intact. However, some page-layout applications and some commercial print spooling and network printing software may not support binary Photoshop EPS files.

• JPEG compresses the file by discarding some image data. You can choose the amount of JPEG compression from very little (JPEG Maximum Quality) to a lot (JPEG Low Quality). Files with JPEG encoding can be printed only on Level 2 (or later) PostScript printers and may not separate into individual plates.

Include Halftone Screen and Include Transfer Function Control print specifications for high-end commercial print jobs. Consult your printer before selecting these options.

Transparent Whites Displays white areas as transparent. This option is available only for images in Bitmap mode.

PostScript Color Management Converts file data to the printer's color space. Do not select this option if you plan to place the image into another color-managed document. Doing so may disrupt the color management.

Note: Only PostScript Level 3 printers support PostScript Color Management for CMYK images. To print a CMYK image using PostScript Color Management on a Level 2 printer, convert the image to Lab mode before saving in EPS format.

Include Vector Data Preserves any vector graphics (such as shapes and type) in the file. However, vector data in EPS and DCS files is only available to other applications; vector data is rasterized if you reopen the file in Photoshop.

Image Interpolation Anti-aliases the printed appearance of a low-resolution image.

Saving files in Photoshop DCS format (Photoshop)

DCS (Desktop Color Separations) format is a version of EPS that lets you save color separations of CMYK or multichannel files. For more information about the Photoshop DCS format, see "Photoshop DCS 1.0 and 2.0 (Photoshop)" on page 584.

To save a file in Photoshop DCS format:

1 Choose File > Save As and choose Photoshop DCS 1.0 or Photoshop DCS 2.0 from the Format menu.

2 In the DCS Format dialog box, select the options you want, and click OK.

The dialog box includes all the options available for Photoshop EPS files. For more information, see "Saving files in Photoshop EPS format (Photoshop)" on page 570. Additionally, the DCS menu gives you the option of creating a 72-ppi composite file that can be placed in a page layout application or used to proof the image:

- DCS 1.0 format creates one file for each color channel in the CMYK image. You can also create a fifth file: a grayscale or color composite. To view the composite file, you must keep all five files in the same folder.

- DCS 2.0 format retains spot-color channels in the image. You can save the color channels as multiple files (as for DCS 1.0) or as a single file. The single-file option saves disk space. You can also include a grayscale or color composite.

Saving files in Photoshop Raw format (Photoshop)

The Photoshop Raw format is a file format for transferring images between applications and computer platforms. For more information about the Photoshop Raw format, see "Photoshop Raw (Photoshop)" on page 588.

To save a file in Photoshop Raw format:

1 Choose File > Save As and choose Photoshop Raw from the Format menu.

2 In the Photoshop Raw Options dialog box, do the following:

- (Mac OS) Specify a File Type and File Creator, or accept the default values.

- Specify a Header parameter.

- Select whether to save the channels in an interleaved or noninterleaved order.

Saving files in BMP format

The BMP format is an image format for the Windows operating system. The images can range from black and white (1 byte per pixel) up to 24-bit color (16.7 million colors). For more information about the BMP format, see "BMP" on page 584.

To save a file in BMP format:

1 Do one of the following:

2 In Photoshop, choose File > Save As and choose BMP from the Format menu.

- In ImageReady, choose File > Export > Original Document, and choose BMP from the Save as Type (Windows) or Format (Mac OS) menu.

3 Specify a filename and location, and click Save.

4 In the BMP Options dialog box, select a file format, specify the bit depth and, if necessary, select Flip Row Order. For more options, click Advanced Modes and specify the BMP options.

5 Click OK.

Saving 16-bit-per-channel files in Cineon format (Photoshop)

RGB images that are 16 bits per channel can be saved in Cineon format for use in the Kodak Cineon Film System. For more information about the Cineon format, see "Cineon" on page 584.

To save a 16-bit-per-channel file in Cineon format:

Choose File > Save As and choose Cineon from the Format menu.

Saving files in GIF format (Photoshop)

You can use the Save As command to save RGB, indexed-color, grayscale, or Bitmap-mode images directly in Compuserve GIF (known as GIF) format. The image is automatically converted to indexed-color mode. For more information about the GIF format, see "GIF" on page 585.

Note: You can also save an image as one or more GIF files using the Save for Web command (Photoshop) or the Save Optimized command (ImageReady). For more information on optimizing images, see "Optimizing images" on page 531.

To save a file in GIF format:

1 Choose File > Save As and choose CompuServe GIF from the Format menu.

2 For RGB images, the Indexed Color dialog box appears. Specify conversion options and click OK. For more information, see "Conversion options for indexed-color images (Photoshop)" on page 160.

3 Select a row order for the GIF file, and click OK:

• Normal displays the image in a browser only when download is complete.

• Interlaced displays low-resolution versions of the image in a browser as the file downloads. Interlacing makes download time seem shorter, but it also increases file size.

Saving files in JPEG format (Photoshop)

You can use the Save As command to save CMYK, RGB, and grayscale images in JPEG format. JPEG compresses file size by selectively discarding data. For more information, see "About file compression" on page 582 and "JPEG" on page 585.

Note: You can also save an image as one or more JPEG files using the Save for Web command (Photoshop) or the Save Optimized command (ImageReady). For more information on optimizing images, see "Optimizing images" on page 531.

To save a file in JPEG format:

1 Choose File > Save As and choose JPEG from the Format menu.

2 In the JPEG Options dialog box, select the options you want, and click OK.

Matte If the image contains transparency, choose a Matte color to simulate the appearance of background transparency. For more information on simulating transparency using the Matte option, see "Optimization options for GIF and PNG-8 formats" on page 537.

Image Options To specify the image quality, choose an option from the Quality menu, drag the Quality pop-up slider, or enter a value between 0 and 12 in the Quality text box.

Format Options Select Baseline ("Standard") to use a format recognized by most Web browsers, Baseline Optimized for optimized color and a slightly smaller file size, or Progressive to display a series of increasingly detailed scans (you specify how many) as the image downloads. Baseline Optimized and Progressive JPEG images are not supported by all Web browsers.

Size To view the estimated download time, select a modem speed. (The Size preview is only available when Preview is selected.)

Note: Some applications may not be able to read a CMYK file saved in JPEG format. In addition, if you find that a Java application cannot read your JPEG file (in any color mode), try saving the file without a thumbnail preview.

Saving files in JPEG 2000 format (Photoshop optional plug-in)

To save files in the JPEG 2000 format, the optional JPEG 2000 plug-in must be installed in Adobe Photoshop CS/Plug-Ins/Adobe Photoshop Only/File Formats. The optional JPEG 2000 plug-in can be found on the Photoshop CS installation CD in Goodies/Optional Plug-Ins/Photoshop Only/File Formats. You can save images in extended JPEG 2000 (JPF) format, which provides an expanded set of options compared to the standard JPEG 2000 (JP2) format. However, you can make files JP2 compatible by selecting the appropriate option in the JPEG 2000 dialog box. For more information on the JPEG 2000 format, see "JPEG 2000 (Photoshop optional plug-in)" on page 585.

Note: You cannot save Duotone, Multichannel, or Bitmap mode images in JPEG 2000 format. To save these files as JPEG 2000, first convert them to RGB color.

To save a file in JPEG 2000 format:

1 Choose File > Save As, and choose JPEG 2000 from the Format menu.

2 Specify a filename and location, select saving options, and click Save, which opens the JPEG 2000 dialog box.

Important: If you want to save a JP2-compatible file, you must select the ICC Profile option (Windows) or the Embed Color Profile option (Mac OS) in the Save As dialog box. Otherwise, the JP2 Compatible option will be unavailable in the JPEG 2000 dialog box. The JP2-compatible option slightly increases the JPF file size. Keep in mind that JP2 viewers are not required to support ICC profiles and metadata present in JPF files, so color fidelity and other features may not work as expected.

3 (Optional) Enter a value in the File Size text box to set a target size for the saved file. The value in the Quality text box will adjust to the best quality for the file size you enter.

4 Do one of the following to specify the image quality:

• Select Lossless to compress the image without losing image quality. Selecting this option creates a larger file.

• Deselect Lossless to create a smaller file. Then drag the Quality pop-up slider or enter a value in the Quality text box to specify the image quality. A higher quality value results in better image quality and a larger file size.

If you specify an image quality that conflicts with a target file size you entered previously, Photoshop automatically changes the value in the File Size text box.

5 Select Fast Mode for faster previewing or encoding of the image. File size control, progressive optimization, and lossy with integer wavelet filter are not supported in Fast Mode.

6 Select Include Metadata to include file information. If your image file contains paths and you wish to store the paths information in the JPEG 2000 file, the Metadata option must be selected.

  💡 Deselect the Include Metadata and Include Color Settings options to make the image file size smaller.

7 Select Include Transparency to preserve transparency that exists in the original image. The Include Transparency option is dimmed if the image does not contain transparency.

8 Select JP2 Compatible to create a file that can be displayed in viewing software that supports standard JPEG 2000 (JP2) format but does not support extended JPEG 2000 (JPF) format.

9 Click the Advanced Options button to set the following options:

Compliance Chooses the types of devices with which the file is compliant. Currently, only general devices (such as Web browsers) are supported.

Wavelet Filter Specifies the type of numbers (coefficients) used to encode the file. Float is more accurate but cannot be used for Lossless compression. Selecting the Lossless compression option automatically sets the Wavelet Filter option to Integer.

  💡 Choose Float or Integer depending on your image and the result you want. Integer is usually the best option for an overall consistent appearance in the image. Float may sharpen the image but could cause it to lose some quality around edges.

Tile Size Chooses the size of the tiles used in the image. When low quality values are used to optimize images smaller than 1024 x 1024 pixels, using the largest tile size will produce better results.

  💡 A tile size of 1024 is best for most images. When creating files with small dimensions (for cell phones, and so forth), a lower tile size should be used.

Metadata Format Select the metadata format(s) to include in the image file. JPEG2000 XML is JPEG 2000-specific XML data; this option is only available if the image file contains this data. XMP is File Info data and EXIF is digital camera data.

Color Settings Format Select the Color Settings Format to include in the image file. The ICC Profile option includes the full ICC profile specified in the Save As dialog box and is the default option. The Restricted ICC Profile option is intended for use in portable devices such as cell phones and PDAs. A Restricted ICC Profile must be in a JP2 file.

10 Choose an Optimization Order from the Order menu:

Growing Thumbnail   Presents a sequence of small thumbnail images increasing in size until they reach the image's full size.

Progressive Presents an image that displays increasingly detailed versions of the entire image as data becomes available (for example, streaming over the Web to a browser). Progressive JPEG images have a slightly larger file size, require more RAM for viewing, and are not supported by all applications and JPEG 2000 viewing software.

Color Makes the image appear first as a grayscale image, then as a color image.

Region of Interest If your Photoshop document contains one or more alpha channels, you can choose an alpha channel to define a Region of Interest.

Once the alpha channel is loaded as a Region of Interest, choose an Enhance value to increase or decrease the quality of the Region of Interest relative to the rest of the image. Note that Enhance does not change the file size of the image, so enhancing the area inside the alpha channel will decrease the quality of the area outside the alpha channel (and vice versa).

The Region of Interest and Enhance options are not available if your Photoshop document does not have an alpha channel.

Note: *The channel (alpha, spot, or Quick Mask) used to define the Region of Interest will be discarded in the final saved JPEG 2000 file.*

11 To preview how the image will appear in JPEG 2000 viewing software, make sure you chose an Optimization Order in step 10. The Preview option takes into consideration how the image is optimized and will open the image accordingly. In the Download Preview area of the JPEG 200 dialog box, choose a download rate from the pop-up menu to view the estimated download time of the image, then click the Preview button.

You can use the Set Preview Zoom pop-up menu to zoom in or out of the image for better viewing. You can also use the Zoom tool 🔍 and the Hand tool ✋ to adjust the viewing area of your preview.

12 When you're done setting options, click OK to generate the JPEG 2000 image file.

Saving files in PNG format (Photoshop)

You can use the Save As command to save RGB, indexed-color, grayscale, and Bitmap-mode images in PNG format. For more information on the PNG format, see "PNG" on page 587.

Note: *You can also save an image as one or more PNG files using the Save for Web command (Photoshop) or the Save Optimized command (ImageReady). For more information on optimizing images, see "Optimizing images" on page 531.*

To save a file in PNG format:

1 Choose File > Save As and choose PNG from the Format menu.

2 Select an Interlace option:

• None displays the image in a browser only when download is complete.

• Interlaced displays low-resolution versions of the image in a browser as the file downloads. Interlacing makes download time seem shorter, but it also increases file size.

3 Click OK.

Saving files in the QuickTime Movie format (ImageReady)

The QuickTime format is used to play back, create, and deliver multimedia. To save in the QuickTime Movie format, you need QuickTime installed on your computer. For more information about the QuickTime Movie format, see "QuickTime Movie (ImageReady)" on page 587.

To save files in QuickTime Movie format:

1 Choose File > Export > Original Document, and choose QuickTime Movie from the Save as Type (Windows) or Format (Mac OS) menu.

2 Specify a filename and location, and click Save.

3 In the Compression Settings dialog box, choose a compression from the pop-up menu, specify the compression options, and then click OK.

Saving files in SWF format (ImageReady)

In ImageReady, you can export a document as a SWF file, which can then go directly to the Web or be imported into the Macromedia® Flash™ application. In a multilayered PSD file, each layer of the PSD file can be exported as one SWF object, or each layer can be exported as separate SWF files using the Layers as Files command. When the entire PSD file is exported to one SWF file, animation frames are exported as SWF animation frames. URLs in slices and image maps will be preserved when exported. Rollovers are ignored. The exported images will not change when you rollover them. For more information about the SWF format, see "SWF (ImageReady)" on page 589.

Layers in a PSD file can be preserved when exported from ImageReady and then imported into Macromedia Flash. Use the Layers as Files command to export the individual layers as separate SWF files. When the SWF files are imported in a SWF document, they each appear on separate layers. You can also export individual animation frames as separate SWF files using the Animation as Files command. Again, each SWF file appears on a separate layer when imported into Macromedia Flash.

To export an ImageReady file in SWF format:

1 Do one of the following:

• Choose File > Export > Macromedia® Flash™ SWF.

• Choose File > Export > Original Document. In the Export Original dialog box, choose Macromedia® Flash™ SWF from the Save as Type (Windows) or Format (Mac OS) menu. Enter a name for the SWF file and choose a destination. Click Save.

The Macromedia® Flash™ (SWF) Export dialog box opens, letting you select options for exporting to SWF format.

2 Under Export Options, select from the following options:

Preserve Appearance   Retains the appearance of the PSD file and may rasterize a text or shape layer if it cannot be exported natively to SWF. If Preserve Appearance is not selected, all effects that cause flattening or rasterization of vectors are dropped, including ones on raster layers.

Generate HTML   Generates HTML in addition to the SWF file.

3 Select the Enable Dynamic Text option to map text variables to SWF dynamic text. SWF dynamic text disappears on import into Macromedia Flash. Therefore, mapping text variables to SWF dynamic text would only be useful if the generated SWF file is going directly to the Web.

4 Under Bitmap Options, either leave the Format menu set at Auto Select or choose a file format used for bitmap images. If you choose JPEG, you can enter JPEG Quality to specify how much compression to use.

5 Under Text Options, specify which characters to embed by choosing either None, Full Set, or Partial Set from the Embed Fonts menu.

If you choose Partial Set, click any of the following buttons to specify the characters of the partial set:

AB includes all uppercase characters.

ab includes all lowercase characters.

includes all numbers.

"" includes all punctuations.

You can also enter specific characters to embed in the Extra text box.

Note: *Whenever possible, PSD text and vector layers are converted into SWF text and vector objects. If layer effects or blending modes prohibit a native mapping of text and vectors, they can then be flattened into bitmap objects.*

6 Click OK. If you chose File > Export > Macromedia® Flash™ SWF in step 1, the Export as Macromedia™ SWF dialog box opens. Enter a name for the SWF file and choose a destination. Click Save.

To export layers or animation frames as individual SWF files:

1 Do one of the following:

• Choose File > Export > Layers as Files. If you're exporting only specific layers, select the layers in the Layers palette before you choose the Layers as Files command.

• Choose File > Export > Animation as Files. If you're exporting only specific frames, select the frames in the Animation palette before you choose the Animation as Files command.

2 In the Export Layers as Files dialog box, under File Options, click Browse (Windows) or Choose (Mac OS) to select a destination for the exported files.

3 Enter a name in the Base Name text box to specify a common name for the files.

4 Set the Save Options.

5 Choose SWF from the Format menu under Format Options and set the options for your SWF files.

6 Click OK.

For more information about the options in the Export Layers as Files dialog box or the Export Frames as Files dialog box, see "Exporting layers as files (ImageReady)" on page 579 and "Exporting animation frames as files (ImageReady)" on page 580.

Saving files in Targa format

The Targa (TGA) format supports images of any dimensions with between 1 and 32 bits of color. It is designed for Truevision's hardware, but it is also used in other applications. For more information on the Targa format, see "Targa" on page 589.

To save a file in Targa format (ImageReady):

1 Do one of the following:

• In Photoshop, choose File > Save As and choose Targa from the Format menu.

• In ImageReady, choose File > Export > Original Document, and choose Targa from the Save as Type (Windows) or Format (Mac OS) menu.

2 Specify a filename and location, and click Save.

3 In the Targa Options dialog box, select a resolution, select the Compress (RLE) option if you want to compress the file, and then click OK.

Saving files in TIFF format

TIFF is a flexible raster (bitmap) image format supported by virtually all paint, image-editing, and page-layout applications. For more information on the TIFF format, see "TIFF" on page 589.

To save a file in TIFF format (Photoshop):

1 Choose File > Save As, and choose TIFF from the Format menu.

2 In the TIFF Options dialog box, select the options you want, and click OK.

Image Compression Specifies a method for compressing the composite image data. (See "About file compression" on page 582.)

Byte Order Photoshop and most recent applications can read files using either IBM PC or Macintosh byte order. However, if you don't know what kind of program the file may be opened in, select the platform on which the file will be read.

Save Image Pyramid Preserves multiresolution information. Photoshop does not provide options for opening multiresolution files; the image opens at the highest resolution within the file. However, Adobe InDesign and some image servers provide support for opening multiresolution formats.

Save Transparency Preserves transparency as an additional alpha channel when the file is opened in another application. Transparency is always preserved when the file is reopened in Photoshop or ImageReady.

Layer Compression Specifies a method for compressing data for pixels in layers (as opposed to composite data). Many applications cannot read layer data and will skip over it when opening a TIFF file. Photoshop, however, can read layer data in TIFF files. Although files that include layer data are larger than those that don't, saving layer data alleviates the need to save and manage a separate PSD file to hold the layer data. Choose Discard Layers and Save a Copy to flatten the image. For more information on RLE and ZIP compression, see "About file compression" on page 582.

Note: To have Photoshop prompt you before saving an image with multiple layers, select Ask Before Saving Layered TIFF Files in the File Handling area of the Preferences dialog box.

To save a file in TIFF format (ImageReady):

1 Choose File > Export > Original Document, and choose TIFF from the Save as Type (Windows) or Format (Mac OS) menu.

2 Specify a filename and location, and click Save.

3 Select a compression method, and click OK.

Exporting layers as files (ImageReady)

You can export and save layers as individual files using a variety of formats, including PSD, GIF, JPEG, PNG, WBMP, and SWF. Different format settings can be assigned to individual layers, or one format can apply to all exported layers. Layers are saved with automatic file naming. You can set options to control the generation of names.

All format settings are saved with your ImageReady document for convenience when you use this feature again.

To export layers as files:

1 Choose File > Export > Layers as Files. If you're exporting only specific layers, select the layers in the Layers palette before you choose the Layers as Files command.

Note: Click a layer in the Layers palette to select it. Shift-click to select a series of layers. Ctrl-click (Windows) or Command-click (Mac OS) to select noncontiguous layers.

2 In the Export Layers as Files dialog box, under File Options, click Choose to select a destination for the exported files.

3 Enter a name in the Base Name text box to specify a common name for the files.

Click the Set button to set up specific options for file naming. Choose elements from the pop-up menus or enter text into the fields to be combined into the default names for all files. Elements include layer name, document name, layer number, file creation date, punctuation, and file extension.

4 Specify how you want to save the files by choosing from the following options:

• For Export, select the layers to be exported by choosing either All Layers, Top Level Layers and Layer Sets, or Selected Layers. The Selected Layers option is only available if you select layers before choosing the Layers as Files command. If your multilayered document has a Background layer, you can select the Include Background option to include it in the export.

- For Layer, choose a layer from the Layer pop-up menu if you are using a separate format for each layer. You can also use the navigation buttons ◄ ► to choose the layer.

- For Apply, choose either One Format for All Layers or Separate Format for Each Layer.

To preview the exported image for a specific layer, select the Preview option and then use the either the Layer pop-up menu or navigation buttons to choose the layer to preview.

5 Under Format Options, either choose a setting from the Preset pop-up menu or manually set the file format and compression. For more information about format options and compression, see "About file formats" on page 582 and "About file compression" on page 582.

If you're using a separate format for each layer, choose another layer and then set the format options. Do this for all the subsequent layers you're exporting.

A custom setting can be saved for reuse. Adjust the settings. The Unnamed option is automatically chosen in the Preset menu. Click the Save Current Layer Settings icon ▣, name the new setting, and save it to the Optimized Settings folder. You can also delete a setting by choosing it from the Preset menu and then clicking the Delete Current Layer Setting icon 🗑.

6 Click OK.

Exporting animation frames as files (ImageReady)

You can export and save animation frames as individual files using a variety of formats, including GIF, JPEG, PNG, WBMP, and SWF. Different format settings can be assigned to individual frames, or one format can apply to all exported frames. Frames are saved with automatic file naming. You can set options to control the generation of names.

All format settings are saved with your ImageReady document for convenience when using the feature again.

To export animation frames as files:

1 Choose File > Export > Animation Frames as Files. If you're exporting only specific frames, select the frames in the Animation palette before you choose the Animation Frames as Files command.

Click a frame in the Animation palette to select it. Shift-click to select a series of frames. Ctrl-click (Windows) or Command-click (Mac OS) to select noncontiguous frames.

2 In the Export Animation Frames as Files dialog box, under File Options, click Choose to select a destination for the exported files.

3 Enter a name in the Base Name text box to specify a common name for the files.

Click the Set button to set up specific options for file naming. Elements include document name, frame number, file creation date, punctuation, and file extension.

4 If you selected frames in the Animation palette before choosing the Animation Frames as Files command, you can enable the Selected Frames Only option to export only the frames you selected. Deselecting this option exports all the frames in your animation regardless of whether you selected them or not.

To preview the exported image for a specific frame, select the Preview option and then use either the Preview menu or navigation buttons ◀ ▶ to choose the frame to preview.

5 Under Format Options, either choose a setting from the Preset pop-up menu or manually set the file format and compression. For more information about format options and compression, see "About file formats" on page 582 and "About file compression" on page 582.

A custom setting can be saved for reuse by clicking the Save Current Format Preset icon 🖫, naming the new setting, and saving it to the Optimized Settings folder. You can also delete a setting by choosing it from the Preset menu and then clicking the Delete Current Format Preset icon 🗑.

6 Click OK.

Exporting images in ZoomView format (Photoshop)

ZoomView is a format for delivering high-resolution images over the Web. With the Viewpoint Media Player, users can zoom into or out of an image and pan the image to see its various parts.

When you export an image in ZoomView format, Photoshop creates the following files:

*   An MTX file that defines the image to be displayed.
*   An HTML file that loads the Viewpoint Media Player and points to the MTX file.
*   A folder containing tiles that are used to display the image.
*   A folder containing VBS and JavaScript scripts that are used by the HTML file.

To export an image in ZoomView format:

1 Choose File > Export > ZoomView.

2 Set the following options, and click OK:

Template Specify a template for generating the MTX, HTML, and auxiliary files. Choose a template (Plain or With Instructions) from the pop-up menu, or click the Load button to choose a different ZoomView Template (ZVT) file. You can download additional templates from the Viewpoint Web site.

Output Location Click Folder to specify an output location. Enter a name in the Base Name text box to specify a common name for the files.

Path to Broadcast License File Specify a URL for the broadcast license file. The Viewpoint Corporation requires that all publishers of ZoomView content acquire a broadcast license. To apply for a key, click Get License.

Image Tile Options ZoomView technology uses image tiling to load only the part of a high-resolution image that a user wants see. Select a Tile Size to control how many pixels are in each tile. A tile size of 128 is recommended for small images; a tile size of 256 is recommended for large images.

To specify an amount of compression for each tile image, choose an option from the Quality menu, drag the Quality pop-up slider, or enter a value between 0 and 13 in the Quality text box. Select Optimize Tables to create enhanced JPEGs with slightly smaller file sizes. This option is recommended for maximum file compression.

Browser Options Specify a width and height for the image in the Viewpoint Media Player. Select Preview in Browser to launch your default Web browser and load the generated HTML file after you click OK.

About file formats

Graphic file formats differ in the way they represent image data (as pixels or as vectors), in compression technique, and in which Photoshop and ImageReady features they support. With the exception of the Large Document Format (PSB), Photoshop Raw, and TIFF, all file formats can only support documents with a file size of 2 GB or less.

For more information on choosing file formats when opening or saving images, see "Opening and importing images" on page 101 and "Saving images" on page 564. For information on choosing a Web optimization format, see "Optimizing images" on page 531 and "Saving optimized images" on page 558.

Note: If a supported file format does not appear in the appropriate dialog box or submenu, you may need to install the format's plug-in module. (See "Using plug-in modules" on page 57.)

About file compression

Many file formats use compression to reduce the file size of bitmap images. *Lossless* techniques compress the file without removing image detail or color information; *lossy* techniques remove detail. The following are commonly used compression techniques:

RLE (Run Length Encoding)   Lossless compression; supported by some common Windows file formats.

LZW (Lemple-Zif-Welch)   Lossless compression; supported by TIFF, PDF, GIF, and PostScript language file formats. Most useful for images with large areas of single color.

JPEG (Joint Photographic Experts Group)   Lossy compression; supported by JPEG, TIFF, PDF, and PostScript language file formats. Recommended for continuous-tone images, such as photographs. JPEG uses lossy compression. To specify image quality, choose an option from the Quality menu, drag the Quality pop-up slider, or enter a value between 0 and 12 (Photoshop) or 0 and 100 (ImageReady) in the Quality text box. For the best printed results, choose maximum-quality compression. JPEG files can be printed only on Level 2 (or later) PostScript printers and may not separate into individual plates.

CCITT   A family of lossless compression techniques for black-and-white images; supported by the PDF and PostScript language file formats. (CCITT is an abbreviation for the French spelling of International Telegraph and Telekeyed Consultive Committee.)

ZIP   Lossless compression; supported by PDF and TIFF file formats. Like LZW, ZIP compression is most effective for images that contain large areas of single color.

PackBits (ImageReady)   Lossless compression that uses a run-length compression scheme; supported by the TIFF file format in ImageReady only.

Photoshop format (PSD)

Photoshop format (PSD) is the default file format and the only format that supports most Photoshop features besides the Large Document Format (PSB). Due to the tight integration between Adobe products, other Adobe applications like Adobe Illustrator, Adobe InDesign, Adobe Premiere, Adobe After Effects, and Adobe GoLive can directly import PSD files and preserve many Photoshop features. For more information, see Help for the specific Adobe applications; also see "Saving images for use in video" on page 604 and "Saving images for use in motion graphics" on page 607.

When saving a PSD file for use in a previous version of Photoshop or ImageReady, you can set a preference to maximize file compatibility.

To maximize compatibility with previous versions of Photoshop and with other applications (Photoshop):

1 Do one of the following:

• In Windows, choose Edit > Preferences > File Handling.

• In Mac OS, choose Photoshop > Preferences > File Handling.

2 Choose Always from the Maximize PSD File Compatibility menu. This saves a composite (flattened) image along with the layers of your document.

Note: If file size is an issue or if you're only opening your files in Photoshop, turning off Maximize PSD File Compatibility reduces the file sizes significantly. In the Maximize PSD File Compatibility menu, choose either Ask to prompt you on whether to maximize compatibility when saving or Never to save your document without maximizing compatibility.

If you edit or save an image using an earlier version of Photoshop, unsupported features are discarded. Keep in mind the following features when working with earlier versions of Photoshop:

• Photoshop CS introduces nested layers, Hard Mix blending mode, Photo Filter adjustment layers, 56 channel limit, text on a path, support for files greater than 2GB, support for files greater than 30,000 pixels in any dimension, non-square pixels support, 16-bit layers, 16-bit patterns, and 16-bit Brushes.

• Photoshop 7.0 introduced the Linear Burn, Linear Dodge, Vivid Light, Linear Light, and Pin Light blending modes and the Layer Mask Hides Effect and Vector Mask Hides Effect advanced blending options.

• Photoshop 6.0 introduced layer sets, layer color coding, layer clipping paths, fill layers, layer styles, editable type, and advanced type formatting. Photoshop 6.0 also added new layer effects.

• Photoshop 5.0 introduced layer effects; however, effects added in later versions of Photoshop are not supported. Photoshop 5.0 also introduced color samplers, spot channels, and embedded ICC profiles.

• Photoshop 4.0 introduced adjustment layers and guides.

Photoshop 2.0 (Photoshop)

(Mac OS) You can use this format to open an image in version 2.0 or to export an image to an application supporting only Photoshop 2.0 files. Saving in Photoshop 2.0 format flattens your image and discards layer information.

QuickTime Movie (ImageReady)

QuickTime (.mov) is a file format for the playback and media authoring of audio and video on both Windows and Mac OS. The QuickTime Movie format is visible in the Export Original Document's Save as Type (Windows) or Format (Mac OS) menu only if QuickTime is installed on the computer.

BMP

BMP is a standard Windows image format on DOS and Windows-compatible computers. BMP format supports RGB, Indexed Color, Grayscale, and Bitmap color modes. You can specify either Windows or OS/2® format and a bit depth for the image. For 4-bit and 8-bit images using Windows format, you can also specify RLE compression.

BMP images are normally written bottom to top; however, you can select the Flip Row Order option to write them from top to bottom. You can also select an alternate encoding method by clicking Advanced Modes. (Flip Row Order and Advanced Modes are most relevant to game programmers and others using DirectX.)

Photoshop EPS

Encapsulated PostScript (EPS) language file format can contain both vector and bitmap graphics and is supported by virtually all graphic, illustration, and page-layout programs. EPS format is used to transfer PostScript-language artwork between applications. When you open an EPS file containing vector graphics, Photoshop rasterizes the image, converting the vector graphics to pixels.

EPS format supports Lab, CMYK, RGB, Indexed Color, Duotone, Grayscale, and Bitmap color modes, and does not support alpha channels. EPS does support clipping paths. Desktop Color Separations (DCS) format, a version of the standard EPS format, lets you save color separations of CMYK images. You use DCS 2.0 format to export images containing spot channels. To print EPS files, you must use a PostScript printer.

Photoshop uses the EPS TIFF and EPS PICT formats to let you open images saved in file formats that create previews but are not supported by Photoshop (such as QuarkXPress®). An opened preview image can be edited and used like any other low-resolution file. An EPS PICT preview is available only in Mac OS.

Note: *EPS TIFF format and EPS PICT format were more relevant for use in earlier versions of Photoshop. The current version of Photoshop includes rasterization features for opening files that include vector data.*

Photoshop DCS 1.0 and 2.0 (Photoshop)

Desktop Color Separations (DCS) format is a version of the standard EPS format that lets you save color separations of CMYK images. You can use DCS 2.0 format to export images containing spot channels. To print DCS files, you must use a PostScript printer.

Cineon

Developed by Kodak, Cineon is a 10-bit-per-channel digital format suitable for electronic compositing, manipulation, and enhancement. Using the Cineon format, you can output back to film with no loss of image quality. The format is used in the Cineon Digital Film System, which transfers images originated on film to the Cineon format and back out to film.

Filmstrip

Filmstrip format is used for RGB animation or movie files created by Adobe Premiere®. If you resize, resample, remove alpha channels, or change the color mode or file format of a Filmstrip file in Photoshop, you won't be able to save it back to Filmstrip format. For further guidelines, see Adobe Premiere Help.

GIF

Graphics Interchange Format (GIF) is the file format commonly used to display indexed-color graphics and images in hypertext markup language (HTML) documents over the World Wide Web and other online services. GIF is an LZW-compressed format designed to minimize file size and electronic transfer time. GIF format preserves transparency in indexed-color images; however, it does not support alpha channels.

IFF

IFF (Interchange File Format) is available through an optional plug-in. It is a general purpose data storage format that can associate and store multiple types of data. IFF is portable and has extensions that support still-picture, sound, music, video, and textual data. The IFF format includes Maya IFF and IFF (formerly Amiga IFF).

JPEG

Joint Photographic Experts Group (JPEG) format is commonly used to display photographs and other continuous-tone images in hypertext markup language (HTML) documents over the World Wide Web and other online services. JPEG format supports CMYK, RGB, and Grayscale color modes, and does not support alpha channels. Unlike GIF format, JPEG retains all color information in an RGB image but compresses file size by selectively discarding data.

A JPEG image is automatically decompressed when opened. A higher level of compression results in lower image quality, and a lower level of compression results in better image quality. In most cases, the Maximum quality option produces a result indistinguishable from the original.

JPEG 2000 (Photoshop optional plug-in)

JPEG 2000 is a file format that provides more options and greater flexibility than the standard JPEG (JPG) format. Using JPEG 2000, you can produce images with better compression and quality for both Web and print publishing. To save files in the JPEG 2000 format, the optional JPEG 2000 plug-in must be installed in Adobe Photoshop CS/Plug-Ins/Adobe Photoshop Only/File Formats. The optional JPEG 2000 format plug-in can be found on the Photoshop CS installation CD in Goodies/Optional Plug-Ins/Photoshop Only/File Formats.

Note: *Currently, computers with the necessary plug-in can display your JPEG 2000 files on the Web.*

Unlike traditional JPEG files, which are lossy, the JPEG 2000 format supports optional lossless compression. The JPEG 2000 format also supports 16-bit color or grayscale files, 8-bit transparency, and it can retain alpha channels and spot channels. Grayscale, RGB, CMYK, and Lab are the only modes supported by the JPEG 2000 format.

The JPEG 2000 format also supports using a Region of Interest (ROI) to minimize file size and preserve quality in critical regions of an image. By using an alpha channel, you can specify the area (ROI) where the most detail should be preserved, allowing greater compression and less detail in other regions. (See "Creating alpha channels (Photoshop)" on page 255.)

Large Document Format (PSB)

The Large Document Format (PSB) supports documents up to 300,000 pixels in any dimension. All Photoshop features, such as layers, effects, and filters, are supported by the PSB format. Currently, if you save a document in PSB format, it can only be opened in Photoshop CS. Other applications and older versions of Photoshop cannot open documents saved in PSB format.

Note: *Most other applications and older versions of Photoshop cannot support documents with file sizes larger than 2 GB.*

The Enable Large Document Format (.psb) option must be enabled in Preferences before you can save documents in PSB format. There is one exception: it is possible to open an *existing* PSB file and save it in PSB format even if the Enable Large Document Format (.psb) option is not selected in Preferences. For more information on saving a document in PSB format and selecting the Enable Large Document Format (.psb) option, see "Saving large documents (Photoshop)" on page 567.

PCX

PCX format is commonly used by IBM PC-compatible computers. Most PC software supports version 5 of PCX format. A standard VGA color palette is used with version 3 files, which do not support custom color palettes.

PCX format supports Bitmap, Grayscale, Indexed Color, and RGB color modes, and does not support alpha channels. PCX supports the RLE compression method. Images can have a bit depth of 1, 4, 8, or 24.

PDF

Portable Document Format (PDF) is a flexible, cross-platform, cross-application file format. Based on the PostScript imaging model, PDF files accurately display and preserve fonts, page layouts, and both vector and bitmap graphics. In addition, PDF files can contain electronic document search and navigation features such as electronic links. PDF supports 16-bit-per-channel images. Adobe Acrobat also has a Touch Up Object tool for minor editing of images in a PDF. For more information about working with images in PDFs, see Acrobat Help.

Note: *The Touch Up Object tool is mainly for last-minute revisions to images and objects. It's best to do image editing in Photoshop before saving as PDF.*

Photoshop and ImageReady recognize two types of PDF files: Photoshop PDF files and Generic PDF files. You can open both types of PDF files; however, you can only save images to Photoshop PDF format.

Photoshop PDF files Are created using the Photoshop Save As command. Photoshop PDF files can contain only a single image.

Photoshop PDF format supports all of the color modes (except Multichannel mode) and features that are supported in standard Photoshop format. Photoshop PDF also supports JPEG and ZIP compression, except for Bitmap-mode images, which use CCITT Group 4 compression.

Generic PDF files Are created using applications other than Photoshop, such as Adobe Acrobat and Adobe Illustrator, and can contain multiple pages and images. When you open a Generic PDF file, Photoshop rasterizes the image.

PICT File

PICT format is used in Mac OS graphics and page-layout applications as an intermediary file format for transferring images between applications. PICT format supports RGB images with a single alpha channel, and indexed-color, grayscale, and Bitmap-mode images without alpha channels. PICT format is especially effective at compressing images with large areas of solid color. This compression can be dramatic for alpha channels with their large areas of white and black.

When saving an RGB image in PICT format, you can choose either a 16-bit or 32-bit pixel resolution. For bitmap and grayscale images, you can choose from 2, 4, or 8 bits per pixel. In Mac OS with QuickTime installed, four JPEG compression options are available.

Note: In ImageReady, PICT format is supported in Mac OS only.

PICT Resource

(Mac OS) A PICT resource is a PICT file but takes a name and resource ID number. The PICT Resource format supports RGB images with a single alpha channel, and indexed-color, grayscale, and Bitmap-mode images without alpha channels.

You can use the Import command or the Open command to open a PICT resource. When saving a file as a PICT resource, you can specify the resource ID and resource name. As with other PICT files, you also specify bit depth and compression options.

Pixar

The Pixar format is designed specifically for high-end graphics applications, such as those used for rendering three-dimensional images and animation. Pixar format supports RGB and grayscale images with a single alpha channel.

PNG

Developed as a patent-free alternative to GIF, Portable Network Graphics (PNG) format is used for lossless compression and for display of images on the Web. Unlike GIF, PNG supports 24-bit images and produces background transparency without jagged edges; however, some Web browsers do not support PNG images. PNG format supports RGB, indexed-color, grayscale, and Bitmap-mode images without alpha channels. PNG preserves transparency in grayscale and RGB images.

QuickTime Movie (ImageReady)

QuickTime Movie format is a cross-platform format used for time-based data, such as video and audio. In ImageReady, you can save animations as QuickTime movies and open existing QuickTime movies as animations in order to optimize them for the Web.

Note: In Windows, QuickTime Movie format is visible in the Files of Type pop-up menu only when QuickTime is installed on your computer.

Photoshop Raw (Photoshop)

The Photoshop Raw format is a flexible file format for transferring images between applications and computer platforms. This format supports CMYK, RGB, and grayscale images with alpha channels, and multichannel and Lab images without alpha channels. Documents saved in the Photoshop Raw format can be any pixel or file size, but cannot contain layers. For more information on saving large documents in Photoshop Raw format, see "Saving large documents (Photoshop)" on page 567.

The Photoshop Raw format consists of a stream of bytes describing the color information in the image. Each pixel is described in binary format, with 0 representing black and 255 white (for images with 16-bit channels, the white value is 65535). Photoshop designates the number of channels needed to describe the image, plus any additional channels in the image. You can specify the file extension (Windows), file type (Mac OS), file creator (Mac OS), and header information.

In Mac OS, the file type is generally a four-character ID that identifies the file—for example, TEXT identifies the file as an ASCII text file. The file creator is also generally a four-character ID. Most Mac OS applications have a unique file creator ID that is registered with the Apple Computer Developer Services group.

The header parameter specifies how many bytes of information appear in the file before actual image information begins. This value determines the number of zeroes inserted at the beginning of the file as placeholders. By default, there is no header (header size = 0). You can enter a header when you open the file in Raw format. You can also save the file without a header and then use a file-editing program, such as HEdit (Windows) or Norton Utilities® (Mac OS), to replace the zeroes with header information.

You can save the image in an interleaved or noninterleaved format. If you choose interleaved, the color values (red, green, and blue, for example) are stored sequentially. Your choice depends on requirements of the application that will open the file.

Note: Photoshop Raw is not the same file format as a raw image file from a digital camera. A digital camera's raw image file is a camera-specific proprietary format that provides the photographer with a digital negative, an image free of any filtering, white balance adjustments, and other in-camera processing.

Scitex CT (Photoshop)

Scitex Continuous Tone (CT) format is used for high-end image processing on Scitex computers. Contact Creo to obtain utilities for transferring files saved in Scitex CT format to a Scitex system. Scitex CT format supports CMYK, RGB, and grayscale images and does not support alpha channels.

CMYK images saved in Scitex CT format often have extremely large file sizes. These files are generated for input using a Scitex scanner. Images saved in Scitex CT format are printed to film using a Scitex rasterizing unit, which produces separations using a patented Scitex halftoning system. This system produces very few moiré patterns and is often demanded in professional color work—for example, ads in magazines.

SWF (ImageReady)

The Macromedia Flash (SWF) file format is used for playing animated compositions. The animated compositions can provide Web site interactivity and navigation. Any browsers with the Macromedia Flash Player plug-in can read the SWF format. Because the SWF format can save animations as vector images to maintain a small file size, it is a good choice for animations with solid areas of color and sharp object definitions. A SWF file can also contain raster (bitmap) images and QuickTime movies. However, raster images and QuickTime movies increase the size of a SWF file significantly.

Some features of the SWF format to keep in mind:

- You can also choose a compression format for any embedded bitmap, such as JPEG, Indexed, and Truecolor. The default format for the embedded bitmaps in an SWF file is JPEG. Note, however, that bitmap objects usually increase the composition's file size.

- The SWF format supports solid-color backgrounds only. Gradients or textures applied to the background of a composition are exported as a backdrop object—a bitmap object that appears behind all the other objects in the composition.

- The SWF format is a streaming format, and plays as soon as a certain amount of the file has downloaded.

Targa

TGA (Targa®) format is designed for systems using the Truevision® video board and is commonly supported by MS-DOS color applications. Targa format supports 16-bit RGB images (5 bits x 3 color channels, plus one unused bit), 24-bit RGB images (8 bits x 3 color channels), and 32-bit RGB images (8 bits x 3 color channels plus a single 8-bit alpha channel). Targa format also supports indexed-color and grayscale images without alpha channels. When saving an RGB image in this format, you can choose a pixel depth and select RLE encoding to compress the image.

TIFF

Tagged-Image File Format (TIFF) is used to exchange files between applications and computer platforms. TIFF is a flexible bitmap image format supported by virtually all paint, image-editing, and page-layout applications. Also, virtually all desktop scanners can produce TIFF images. TIFF documents can have a maximum file size of 4 GB. Photoshop CS supports large documents saved in TIFF format. However, most other applications and older versions of Photoshop do not support documents with file sizes greater than 2 GB. For more information on saving large documents in TIFF format, see "Saving large documents (Photoshop)" on page 567.

TIFF format supports CMYK, RGB, Lab, indexed-color, and grayscale images with alpha channels and Bitmap-mode images without alpha channels. Photoshop can save layers in a TIFF file; however, if you open the file in another application, only the flattened image is visible. Photoshop can also save annotations, transparency, and multiresolution pyramid data in TIFF format.

Adding file information (Photoshop)

File information—also called *metadata*—is increasingly important in all types of publishing. Photoshop supports the information standard developed by the Newspaper Association of America (NAA) and the International Press Telecommunications Council (IPTC) to identify transmitted text and images. This standard includes entries for descriptions, keywords, categories, credits, and origins.

In Windows and Mac OS, you can add file information to files saved in Photoshop, Large Document Format (PSB), TIFF, JPEG, EPS, and PDF formats. In Mac OS, you can also add file information to files in other Photoshop-supported formats except GIF. The information you add is embedded in the file using XMP (eXtensible Metadata Platform). XMP provides Adobe applications and workflow partners with a common XML framework that standardizes the creation, processing, and interchange of document metadata across publishing workflows. When you save files from Photoshop that contain keywords, those keywords are not displayed in Adobe Acrobat's File Info dialog when the file is opened in Acrobat. For information on adding metadata to a file, see "Working with the metadata palette" on page 97 and "Adding metadata to files" on page 99.

Note: *It's possible to add metadata in ImageReady using the options in the Optimize palette. For more information, see* "Including image metadata (ImageReady)" on page 562.

Adding digital copyright information

You can add copyright information to Photoshop images and notify users that an image is copyright-protected via a digital watermark that uses Digimarc ImageBridge technology. The watermark—a digital code added as noise to the image—is virtually imperceptible to the human eye. The Digimarc watermark is durable in both digital and printed forms, surviving typical image edits and file format conversions.

Embedding a digital watermark in an image lets viewers obtain information about the creator of the image. This feature is particularly valuable to image creators who license their work to others. Copying an image with an embedded watermark also copies the watermark and any information associated with it.

For more detailed information on embedding Digimarc digital watermarks, refer to the Digimarc Web site at www.digimarc.com.

Before adding a digital watermark
Keep in mind the following considerations before embedding a digital watermark in your image.

Color variation The image must contain some degree of variation or randomness in color to embed the digital watermark effectively and imperceptibly. The image cannot consist mostly or entirely of a single flat color.

Pixel dimensions The Digimarc technology requires a minimum number of pixels to work. Digimarc recommends the following minimum pixel dimensions for the image to be watermarked:

• 100 pixels by 100 pixels if you don't expect the image to be modified or compressed prior to its actual use.

- 256 pixels by 256 pixels if you expect the image to be cropped, rotated, compressed, or otherwise modified after watermarking.

- 750 pixels by 750 pixels if you expect the image to appear ultimately in printed form at 300 dpi or greater.

There is no upper limit on pixel dimensions for watermarking.

File compression In general, a Digimarc watermark will survive lossy compression methods such as JPEG, though it is advisable to favor image quality over file size (a JPEG compression setting of 4 or higher works best). In addition, the higher the Watermark Durability setting you choose when embedding the watermark (see "Using the Watermark Durability setting" on page 592), the better the chances that the digital watermark will survive compression.

Workflow Digital watermarking should be one of the very last tasks you perform on an image, except for file compression.

Use the following recommended workflow:

- Make all necessary modifications to your image until it has the desired final appearance (this includes resizing and color correction).

- Embed the Digimarc watermark.

- If needed, compress the image by saving it in JPEG or GIF format.

- If the image is intended for printed output, perform the color separation.

- Read the watermark and use the signal strength meter to verify that the image contains a watermark of sufficient strength for your purposes.

- Publish the digital watermarked image.

Embedding digital watermarks

To embed a digital watermark, you must first register with Digimarc Corporation—which maintains a database of artists, designers, and photographers and their contact information—to get a unique Digimarc ID. You can then embed the Digimarc ID in your images, along with information such as the copyright year or a restricted-use identifier.

To embed a watermark:

1 Open the image that you want to watermark. You can embed only one digital watermark per image. The Embed Watermark filter won't work on an image that has been previously watermarked.

If you're working with a layered image, you should flatten the image before watermarking it; otherwise, the watermark will affect the active layer only.

Note: *You can add a digital watermark to an indexed-color image by first converting the image to RGB mode, embedding the watermark, and then converting the image back to indexed-color mode. However, the results may be inconsistent. To make sure that the watermark was embedded, run the Read Watermark filter.*

2 Choose Filter > Digimarc > Embed Watermark.

3 If you are using the filter for the first time, click the Personalize button. Get a Digimarc ID by clicking Info to launch your Web browser and visit the Digimarc Web site at www.digimarc.com, or by contacting Digimarc at the telephone number listed in the dialog box. Enter your PIN and ID number in the Digimarc ID text box, and click OK.

Once you have entered a Digimarc ID, the Personalize button becomes a Change button, allowing you to enter a new Digimarc ID.

4 Enter a copyright year, Transaction ID, or Image ID for the image.

5 Select any of the following image attributes:

- Restricted Use to limit the use of the image.

- Do Not Copy to specify that the image should not be copied.

- Adult Content to label the image contents as suitable for adults only. (Within Photoshop, this option does not limit access to adult-only images, but future versions of other applications may limit their display.)

6 For Target Output, specify whether the image is intended for monitor, Web, or print display.

7 For Watermark Durability, drag the slider or enter a value, as described in the next section.

8 Select Verify to automatically assess the watermark's durability after it is embedded. For more information, see "Using the signal strength meter" on page 592.

9 Click OK.

Using the Watermark Durability setting

The default Watermark Durability setting is designed to strike a balance between watermark durability and visibility in most images. However, you can adjust the Watermark Durability setting yourself to suit the needs of your images. Low values are less visible in an image but less durable, and may be damaged by applying filters or by performing some image-editing, printing, and scanning operations. High values are more durable but may display some visible noise in the image.

Your setting should depend on the intended use of the image and on the goals you've set for your watermarks. For example, it may be quite acceptable to use a higher Watermark Durability setting with JPEG images posted on a Web site. The higher durability helps to ensure the persistence of the watermark, and the increased visibility often is not noticeable with medium-resolution JPEG images. Digimarc recommends experimenting with various settings as part of your testing process to determine which setting works best for the majority of your images.

Using the signal strength meter

The signal strength meter helps you determine whether a watermark is durable enough to survive the intended use of the image. The signal strength meter is available only for images containing digital watermarks that you yourself have embedded.

Digimarc recommends that you check the signal strength meter before publishing your images. For example, if you often compress watermarked images for inclusion in a Web site, check the meter before posting the images. You can also use the signal strength meter to gauge the effectiveness of different Watermark Durability settings that you are experimenting with.

To check the signal strength meter:

Choose Filter > Digimarc > Read Watermark. The signal strength meter appears at the bottom of the dialog box.

You can also display the meter automatically by selecting Verify while embedding the watermark. See "Embedding digital watermarks" on page 591.

Setting preferences for saving files (Photoshop)

In Photoshop, you can set preferences for saving image previews, using file extensions, and maximizing file compatibility.

To set file saving preferences:

1 Do one of the following:

• In Windows, choose Edit > Preferences > File Handling.

• In Mac OS, choose Photoshop > Preferences > File Handling.

2 Set the following options:

Image Previews Choose an option for saving image previews: Never Save to save files without previews, Always Save to save files with specified previews, or Ask When Saving to assign previews on a file-by-file basis.

In Mac OS, you can select one or more of the following preview types (to speed the saving of files and minimize file size, select only the previews you need):

• Icon to use the preview as a file icon on the desktop.

• Full Size to save a 72-ppi version of the file for use in applications that can only open low-resolution Photoshop images. For non-EPS files, this is a PICT preview.

• Macintosh Thumbnail to display the preview in the Open dialog box.

• Windows Thumbnail to save a preview that can display on Windows systems.

File Extension (Windows) Choose an option for the three-character file extensions that indicate a file's format: Use Upper Case to append file extensions using uppercase characters, or Use Lower Case to append file extensions using lowercase characters.

Append File Extension (Mac OS) File extensions are necessary for files that you want to use on or transfer to a Windows system. Choose an option for appending extensions to filenames: Never to save files without file extensions, Always to append file extensions to filenames, or Ask When Saving to append file extensions on a file-by-file basis. Select Use Lower Case to append file extensions using lowercase characters.

To toggle the Append File Extension option for a single file, hold down Option when you choose a file format in the Save As dialog box.

Creating multiple-image layouts (Photoshop)

You can export multiple images automatically as contact sheets and picture packages using Automate commands.

Creating contact sheets

Contact sheets let you easily preview and catalog groups of images by displaying a series of thumbnails on a single page. You can automatically create and place thumbnails on a page using the Contact Sheet II command.
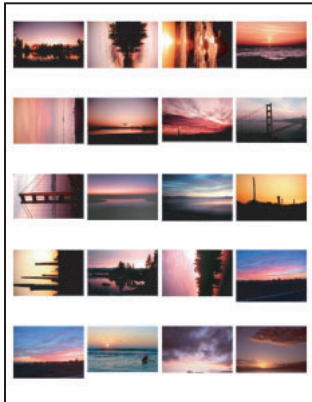
Example of a contact sheet

To create a contact sheet:

1 Do one of the following:

• From the main menu, choose File > Automate > Contact Sheet II.

• In the File Browser, select a folder of images or specific image files, and then from the File Browser menu, choose Automate > Contact Sheet II. The Contact Sheet II command will use all the images displayed in the File Browser unless you select specific images before choosing the command. You can always choose a different folder of images or current open documents after the Contact Sheet II dialog box opens.

Note: *Click to select an image in the File Browser. Shift-click to select a series of images. Ctrl-click (Windows) or Command-click (Mac OS) to select noncontiguous images.*

2 In the Contact Sheet II dialog box, specify the images to use by choosing one of the following from the Use menu in the Source Images area:

• Current Open Documents to use any image that is currently open in Photoshop.

• Folder, and then click Browse (Windows) or Choose (Mac OS) to specify the folder containing the images you want to use. Select Include All Subfolders to include images inside any subfolders.

• Selected Images from File Browser to use images displayed in the File Browser. All images in the File Browser will be used unless you select specific images before choosing the Contact Sheet II command.

3 In the Document area, specify the dimensions, resolution, and color mode for the contact sheet. Select Flatten All Layers to create a contact sheet with all images and text on a single layer. Deselect Flatten All Layers to create a contact sheet in which each image is on a separate layer and each caption is on a separate text layer.

4 In the Thumbnails area, specify layout options for the thumbnail previews.

- For Place, choose whether to arrange thumbnails across first (from left to right, then top to bottom) or down first (from top to bottom, then left to right).

- Enter the number of columns and rows that you want per contact sheet. The maximum dimensions for each thumbnail are displayed to the right, along with a visual preview of the specified layout.

- Select Use Auto-Spacing to let Photoshop automatically space the thumbnails in the contact sheet. Deselecting Use Auto-Spacing lets you specify the vertical and horizontal space around the thumbnails. The contact sheet preview in the dialog box updates as you specify the spacing.

- Select Rotate For Best Fit to rotate the images, regardless of their orientation, so they fit efficiently on a contact sheet.

The Rotate For Best Fit option off and on

5 Select Use Filename As Caption to label the thumbnails using their source image filenames. Use the menu to specify a caption font and font size.

6 Click OK.

Creating picture packages

With the Picture Package command, you can place multiple copies of a source image on a single page, similar to the photo packages traditionally sold by portrait studios. You also have the option of placing different images on the same page. You can choose from a variety of size and placement options to customize your package layout.

Example of a picture package layout

To create a picture package:

1 Do one of the following:

• Choose File > Automate > Picture Package. If you have multiple documents open, Picture Package uses the frontmost document.

• From the File Browser menu, choose Automate > Picture Package. The Picture Package command uses the first image listed in the File Browser unless you select a specific image before launching the Picture Package command.

If you're only using the frontmost document or a selected image from the File Browser for the Picture Package, you can skip to step 3.

2 Add one or more images to the layout by doing one of the following:

• In the Source Images area of the Picture Package dialog box, choose either File or Folder from the Use menu and click Browse (Windows) or Choose (Mac OS). When choosing Folder, you can select Include All Subfolders to include images inside any subfolders.

• Click a placeholder in the preview layout and browse to select an image.
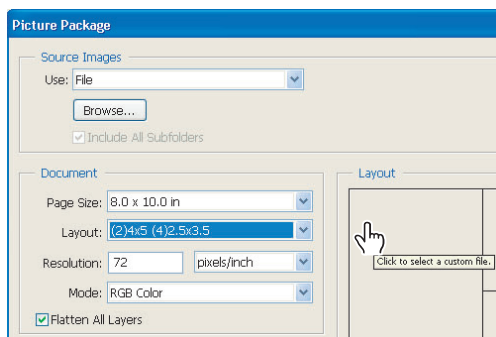
Clicking a placeholder in the Picture Package preview layout lets you browse to select an image.

- Drag an image from the desktop or a folder into a placeholder.
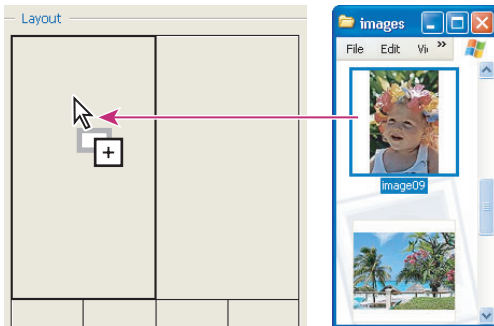
Dragging an image from the desktop into a placeholder to add an image in the Picture Package

You can change any image the layout by clicking a placeholder and browsing to select an image.

3 In the Document area of the Picture Package dialog box, select page size, layout, resolution, and color mode. A thumbnail of the chosen layout is displayed on the right side of the dialog box.

You can also create your own custom layouts. For more information, see "Customizing picture package layouts" on page 597.

4 Select Flatten All Layers to create a picture package with all images and label text on a single layer. Deselect Flatten All Layers to create a picture package where each image is on a separate layer and each label is on a separate text layer. Placing each image and label on a separate layer lets you update your picture package even after it's been saved. Keep in mind that not flattening layers increases the file size of your picture package.

5 In the Label area, choose the source for label text from the Content menu or choose None. If you choose Custom Text, enter the text for the label in the Custom Text field.

6 Specify font, font size, color, opacity, position, and rotation for the labels.

7 Click OK.

Customizing picture package layouts

You can modify existing layouts or create new layouts using the Picture Package Edit Layout feature. Your custom layouts are saved as text files that are stored in the Layouts folder inside the Presets folder. These saved layouts can be reused. The Picture Package Edit Layout feature uses a graphic interface that eliminates the need to write text files to create or modify layouts.

To customize a picture package layout:

1 Do one of the following:

- Choose File > Automate > Picture Package.

- From the File Browser menu, choose Automate > Picture Package.

2 In the Picture Package dialog box, choose a layout from the Layout menu if you're creating a customizing an existing layout.

3 Click the Edit Layout button.

4 In the Picture Package Edit Layout dialog box, enter a name for the custom layout in the Name text box.

5 (Optional) In the Layout area of the Picture Package Edit Layout dialog box, choose a size from the Page Size menu or enter values in the Width and Height text boxes. You can use the Units menu to specify inches, centimeters, pixels, or millimeters.
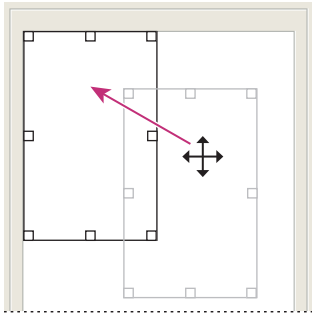
Dragging a placeholder to a new location in the Picture Package layout

6 In the Grid area of the Picture Package Edit Layout dialog box, select the Snap To option to display a grid to help you position the elements in the custom layout. Enter a value in the Size text box to change the appearance of the grid.

7 To add or delete a placeholder, do one of the following:

• Click Add Zone to add a placeholder to the layout.

• Select a placeholder and click Delete Zone to delete it from the layout.

8 To modify a placeholder, select a placeholder and do one of the following:

• Enter values in the Width and Height text boxes to resize a placeholder.

• Click and drag a handle to resize a placeholder. If you resize a rectangle placeholder with an image in it, Picture Package will snap the image within the vertical or horizontal placeholder, depending on the way the zone is being resized.

• Enter values in the X and Y text boxes to move a placeholder.

• Enter values in the Position and Size text boxes for the positioning and sizing a placeholder.

• Click and drag a placeholder to the location you want in the layout.

9 Click Save.

Creating a PDF presentation

The PDF Presentation command lets you use a variety of images to create a a multipage document or slide show presentation. You can set options to maintain image quality in the PDF, specify security settings, and set the document to open automatically as a slide show.

PDF Presentation as a slide show
A. First slide   **B.** Wipe Left transition   **C.** Second slide

To create a multipage PDF Presentation:

1 Do one of the following:

• From the main menu, choose File > Automate > PDF Presentation.

• From the File Browser menu, choose Automate > PDF Presentation. All the image files displayed in the File Browser will be added to the PDF Presentation. In the File Browser, you can select the image files you want for the PDF Presentation. Otherwise, the PDF Presentation command will select all the images currently displayed in the File Browser.

Note: Click a file to select it. Shift-click to select a series of files. Ctrl-click (Windows) or Command-click (Mac OS) to select noncontiguous files.

2 If you did not launch the PDF Presentation command from the File Browser, click Browse and navigate to select files for the PDF Presentation. Select the Add Open Files option to add files already open in Photoshop.

You can remove any unwanted file by selecting it in the Source Files window, and then clicking the Remove button.

The files in the Source Files window are used to generate the pages in the PDF Presentation, starting with the topmost file for the first page and progressing down the list for subsequent pages. To reorder a file in the sequence, select the file and drag it to a new position in the list.
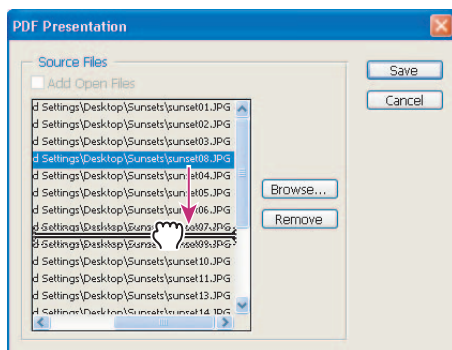
Dragging a file to a new position in the list

3 In the Output Options area of the PDF Presentation dialog box, select one of the following:

Multi-Page Document Creates a PDF document with the images on separate pages.

Presentation Creates a PDF slide show presentation.

4 Select the View PDF After Saving option if you want Adobe Acrobat or the Adobe Reader to open the PDF after it's created.

5 If you selected Presentation as the Output Option, in the Presentation Options area, you can specify the following options:

Advance Every [5] Seconds Specifies how long each image is displayed before the presentation advances to the next image. The default duration is 5 seconds.

Loop After Last Page Specifies that the presentation will automatically start over after reaching the end. Deselecting this option specifies that the presentation will stop after the final image is displayed.

Transition Specifies the transition from one image to the next.

6 Click Save.

7 In the Save dialog box, enter a name for the PDF Presentation and select a destination for the saved file. Click Save.

8 In the PDF Options dialog box, select the options you want, and click OK.

Encoding Determines the compression method (Zip or JPEG). For more information, see "About file compression" on page 582.

Save Transparency Preserves transparency when the file is opened in another application. (Transparency is always preserved when the file is reopened in Photoshop or ImageReady.) This option is not available if the file contains a spot color channel or does not contain transparency.

Image Interpolation Anti-aliases the printed appearance of a low-resolution image.

Downgrade Color Profile If you selected ICC Profile (Windows) or Embed Color Profile (Mac OS) for a version 4 profile in the Save dialog box, this option downgrades the profile to version 2. Select this option if you plan to open the file in an application that does not support version 4 profiles.

PDF Security Specifies security options such as password protection and restricted access to a file's content. Choose 40-bit or 128-bit RC4 encryption for a lower or higher level of security. For more information on PDF security, see "Saving files in Photoshop PDF format (Photoshop)" on page 567.

Include Vector Data Preserves any vector graphics (such as shapes and type) as resolution-independent objects, ensuring smoother output. When it is selected, you can select the following options:

• Embed Fonts ensures that all fonts used in the file are displayed and printed, even on computers that do not have the fonts installed. Bitmap fonts, fonts that don't allow PDF embedding, substitute fonts, type that uses the faux bold style, and warped type cannot be embedded. Selecting Embed Fonts increases the size of the saved file.

- Use Outlines for Text saves text as paths. Select this option if embedding fonts results in a file that is too large, if you plan to open the file in an application that cannot read PDF files with embedded fonts, or if a font fails to display or print correctly. Text saved as outlines is not searchable or selectable in a PDF viewer. You can, however, edit the text when you reopen the file in Photoshop.

Note: *The PDF viewer may display a substitute font if both Embed Fonts and Use Outlines for Text are deselected.*

9 Click OK. Photoshop closes the PDF options dialog box and creates the PDF Presentation. A dialog appears telling you if the PDF Presentation was successfully created.

Placing Photoshop images in other applications (Photoshop)

Photoshop provides a number of features to help you use images in other applications. Due to the integration between Adobe products, many Adobe applications can directly import Photoshop (PSD) format files and use Photoshop features like layers, layer styles, masks, transparency, and effects. Additionally, programs like Adobe GoLive can use variables set in ImageReady and Photoshop (topmost text layer only) to use in creating multiple-iterations of an image. For more information on setting variables, see "Using variables" on page 650.

Using image clipping paths to create transparency

You can use image clipping paths to define transparent areas in images you place in page-layout applications. In addition, Mac OS users can embed Photoshop images in many word-processor files.

For assistance with image clipping paths, choose Help > Export Transparent Image. This interactive wizard helps you prepare images with transparency for export to a page-layout application.

You may want to use only part of a Photoshop image when printing it or placing it in another application. For example, you may want to use a foreground object and exclude the background. An *image clipping path* lets you isolate the foreground object and make everything else transparent when the image is printed or placed in another application.
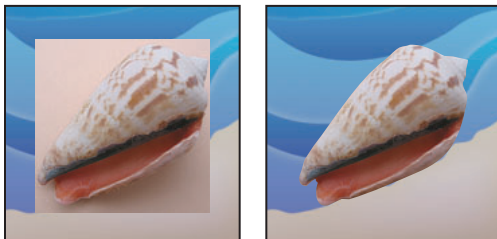
Image imported into Illustrator or InDesign without image clipping path (left),
and with image clipping path (right)

To save a path as an image clipping path:

1 Draw a work path that defines the area of the image you want to show. For more information, see "Creating a work path (Photoshop)" on page 300 and "Converting selection borders to paths" on page 311.

Note: *Paths are vector-based; therefore, they have hard edges. You cannot preserve the softness of a feathered edge, such as in a shadow, when creating an image clipping path.*

2 In the Paths palette, save the work path as a path. For more information, see "Managing paths (Photoshop)" on page 308.

3 Choose Clipping Path from the Paths palette menu, set the following options, and click OK:

• For Path, choose the path you want to save.

• For Flatness, leave the flatness value blank to print the image using the printer's default value. If you experience printing errors, enter a flatness value to determine how the PostScript interpreter approximates the curve. The lower the flatness value, the greater the number of straight lines used to draw the curve and the more accurate the curve.

Values can range from 0.2 to 100. In general, a flatness setting from 8 to 10 is recommended for high-resolution printing (1200 dpi to 2400 dpi), and a setting from 1 to 3 for low-resolution printing (300 dpi to 600 dpi).

4 If you plan to print the file using process colors, convert the file to CMYK mode. For more information, see "Converting between color modes (Photoshop)" on page 156.

5 Save the file by doing one of the following:

• To print the file using a PostScript printer, save in Photoshop EPS, DCS, or PDF format.

• To print the file using a non-PostScript printer, save in TIFF format and export to Adobe InDesign, or to Adobe PageMaker® 5.0 or later.

Note: *If you import an EPS or DCS file with a TIFF preview into Adobe Illustrator, the image clipping path transparency may not display properly. This affects the on-screen preview only; it does not affect the printing behavior of the image clipping path on a PostScript printer.*

Printing image clipping paths

Sometimes an imagesetter has difficulty interpreting image clipping paths, or a printer finds the image clipping path too complex to print, resulting in a Limitcheck error or a general PostScript error. Sometimes you can print a complex path on a low-resolution printer without difficulty but run into problems when printing the same path on a high-resolution printer. This is because the lower-resolution printer simplifies the path, using fewer line segments to describe curves than does the high-resolution printer.

You can simplify an image clipping path in the following ways:

• Manually reduce the number of anchor points on the path. (See "Adding, deleting, and converting anchor points" on page 307.)

• Increase the tolerance setting used to create the path. To do this, load the existing path as a selection, choose Make Work Path from the Paths palette menu, and increase the tolerance setting (4 to 6 pixels is a good starting value). Then re-create the image clipping path. For more information, see "Converting paths to selection borders" on page 310 and "Using image clipping paths to create transparency" on page 601.

Exporting paths to Adobe Illustrator

The Paths to Illustrator command lets you export Photoshop paths as Adobe Illustrator files. This makes it easier to work with combined Photoshop and Illustrator artwork or to use Photoshop features on Illustrator artwork. For example, you may want to export a pen tool path and stroke it to use as a trap with an Photoshop clipping path you are printing in Illustrator. You can also use this feature to align Illustrator text or objects with Photoshop paths.

To use the Paths to Illustrator command:

1 Draw and save a path or convert an existing selection into a path.

2 Choose File > Export > Paths to Illustrator.

3 Choose a location for the exported path, and enter a filename. Make sure Work Path is chosen in the Write menu to export the path.

4 Click Save.

5 Open the file in Adobe Illustrator. You can manipulate the path or use the path to align Illustrator objects that you add to the file.

Note that the crop marks in Adobe Illustrator reflect the dimensions of the Photoshop image. The position of the path within the Photoshop image is maintained, provided you don't change the crop marks or move the path.

Object linking and embedding (OLE) (Windows only)

Photoshop is an OLE 2.0 server, which means it supports embedding or linking an image in an OLE container application (usually a word-processor or page-layout program). For example, you can insert Photoshop files and selections into other OLE applications such as Adobe PageMaker, Adobe FrameMaker, and Microsoft Word using copy and paste or other methods.

• Linking lets you place a link in the OLE container file that refers to the Photoshop file on the hard drive.

• Embedding lets you insert the Photoshop file into the OLE container file.

Once in the container application, an image can be double-clicked for editing in Photoshop. When closed in Photoshop, the image is updated in the container application.

To link or embed a selection or image in an OLE application:

Do one of the following:

• Copy a selection in Photoshop, and insert it in your OLE container application using the application's Paste Special command. Refer to your word-processing or page-layout application documentation for more instructions. Pasted selections can only be embedded, not linked.

• Use your OLE container application's Insert Object command to insert a new Photoshop image or existing Photoshop file as an OLE-embedded or OLE-linked object. Refer to your word-processing or page-layout application documentation for instructions.

To insert an unlinked screen-resolution bitmap into an OLE application:

With the Move tool ▸⊕, drag a selection to the OLE container application. When you drop the object, it appears as a 72-ppi bitmap, which cannot be automatically updated in Photoshop.

To modify and update a linked or embedded image in an OLE application:

1 Double-click the linked or embedded image in your word-processor or page-layout application to launch Photoshop (if it is not already running), and open the image for editing.

2 Modify the image as desired.

3 Do one of the following:

• For embedded images, close the file, or choose File > Update or File > Close & Return to *application name*.

• For linked images, save and close the file.

Note: *You can also modify linked files without first opening the container document. The linked image will be updated the next time you open the document in its OLE container application.*

Saving images for use in video

The preset file sizes in the Preset menu of the New file dialog let you create images at a size and pixel aspect ratio to compensate for scaling when incorporated into video. The presets also create a document with nonprinting guides that delineate the action safe and title safe areas of the image. Using the preset file sizes, you can produce images for specific video systems—NTSC, PAL, or HDTV.

An image on a computer monitor is made up of pixels that are essentially square. An image displayed on a video monitor is analog and does not involve pixel shape. Nonsquare pixels are the most commonly used by encoding devices for video. When importing an image created by a square-pixel graphics program into a video editing program like Adobe Premiere, the square pixels are scaled to the nonsquare pixels for video encoding. This scaling results in a distorted image.

A   B   C
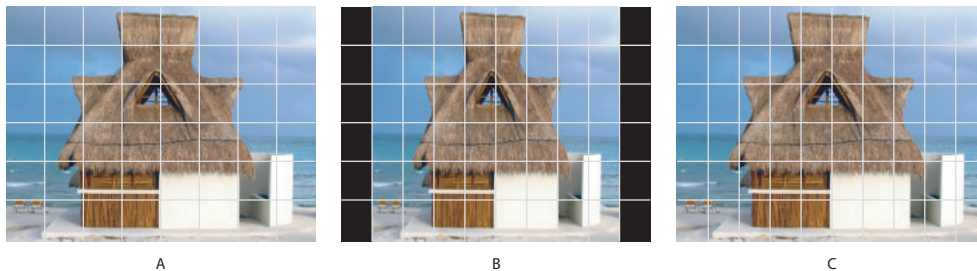
Pixel aspect ratio scaling
A. Square pixel image viewed on a computer monitor **B.** Square pixel image viewed on a video monitor **C.** Same image with the correct pixel aspect ratio viewed on a video monitor

Other issues to keep in mind when creating images for use in video are as follows:

• Premiere does not support 16-bit-per-channel images.

• Premiere can import an individual layer from a multilayer Photoshop (PSD) file.

• If your Photoshop image file has transparency, Premiere preserves it.

• If your file uses a layer mask or multiple layers, you might not have to flatten the layers, but you might want to include a flattened copy of the PSD file in the PSD format to maximize backward compatibility. This should ensure that your Photoshop file will import successfully into Premiere.

To save images for use in video:

1 Create a new document.

2 In the New dialog box, choose the appropriate preset from the Preset menu for the video system that the image will be shown on.
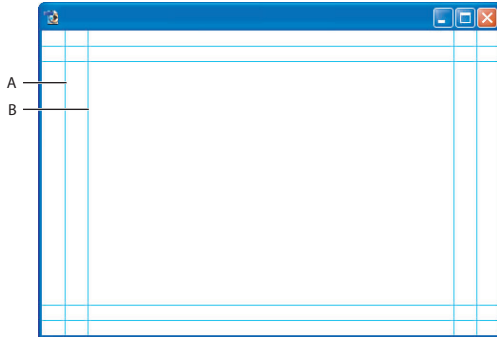
Video preset file size guides
A. Action safe area (outer rectangle) **B.** Title safe area (inner rectangle)

For more options, click the Advanced button ⌃ to specify a color profile and specific pixel aspect ratio. For more information on using the New dialog box, see "Creating new images" on page 89.

By default, non-square pixel documents open with the Pixel Aspect Ratio Correction enabled. This scales the image so you can preview how the image will appear on the output device (usually a video monitor).

3 (Optional) Choose View > Pixel Aspect Ratio Correction to turn off the scaling correction and view the image as it looks on a computer (square pixel) monitor.
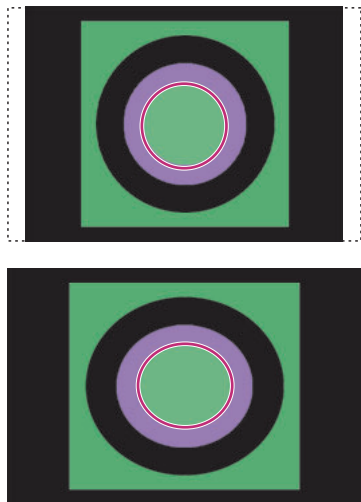
Viewing an image of a circle in a NTSC DV 720x480 document with the Pixel Aspect Ratio Correction turned on (top), and with the Pixel Aspect Ratio Correction turned off (bottom)

You can simultaneously view an image with the Pixel Aspect Ratio Correction turned on and with the correction turned off. With the non-square pixel image open and the Pixel Aspect Ratio Correction enabled, choose Window > Arrange > New Window for [name of document]. With the new window active, choose View > Pixel Aspect Ratio Correction to turn the correction off.

To add images from another document to a non-square pixel document:

Do one of the following:

• Copy and paste an image.

• Drag an image from another document window.

• Choose File > Place, choose the file you want to place, and click the Place button.

Photoshop automatically converts and scales the image to the pixel aspect ratio of the non-square pixel document. Images brought in from Adobe Illustrator will also be properly scaled.

To assign a pixel aspect ratio value to an existing document:

With the square pixel document open, choose Image > Pixel Aspect Ratio and select a pixel aspect ratio.

To create a custom pixel aspect ratio:

1 With a document open, choose Image > Pixel Aspect Ratio > Custom Pixel Aspect Ratio.

2 In the Save Pixel Aspect Ratio dialog box, enter a value in the Factor text box, name the custom pixel aspect ratio, and click OK.

The new custom pixel aspect ratio will appear in the both the Pixel Aspect Ratio menu in the New dialog box and in the Pixel Aspect Ratio submenu in the Image menu.

To delete a pixel aspect ratio:

1 With a document open, choose Image > Pixel Aspect Ratio > Delete Pixel Aspect Ratio.

2 In the Delete Pixel Aspect Ratio dialog box, choose the option you want to delete from the Pixel Aspect Ratio menu and click Delete.

To reset the pixel aspect ratios:

1 With a document open, choose Image > Pixel Aspect Ratio > Reset Pixel Aspect Ratios.

2 In the dialog box, choose one of the following:

Append Replaces the current pixel aspect ratios with the default values plus any custom pixel aspect ratios. This option is useful if you deleted a default value and want to restore it to the menu but also want to retain any custom values.

Cancel Cancels the command.

OK Replaces the current pixel aspect ratios with the default values. Custom pixel aspect ratios are discarded.

Saving images for use in motion graphics

You can save images in Photoshop for use in motion graphics software like Adobe After Effects. A Photoshop (PSD) file can be imported directly into an After Effects project with the option of preserving individual layers, layer styles, transparent areas and layer masks, and adjustment layers. Importing layers makes it easy to prepare still images for animation.

You can reduce the rendering times and problems in After Effects by doing the following:

- Organize and name layers. If you change a layer name or delete a layer in a Photoshop document after you have imported it into After Effects, After Effects will not be able to find the renamed or deleted layer. The After Effects Project window lists that layer as Missing.

- Make sure that each layer has a unique name, because After Effects manages layers by their names. Duplicate layer names can cause problems when you update footage.

- If you want to import a composited version of a layered Photoshop file along with a layered version, select the Include Composited Image With Layered Files option in the Photoshop Saving Files Preferences dialog box.

If you are creating a Photoshop file for export to After Effects for use in a video project, use one of the file size presets for video in the New file dialog box. For more information on why you must specify specific pixel aspect ratios for use in video, see "Saving images for use in video" on page 604.

Printing (Photoshop)

About printing

Whether you are printing an image on your desktop printer or sending it to a prepress facility, knowing a few basics about printing will make the print job go more smoothly and help ensure that the finished image appears as intended.

Types of printing   For most users, printing a file means that the Adobe Photoshop application sends the image to an inkjet printer to print a photograph. Photoshop can send your image to a variety of printing devices to be printed directly onto paper or to be converted to a positive or negative image on film. In the latter case, the film can be used to create a master plate for printing by a mechanical press.

Types of images   The simplest types of images, such as line art, use only one color in one level of gray. A more complex image, such as a photograph, has color tones that vary within the image. This type of image is known as a c*ontinuous-tone image*.

Halftoning   To create the illusion of continuous tones when printed, images are broken down into a series of dots. When printing photos on a printing press, this process is called *halftoning*. Varying the sizes of the dots in a halftone screen creates the optical illusion of variations of gray or continuous color in the image.

Note: Although inkjet printers also use dots to create the illusion of continuous tones, they use a different type of screen process that does not vary the size of the dots. Instead, inkjet printers use dots that have a uniform size and that are much tinier than the dots used by most printing presses.

Color separation   Artwork that will be commercially reproduced and that contains more than a single color must be printed on separate master plates, one for each color. This process is called *color separation* and most commonly uses cyan, yellow, magenta, and black (CMYK) inks. In Photoshop, you can adjust how the various plates are generated.

Quality of detail   The detail in a printed image results from a combination of resolution and screen frequency. The higher an output device's resolution, the finer (higher) a screen ruling you can use. Many inkjet printer drivers offer simplified print settings for choosing higher-quality printing.

Printing images to a desktop printer

Unless you work in a commercial printing company or service bureau, you're probably printing images on a desktop printer—such as an inkjet, dye sublimation, or laser printer—and not to an image setter. Photoshop lets you control how your image will print.

Desktop printing considerations

Because your monitor displays an image using light and a desktop printer reproduces an image using inks, dyes, or pigments, it is impossible for a desktop printer to reproduce all the colors that can be displayed on a monitor. However, by incorporating certain proce-dures (such as a color management system) into your workflow, you can achieve predictable results when printing your images on a desktop printer. Here are some issues to consider when working with an image that you intend to print:

- If your image is in RGB mode, do not convert the document to CMYK mode when printing to a desktop printer. Work entirely in RGB mode.

- If you want a preview of what your image might look like on any device for which you have a profile, use the Proof Colors command. For more information on proof setup and using the Proof Colors command, see "Soft-proofing colors" on page 140.

- For accurate color reproduction between the screen and the printed page, it's absolutely necessary to incorporate color management into your workflow. You must work with a monitor that is calibrated and characterized. It's also necessary that you have a custom profile for the combination of your printer and the paper you're printing on. Using the profile supplied with your printer will only give average results (although the results are better than using no profiles at all). For more information on producing consistent color, see "Calibrating and creating profiles" on page 119 and "Using color management when printing" on page 612.

Printing images

Photoshop provides the following printing commands:

- Page Setup and Print display options that are determined by your printer, print drivers, and operating system.

- Print with Preview displays Photoshop's printing, output, and color management options.

- Print One Copy prints one copy of a file without displaying a dialog box.

Note: *You cannot print images directly from ImageReady. If you have an image open in ImageReady and need to print it, use the Edit in Photoshop command to open the image in Photoshop. Keep in mind that ImageReady images open at screen resolution (72 ppi); this resolution may not be high enough to produce a high-quality print.*

To print an image with its current options:

Do one of the following:

- Choose File > Print, and click Print or OK.

- To print one copy of a file without displaying a dialog box, choose File > Print One Copy.

Note: *By default, Photoshop prints a composite of all visible layers and channels. To print an individual layer or channel, make it the only visible layer or channel before choosing the Print command.*

To set printer and page setup options:

1 Choose File > Page Setup or File > Print.

2 Select a printer from the pop-up list at the top of the dialog box.

3 Set additional options, such as paper size and layout, as desired. The available options depend on your printer, print drivers, and operating system.

If you plan to scale the printed image, choose the Print with Preview command and use the scaling options in the Print dialog box rather than the Page Setup dialog box. The Print dialog box is more helpful because it shows you a preview of the scaled image. Also, you don't want to set the scaling options in both the Page Setup and Print dialog boxes. This applies scaling twice, and the resulting image may not print at the size you intended.

To set Photoshop print options:

1 Choose File > Print with Preview.
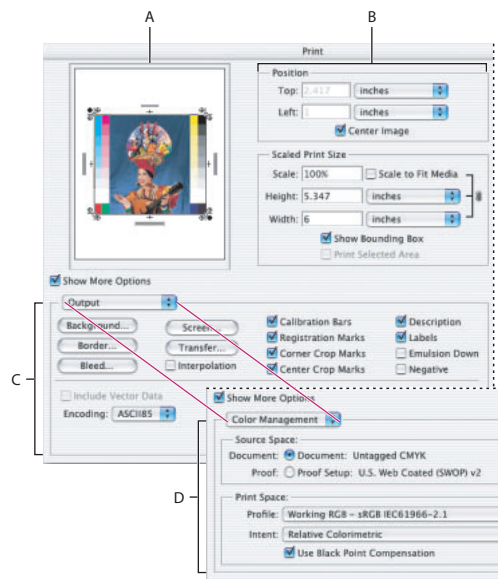
Print with Preview dialog box
A. Preview print **B.** Position and scale image **C.** Specify options to prepare a file for prepress
D. Specify the document's working space and choose a color management profile for printing on a desktop printer

2 Make sure Show More Options is selected. Then do one or more of the following:

• Adjust the position and scale of the image in relation to the selected paper size and orientation. (See "Positioning and scaling images" on page 611.)

• Set the Output options. For more information, see "Setting output options" on page 616.

• Choose Color Management from the pop-up menu and set color management options. (See "Using color management when printing" on page 612.)

3 Do one of the following:

• Click Print to print the image.

• Click Cancel to close the dialog box without saving the options.

• Click Done to preserve the options and close the dialog box.

• Hold down Alt (Windows) or Option (Mac OS) and click Print One to print one copy of the image.

- Hold down Alt (Windows) or Option (Mac OS) and click Reset to reset the print options.
- Hold down Alt (Windows) or Option (Mac OS) and click Remember to save the print options without closing the dialog box.

To preview the current image position and options:

Position the pointer over the file information box (at the bottom of the application window in Windows or the document window in Mac OS) and hold down the mouse button.

Positioning and scaling images

You can adjust the position and scale of an image and preview how the image will be printed on the selected paper using the Print with Preview command. The shaded border at the edge of the paper represents the margins of the selected paper; the printable area is white.

The base output size of an image is determined by the document size settings in the Image Size dialog box. (See "Changing image size and resolution" on page 65.) Scaling an image in the Print with Preview dialog box changes the size and resolution of the printed image only. For example, if you scale a 72-ppi image to 50% in the Print with Preview dialog box, the image will print at 144 ppi; however, the document size settings in the Image Size dialog box will not change.

Many printer drivers, such as AdobePS and LaserWriter, provide a scaling option in the Page Setup dialog box. This scaling affects everything on the page, including the size of all page marks such as crop marks and captions, whereas the scaling percentage provided by the Print with Preview command affects only the size of the printed image (and not the size of page marks).

Important: The Print with Preview command may not reflect accurate values for Scale, Height, and Width if you set a scaling percentage in the Page Setup dialog box. To avoid inaccurate scaling, specify scaling using the Print with Preview command rather than the Page Setup command; do not enter a scaling percentage in both dialog boxes.

To reposition an image on the paper:

Choose File > Print with Preview, and do one of the following:

- Select the Center Image option to center the image in the printable area.
- Deselect the Center Image option and then enter values for Top and Left to position the image numerically.
- Deselect the Center Image option and then drag the image in the preview area.

To scale the print size of an image:

Choose File > Print with Preview, and do one of the following:

- Click Scale to Fit Media to fit the image within the printable area of the selected paper.
- Enter values for Height and Width to rescale the image numerically.
- Select Show Bounding Box, and drag a bounding box handle in the preview area to achieve the desired scale.

Printing part of an image

You can use the Print Selected Area option to print a specific part of an image.

To print part of an image:

1 Use the Rectangle Marquee tool to select the part of an image you want to print.

2 Choose File > Print with Preview, select Print Selected Area, and click Print.

Printing vector graphics

If an image includes vector graphics, such as shapes and type, Photoshop can send the vector data to a PostScript printer. When you choose to include vector data, Photoshop sends the printer a separate image for each type layer and each vector shape layer. These additional images are printed on top of the base image, and clipped using their vector outline. Consequently, the edges of vector graphics print at the printer's full resolution, even though the content of each layer is limited to the resolution of your image file.

To print vector data:

1 Choose File > Print with Preview.

2 Select Show More Options, and choose Output from the pop-up menu.

3 Select the Include Vector Data option. If necessary, you can choose an encoding algorithm from the Encoding pop-up menu.

Using color management when printing

Even though it is impossible to perfectly match all colors between your monitor and your printer, you can use color management to ensure that most colors are the same or similar enough so they appear consistent. By calibrating and characterizing your monitor and creating profiles for your printer and papers, the color management system in Photoshop knows the color spaces that your devices operate in and can correctly transform the color from one color space to another. The color management options in the Print with Preview dialog box let you configure Photoshop to transform the outgoing image data so the printer will print colors consistent with what you see on your monitor. For more information on color management, see "Using color management to produce consistent color" on page 117.

Note: *Color management is also used to maintain consistent color when sending your image out to be printed on an offset press. For more information, see* "Printing images to a commercial printing press" on page 615 *and* "Producing consistent color when sending images to press" on page 147*.*

Printing with the printer driver's built-in profiles

Using the print driver's factory profiles is useful when you don't have custom profiles for the printer and every paper used with the printer. The print driver picks the best profile according to the paper type, resolution, and so forth.

To color manage a document using the print driver's factory profiles:

1 Open the document in Photoshop.

2 Choose File > Print with Preview.

3 Select Show More Options and choose Color Management from the menu.

4 In the Source Space area, select Document to reproduce document colors as interpreted by the profile currently assigned to the document.

5 In the Print Space area of the Print dialog box, choose Printer Color Management from the Profile menu.

6 For Intent, choose a rendering intent to use when converting colors to the destination color space. For more information on rendering intents, see "Handling colors with a rendering intent" on page 135.

7 Click the Print button. A second Print dialog box (for setting printer options) opens.

8 On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. Set the print options for the quality you want. Specify the color management settings to let your printer driver handle the color management during printing.

9 Click the Print button.

Printing with custom profiles

Printing with a custom profile (for a specific paper and a specific printer) can potentially produce the best print results. Custom profiles are usually created using a third-party measuring instrument and software.

To color-manage a document while printing with custom profiles:

1 Open the document in Photoshop.

2 Choose File > Print with Preview.

3 Select Show More Options and choose Color Management from the menu.

4 In the Source Space area, select Document to reproduce document colors as interpreted by the profile currently assigned to the document.

5 In the Print Space area of the Print dialog box, choose the custom profile from the Profile menu.

6 For Intent, choose a rendering intent to use when converting colors to the destination color space. For more information on rendering intents, see "Handling colors with a rendering intent" on page 135.

7 Click the Print button. A second Print dialog box (for setting printer options) opens.

8 On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. Set the print options for the quality you want. Since Photoshop is handling the color adjustment or color management options during printing, turn off all printer driver color adjustment options.

9 Click the Print button.

Printing a hard proof

Printing a hard proof using the settings from the Proof Setup can simulate the final output of your document on a press. For more information on the Proof Setup command, soft proofs, and printing hard proofs, see "Soft-proofing colors" on page 140 and "Printing a hard proof" on page 143.

To print a soft proof:

1 Open the document in Photoshop.

2 Choose View > Proof Setup > Custom and choose the profile of your output device in the Profile menu. Choose a Rendering Intent from the Intent menu. Click Save to save the settings if you're going to be doing more proofs on the specific output device.

3 Click OK to close the Proof Setup dialog box.

4 Choose File > Print with Preview.

5 In the Print dialog box, make sure Show More Options is selected and Color Management is chosen from the menu.

6 In the Source Space area, select Proof. The Proof Setup should be the profile you specified.

7 In the Print Space area of the Print dialog box, do one of the following:

• Choose Printer Color Management from the Profile menu if you're printing with the print driver's choices of factory profiles. This is useful when you don't have custom profiles for the printer, and you want the print driver to pick the best profile according to the paper type, resolution, and so forth. After clicking the Print button, a second Print dialog box opens to set printer options. On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. Set the print options for the quality you want and specify the color management settings to let your printer driver handle the color management during printing.

• If you're printing with a custom profile, choose the custom profile from the Profile menu, and then click the Print button. A second Print dialog box (to set printer options) opens. On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. Set the print options for the quality you want and turn off all printer driver color adjustment options.

8 Click the Print button.

Printing targets for custom profiles

Printing a target is for creating a custom profile. Generally, a target document with swatches is supplied as part of a third-party color management software package. When printing a target, you want to turn off all color management in both Photoshop and the print driver. Once the target is printed, it is read/scanned by a third-party measuring instrument to create the custom profile.

To print a target:

1 Open the color target document in Photoshop.

2 Choose File > Print with Preview.

3 In the Print with Preview dialog box, make sure Show More Options is selected and Color Management is chosen from the menu.

4 In the Source Space area, select Document to reproduce document colors as interpreted by the profile currently assigned to the document.

5 In the Print Space area, choose Same As Source from the Profile menu.

6 Click the Print button.

7 In the Print dialog box (for setting printer options), set the print driver for No Color Management, Color Adjustments Off, or Color Management Off.

8 Click the Print button.

Printing images to a commercial printing press

Photoshop lets you prepare image files for printing by different types of commercial printing press, such as offset lithography, digital printing, and gravure.

Preparing images for press

Generally, your workflow depends on the capabilities of the prepress facility. Before you begin a workflow for commercial printing, you need to contact the people that will be outputting the file and find out what they want you to do. For example, they may not want you to convert to CMYK at any point because they have specific settings that they need to use. Here are some possible scenarios for preparing your image files to achieve predictable printing results:

- Work entirely in RGB mode and make sure the image file is embedded with the RGB working space profile. If your printer or prepress person uses a color management system, he or she should be able to use your file's profile to make an accurate conversion to CMYK for producing the film and printing plates.

- Work in RGB mode until you finish with your image editing. Then convert the image to CMYK mode and make any additional color and tonal adjustments. Especially check the highlight and shadow areas of the image. Use the Levels, Curves, or Hue/Saturation command to make corrections. These adjustments should be very minor. Then send the CMYK file to the professional printer.

- Place your RGB or CMYK image in Adobe InDesign, Adobe Illustrator, or Adobe PageMaker. In general, most images printed on a commercial press are not printed directly from Photoshop but from a page-layout program like Adobe InDesign or a print-savvy program like Adobe Illustrator. For more information on importing Photoshop files into Adobe InDesign or Adobe Illustrator, see the Adobe InDesign Help or the Adobe Illustrator Help.

Here are a few issues to keep in mind when working on an image intended for commercial printing:

- If you know the characteristics of your printer's press, you can specify the highlight and shadow output to preserve certain details. For more information on setting the tonal and color output of your image, see "Making Color and Tonal Adjustments" on page 173.

- If you print an image on a desktop printer in order to preview what the final printed piece will look like, keep in mind that there are differences between a desktop printer and a commercial printing press. You may find that the resulting images do not look alike. A professional color proof gives a more accurate preview of the final printed piece.

- If you have a profile from the print house, you could choose it with the Proof Setup command then view a soft proof using the Proof Colors command. This method gives you a preview on your monitor of the final printed piece. For more information on soft proofing, see "Soft-proofing colors" on page 140.

Specifying prepress options

Photoshop has options in the Print with Preview command for preparing an image for output to an image setter or plate setter. The options include specifying page marks, half tone attributes, color channels as separate pages, and print encoding method. Generally, these output options should only specified by prepress professionals or people knowledgeable about the commercial printing process.

Setting output options

If you are preparing your images for commercial printing directly from Photoshop, you can select and preview a variety of page marks and other output options using the Print with Preview command.
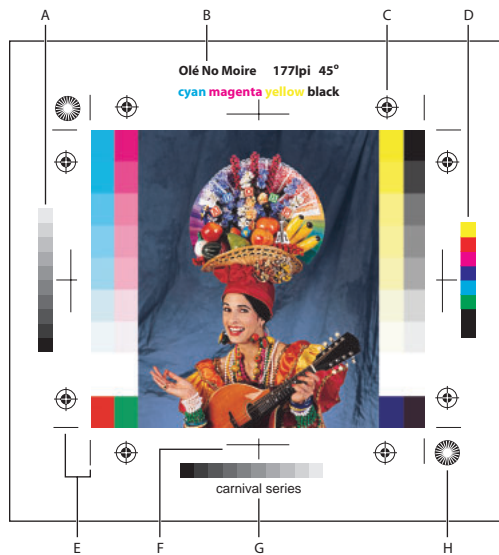
Page marks
A. Gradient tint bar **B.** Label **C.** Registration marks **D.** Progressive color bar **E.** Corner crop mark
F. Center crop mark **G.** Description **H.** Star target

To set output options:

1 Choose File > Print with Preview.

2 Select Show More Options, and choose Output from the pop-up menu.

Note: Options not supported by the designated printer are dimmed.

3 Set one or more of the following options:

Background Lets you select a background color to be printed on the page outside the image area. For example, a black or colored background may be desirable for slides printed to a film recorder. To use this option, click Background, and then select a color from the Color Picker dialog box. This is a printing option only; it does not affect the image itself.

Border Lets you print a black border around an image. Type in a number and choose a unit value to specify the width of the border.

Bleed Lets you print crop marks inside rather than outside the image. Use this option when you want to trim the image within the graphic. Type a number and choose a unit value to specify the width of the bleed.

Screen Lets you set the screen frequency and dot shape for each screen used in the printing process. (See "Selecting halftone screen attributes" on page 618.)

Transfer Lets you adjust the transfer functions, traditionally used to compensate for dot gain or dot loss that may occur when an image is transferred to film. This option is recognized only when you print directly from Photoshop, or when you save the file in EPS format and print to a PostScript printer. Generally, it's best to adjust for dot gain using the settings in the CMYK Setup dialog box. Transfer functions are useful, however, when compensating for a poorly calibrated output device. (See "Compensating for dot gain in film using transfer functions" on page 139.)

Interpolation Reduces the jagged appearance of a low-resolution image by automatically resampling up while printing. However, resampling may reduce the sharpness of the image quality. (See "About resampling" on page 66.) Some PostScript Level 2 (or higher) printers have interpolation capability. If your printer doesn't, this option has no effect.

Calibration Bars Prints an 11-step grayscale, a transition in density from 0 to 100% in 10% increments. With a CMYK color separation, a gradient tint bar is printed to the left of each CMY plate, and a progressive color bar to the right.

Note: Calibration bars, registration marks, crop marks, and labels will print only if the paper size is larger than the printed image dimensions.

Registration Marks Prints registration marks on the image (including bull's-eyes and star targets). These marks are used primarily for aligning color separations.

Corner Crop Marks Prints crop marks where the page is to be trimmed. You can print crop marks at the corners.

Center Crop Marks Prints crop marks where the page is to be trimmed. You can print crop marks at the center of each edge.

Description Prints any description text entered in the File Info dialog box up to about 300 characters. (See "Adding file information (Photoshop)" on page 590.) Description text always prints as 9-point Helvetica plain type.

Labels Prints the filename above the image.

Emulsion Down Makes type readable when the emulsion is down—that is, when the photosensitive layer on a piece of film or photographic paper is facing away from you. Normally, images printed on paper are printed with emulsion up, with type readable when the photosensitive layer faces you. Images printed on film are often printed with emulsion down.

Negative Prints an inverted version of the entire output, including all masks and any background color. Unlike the Invert command in the Image menu, the Negative option converts the output, not the on-screen image, to a negative. If you print separations directly to film, you probably want a negative, although in many countries film positives are common. Check with your print shop to determine which is required.

To determine the emulsion side, examine the film under a bright light after it has been developed. The dull side is the emulsion; the shiny side is the base. Check whether your print shop requires film with positive emulsion up, negative emulsion up, positive emulsion down, or negative emulsion down.

Selecting halftone screen attributes

Halftone screen attributes include the screen frequency and dot shape for each screen used in the printing process. For color separations, the prepress person must also specify an angle for each of the color screens. Setting the screens at different angles ensures that the dots placed by the four screens blend to look like continuous color and do not produce moiré patterns.

Halftone screens consist of dots that control how much ink is deposited at a specific location on-press. Varying their size and density creates the illusion of variations of gray or continuous color. For a process color image, four halftone screens are used: cyan, magenta, yellow, and black—one for each ink used in the printing process.
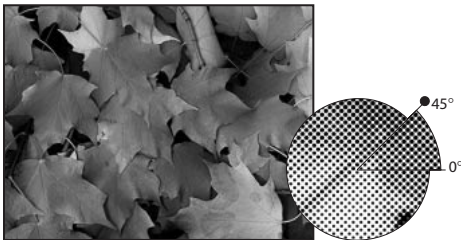
Halftone screen with black ink
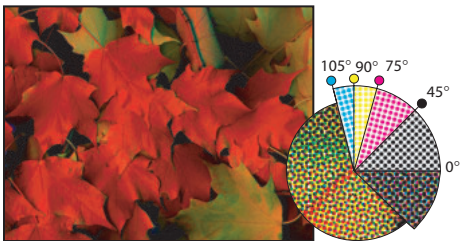
Halftone screens with process ink at different screen angles; correctly registered dots form rosettes

In traditional print production, a halftone is produced by placing a halftone screen between a piece of film and the image and then exposing the film. In Photoshop, you specify the halftone screen attributes just before producing the film or paper output. For best results, your output device (a PostScript imagesetter, for example) should be set to the correct density limit, and your processor should be properly calibrated; otherwise, results can be unpredictable.

Before creating your halftone screens, check with your print shop for preferred frequency, angle, and dot settings. (Use the default angle settings unless your print shop specifies changes.)

To define the screen attributes:

1 Choose File > Print with Preview.

2 Select Show More Options, choose Output from the pop-up menu, and click Screen.

3 In the Halftone Screens dialog box, choose whether to generate your own screen settings:

- Deselect Use Printer's Default Screens to choose your own screen settings.

- Select Use Printer's Default Screens to use the default halftone screen built into the printer. Photoshop then ignores the specifications in the Halftone Screens dialog box when it generates the halftone screens.

4 For a grayscale halftone, enter a screen frequency from 1 to 999.999, and choose a unit of measurement. Enter a screen angle from –180 to +180 degrees.

5 For a color separation, choose from the following options:

- To manually enter the screen frequency and angle, choose a color of the screen for Ink, and enter the frequency and angle; repeat for each color separation.

- To have Photoshop determine and enter the best frequencies and angles for each screen, click Auto. In the Auto Screens dialog box, enter the resolution of the output device and the screen frequency you intend to use, and click OK. Photoshop enters the values in the Halftone Screens dialog box. Changing these values may result in moiré patterns.

- If you are using a PostScript Level 2 (or higher) printer or an imagesetter equipped with an Emerald controller, make sure that the Use Accurate Screens option is selected in the Auto Screens dialog box (or in the Halftone Screens dialog box, if you're entering the values manually). The Use Accurate Screens option lets the program access the correct angles and halftone screen frequencies for high-resolution output. If your output device is not a PostScript Level 2 (or higher) printer or is not equipped with an Emerald controller, this option has no effect.

6 For Shape, choose the dot shape you want. If you want all four screens to have the same dot shape, select Use Same Shape For All Inks.

Choosing Custom from the Shape menu displays the Custom Spot Function dialog box. You can define your own dot shapes by entering PostScript commands—useful for printing with nonstandard halftone algorithms. For information about using PostScript language commands, see the *PostScript Language Reference* published by Addison-Wesley, or consult the imagesetter's manufacturer.

For optimal output on a PostScript printer, the image resolution should be 1.5 to 2 times the halftone screen frequency. If the resolution is more than 2.5 times the screen frequency, an alert message appears. (See "Understanding image size and resolution" on page 62.) If you are printing line art or printing to a non-PostScript printer, see your printer documentation for the appropriate image resolutions to use.

7 Click OK.

To save halftone screen settings:

In the Halftone Screens dialog box, click Save. Choose a location for the saved settings, enter a filename, and click Save.

💡 To save the new settings as the default, hold down Alt (Windows) or Option (Mac OS), and click the —> Default button.

To load halftone screen settings:

In the Halftone Screens dialog box, click Load. Locate and select the settings, and click Load.

💡 To return to the original default settings, hold down Alt (Windows) or Option (Mac OS), and click <—Default.

Printing color separations

When preparing your image for prepress and working with CMYK images or images with spot colors, you can print each color channel as a separate page.
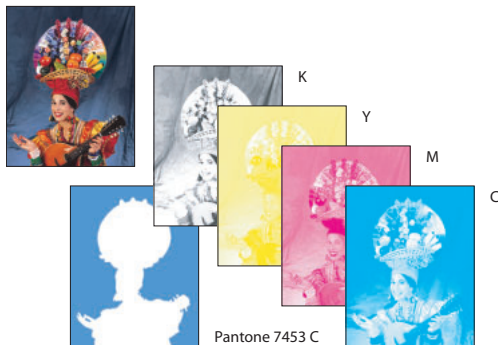
Each color channel printed as a separate page

Note: If you are printing an image from another application and want to print spot channels to spot color plates, you must first save the file in DCS 2.0 format. DCS 2.0 preserves spot channels and is supported by applications such as Adobe InDesign, Adobe PageMaker, and QuarkXPress°. (See "Saving files in Photoshop EPS format (Photoshop)" on page 570.)

To print separations from Photoshop:

1 Make sure your document is in CMYK Color or Multichannel mode, and then choose File > Print with Preview.

2 Select Show More Options, and choose Color Management from the pop-up menu.

3 Choose Separations from the Profile pop-up menu.

Note: Depending on the designated printer and print drivers on your computer, these options may also appear in the Print dialog box (for setting printer options). On Windows, click the Properties button to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options.

4 Click Print. Separations are printed for each of the colors in the image.

To prepare an image with spot channels for printing from another application:

1 If the image is a duotone, convert to Multichannel color mode.

2 Save the image in DCS 2.0 format.

3 In the DCS 2.0 Format dialog box, be sure to deselect the Include Halftone Screen and the Include Transfer Function options. (See "Saving files in Photoshop EPS format (Photoshop)" on page 570.)

4 Open or import the image in the application you will be printing from, and set your screen angles. Make sure that you've communicated to the printer the spot color you want for each of the color plates.

Note: You can place a PSD file containing spot colors directly in InDesign CS without special preparation.

Choosing a print encoding method

By default, the printer driver transfers binary information to PostScript printers; however, you can choose to transfer image data using JPEG or ASCII85 encoding. These options are not available to non-PostScript printers such as many inkjet models.

ASCII85 is a text encoding for binary data that is more compact than ASCII encoding.

JPEG-encoded files are smaller than binary files, and therefore require less time to print; however, using JPEG encoding decreases the image quality. Only PostScript Level 2 (or higher) printers support JPEG encoding; sending a JPEG-encoded file to a PostScript Level 1 output device may result in PostScript language errors.

Some print spooler programs, computer networks, and third-party printer drivers don't support files that are binary or JPEG-encoded, and some PostScript output devices accept binary and JPEG-encoded image data only through their AppleTalk and Ethernet ports, not their parallel or serial ports. In these situations, you can select the ASCII85 encoding method. However, ASCII85 files contain about twice as many characters and require about twice as much time to transfer as binary files.

To change the encoding method:

1 Choose File > Print with Preview.

2 Select Show More Options, and choose Output from the pop-up menu.

3 Select an option from the Encoding menu.

Creating color traps

A *trap* is an overlap that prevents tiny gaps from appearing in the printed image, due to a slight misregistration on press. It's important that you first contact your service provider to see whether or not you should do any trapping. In most cases, your print shop will determine if trapping is needed and if so, they will tell you what values to enter in the Trap dialog box.
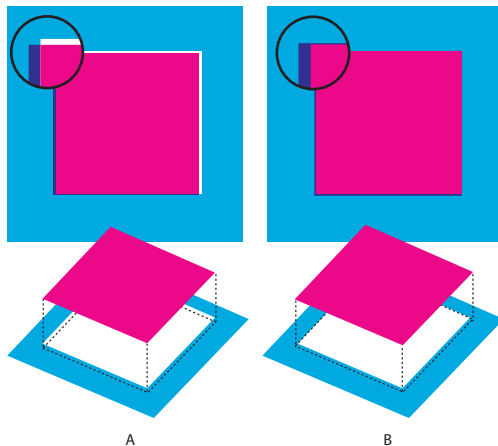
Trapping to correct misalignment
A. Misregistration with no trap **B.** Misregistration with trap

Trapping is intended to correct the misalignment of solid colors. In general, you don't need traps for continuous-tone images such as photographs. Excessive trapping may produce an outline effect. These problems may not be visible on-screen and might show up only in print. Photoshop uses standard rules for trapping:

- All colors spread under black.

- Lighter colors spread under darker colors.

- Yellow spreads under cyan, magenta, and black.

- Pure cyan and pure magenta spread under each other equally.

To create a trap:

1 Save a version of the file in RGB mode, in case you want to reconvert the image later. Then choose Image > Mode > CMYK Color to convert the image to CMYK mode.

2 Choose Image > Trap.

3 For Width, enter the trapping value provided by your print shop. Then select a unit of measurement, and click OK. Consult your print shop to determine how much misregistration to expect.

Printing duotones

Photoshop lets you create monotones, duotones, tritones, and quadtones. Monotones are grayscale images printed with a single, nonblack ink. Duotones, tritones, and quadtones are grayscale images printed with two, three, and four inks. In these types of images, colored inks are used to reproduce tinted grays rather than different colors. This section uses the term *duotone* to refer to duotones, monotones, tritones, and quadtones.

About duotones

Duotones are used to increase the tonal range of a grayscale image. Although a grayscale reproduction can display up to 256 levels of gray, a printing press can reproduce only about 50 levels of gray per ink. This means that a grayscale image printed with only black ink can look significantly coarser than the same image printed with two, three, or four inks, each individual ink reproducing up to 50 levels of gray.

Sometimes duotones are printed using a black ink and a gray ink—the black for shadows and the gray for midtones and highlights. More frequently, duotones are printed using a colored ink for the highlight color. This technique produces an image with a slight tint to it and significantly increases the image's dynamic range. Duotones are ideal for two-color print jobs with a spot color (such as a PANTONE Color) used for accent.

Because duotones use different color inks to reproduce different gray levels, they are treated in Photoshop as single-channel, 8-bit, grayscale images. In Duotone mode, you do not have direct access to the individual image channels (as in RGB, CMYK, and Lab modes). Instead, you manipulate the channels through the curves in the Duotone Options dialog box.

To convert an image to duotone:

1 Convert the image to grayscale by choosing Image > Mode > Grayscale. Only 8-bit grayscale images can be converted to duotones.

2 Choose Image > Mode > Duotone.

3 In the Duotone Options dialog box, select Preview to view the effects of the duotone settings on the image.

4 Select Monotone, Duotone, Tritone, or Quadtone for Type.

5 To specify ink colors, click the color box (the solid square) for an ink. Then use the Color Picker or click the Custom button in Color Picker dialog box to open the Custom Colors dialog box to select an ink. For more information on the Adobe Color Picker, see "Using the Adobe Color Picker" on page 164.

Note: *To produce fully saturated colors, make sure that inks are specified in descending order—darkest at the top, lightest at the bottom.*

6 Click the curve box next to the color ink box and adjust the duotone curve for each ink color. (See "Modifying the duotone curve" on page 623.)

7 Set overprint colors, if necessary. (See "Specifying overprint colors" on page 624.)

8 Click OK.

To apply a duotone effect to only part of an image, convert the duotone image to Multichannel mode—this converts the duotone curves to spot channels. You can then erase part of the spot channel for areas that you want printed as standard grayscale. (See "Adding spot colors (Photoshop)" on page 362.)

Modifying the duotone curve

In a duotone image, each ink has a separate curve that specifies how the color is distributed across the shadows and highlights. This curve maps each grayscale value in the original image to a specific ink percentage.

To modify the duotone curve for a given ink:

1 To preview any adjustments, select the Preview option.

2 Click the curve box next to the ink color box.

The default duotone curve, a straight diagonal line, indicates that the grayscale values in the original image map to an equal percentage of ink. At this setting, a 50% midtone pixel prints with a 50% tint of the ink, a 100% shadow is printed in 100% color, and so on.

3 Adjust the duotone curve for each ink by dragging a point on the graph or by entering values for the different ink percentages.

• In the curve graph, the horizontal axis moves from highlights (at the left) to shadows (at the right). Ink density increases as you move up the vertical axis. You can specify up to 13 points on the curve. When you specify two values along the curve, Photoshop calculates intermediate values. As you adjust the curve, values are automatically entered in the percentage text boxes.

• In the text box, the value you enter indicates the percentage of the ink color that will be used to represent the grayscale value in the original image. For example, if you enter 70 in the 100% text box, a 70% tint of that ink color will be used to print the 100% shadow areas of the image. (See "Using the Curves dialog box (Photoshop)" on page 189.)

4 Click Save in the Duotone Curve dialog box to save curves created with this dialog box.

5 Click Load to load these curves or curves created in the Curves dialog box, including curves created using the Arbitrary Map option. (See "Saving and loading duotone settings" on page 625.)

You can use the Info palette to display ink percentages when you're working with duotone images. Set the readout mode to Actual Color to see the ink percentages that will be applied when the image is printed. These values reflect any changes you've entered in the Duotone Curve dialog box.

Specifying overprint colors

Overprint colors are two unscreened inks printed on top of each other. For example, when a cyan ink prints over a yellow ink, the resulting overprint is a green color. The order in which inks are printed, as well as variations in the inks and paper, can significantly affect the final results.

To help you predict how colors will look when printed, use a printed sample of the overprinted inks to adjust your screen display. Just remember that this adjustment affects only how the overprint colors appear on-screen, not when printed. Before adjusting these colors, make sure that you have calibrated your monitor following the instructions in "Calibrating and creating a profile of your monitor" on page 119.

To adjust the display of overprint colors:

1 Choose Image > Mode > Duotone.

2 Click Overprint Colors. The Overprint Colors dialog box displays the combinations that will result when the inks are printed.

3 Click the color swatch of the ink combination you want to adjust.

4 Select the color you want in the color picker, and click OK.

5 Repeat steps 3 and 4 until the overprint inks appear as you want them. Then click OK.

Saving and loading duotone settings

Use the Save button in the Duotone Options dialog box to save a set of duotone curves, ink settings, and overprint colors. Use the Load button to load a set of duotone curves, ink settings, and overprint colors. You can then apply these settings to other grayscale images.

The Photoshop application includes several sample sets of duotone, tritone, and quadtone curves. These sets include some of the more commonly used curves and colors and are useful as starting points for creating your own combinations.

Viewing individual printing plates

Because duotones are single-channel images, your adjustments to individual printing inks are displayed as part of the final composite image. In some cases, you may want to view the individual "printing plates" to see how the individual colors will separate when printed (as you can with CMYK images).

To view the individual colors of a duotone image:

1 After specifying your ink colors, choose Image > Mode > Multichannel.

The image is converted to a multichannel image, with each channel represented as a spot-color channel. The contents of each spot channel accurately reflect the duotone settings, but the on-screen composite preview may not be as accurate as the preview in Duotone mode.

Important: If you make any changes to the image in Multichannel mode, you will be unable to revert to the original duotone state (unless you can access the duotone state in the History palette). To adjust the distribution of ink and view its effect on the individual printing plates, make the adjustments in the Duotone Curves dialog box before converting to Multichannel mode.

2 Select the channel you want to examine in the Channels palette.

3 Choose Edit > Undo Multichannel to revert to Duotone mode.

Printing duotones

When creating duotones, keep in mind that both the order in which the inks are printed and the screen angles you use dramatically affect the final output.

Click the Auto button in the Halftone Screens dialog box to set the optimal screen angles and frequencies. (See "Selecting halftone screen attributes" on page 618.) Make sure that you select Use Accurate Screens in the Auto Screens dialog box if you're printing to a PostScript Level 2 (or higher) printer or an imagesetter equipped with an Emerald controller.

Note: The recommended screen angles and frequencies for quadtones are based on the assumption that channel 1 is the darkest ink and channel 4 is the lightest ink.

You do not have to convert duotone images to CMYK to print separations—simply choose Separations from the Profile pop-up menu in the Color Management section of the Print dialog box (for setting printer options). (See "Printing color separations" on page 620.) Converting to CMYK mode converts any custom colors to their CMYK equivalents.

Exporting duotone images to other applications

To prepare a duotone image for exporting to a page-layout application, save the image in EPS or PDF format (unless the image contains spot channels, in which case you should convert it to Multichannel mode and save it in DCS 2.0 format). Keep in mind that it's important to name custom colors so they'll be recognized by the other application. Otherwise the image won't print correctly—or might not print at all.

Using online services

The Online Services feature allows you to send images from Photoshop to remote service providers, such as Photo Printing partners and Online Sharing companies. The service list may be updated each time you select the Online Services command, so check it occasionally for new services.

To select an online service:

1 Choose File > Online Services.

2 In the Online Services Assistant dialog box, choose a service from the list.

Automating Tasks

About actions

An *action* is a series of commands that you play back on a single file or a batch of files. For example, you can create an action that applies an Image Size command to change an image to a specific size in pixels, followed by an Unsharp Mask filter that resharpens the detail, and a Save command that saves the file in the desired format.

Most commands and tool operations are recordable in actions. Actions can include stops that let you perform tasks that cannot be recorded (for example, using a painting tool). Actions can also include modal controls that let you enter values in a dialog box while playing an action. Actions form the basis for droplets, which are small applications that automatically process all files that are dragged onto their icon.

Both Photoshop and ImageReady include a number of predefined actions, although Photoshop has significantly more user-recordable functionality than ImageReady. You can use these actions as is, customize them to meet your needs, or create new actions.

Using the Actions palette

You use the Actions palette to record, play, edit, and delete individual actions. This palette also lets you save and load action files.

In Photoshop, actions are grouped into sets—you can create new sets to better organize your actions. (See "Organizing sets of actions (Photoshop)" on page 641.) In ImageReady, you cannot group actions into sets.
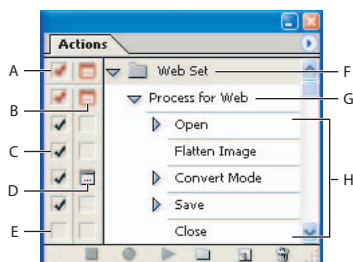
Photoshop Actions palette
A. Action or set with excluded command **B.** Action or set with a modal control **C.** Included command (toggles command on or off) **D.** Modal control (toggles modal control on or off) **E.** Excluded command **F.** Set **G.** Action **H.** Recorded commands

To display the Actions palette:

Choose Window > Actions and press Alt +F9 (Windows) or Window > Actions (Mac OS), or click the Actions palette tab if the palette is visible but not active.

By default, the Actions palette displays actions in list mode—you can expand and collapse sets, actions, and commands. In Photoshop, you can also choose to display actions in button mode (as buttons in the Actions palette that play an action with a single mouse click). However, you cannot view individual commands or sets in button mode.

To expand and collapse sets, actions, and commands:

Click the triangle ▷ to the left of the set, action, or command in the Actions palette. Alt-click (Windows) or Option-click (Mac OS) the triangle to expand or collapse all actions in a set or all commands in an action.

To select actions:

Do one of the following:

• Click an action name to select a single action.

• (Photoshop) Shift-click action names to select multiple, contiguous actions.

• (Photoshop) Ctrl-click (Windows) or Command-click (Mac OS) action names to select multiple, discontiguous actions.

To display actions as buttons (Photoshop):

Choose Button Mode from the Actions palette menu. Choose Button Mode again to return to list mode.

To create a new set (Photoshop):

1 Do one of the following:

• In the Actions palette, click the Create New Set button ▭.

• In the Actions palette menu, choose New Set.

2 Enter the name of the new set.

Note: *If you plan to create a new action and group it in a new set, make sure you create the set first. Then, the new set will appear in the set pop-up menu when you create your new action.*

Recording actions

Keep in mind the following guidelines when recording actions:

• You can record most—but not all—commands in an action.

• You can record operations that you perform with the Marquee, Move, Polygon, Lasso, Magic Wand, Crop, Slice, Magic Eraser, Gradient, Paint Bucket, Type, Shape, Notes, Eyedropper, and Color Sampler tools—as well as those that you perform in the History, Swatches, Color, Paths, Channels, Layers, Styles, and Actions palettes.

• Results depend on file and program setting variables, such as the active layer or the foreground color. For example, a 3-pixel Gaussian blur won't create the same effect on a 72-ppi file as on a 144-ppi file. Nor will Color Balance work on a grayscale file.

- When recording actions that include dialog boxes and palettes, the settings recorded will be the ones that are presently in the dialog box and palette at the time of the recording. If you change a setting in a dialog box or palette while recording an action, the resulting value will be the one recorded.

Note: Most dialog boxes retain the values of their previous settings; when they next appear they may already have values. Be sure to check carefully to see if the values are the ones you want to record.

- Modal operations and tools—as well as tools that record position—use the units currently specified for the ruler. A modal operation or tool is one that requires you to press Enter or Return to apply its effect, such as the transformation and crop commands. Tools that record position include the Marquee, Slice, Gradient, Magic Wand, Lasso, Shape, Path, Eyedropper, and Notes tools.

In Photoshop, when recording an action that will be played on files of different sizes, set the ruler units to percent. As a result, the action will always play back in the same relative position in the image.

- You can record the Play command listed on the Actions palette menu to cause one action to play another.

- In ImageReady, you can drag a command from the History palette to the action in the Actions palette in which you want the command recorded. Commands in italics are not recordable in an action. You cannot drag italicized commands from the History palette to the Actions palette.

- Photoshop and ImageReady cannot share actions.

Creating a new action

When you create a new action, the commands and tools you use are added to the action until you stop recording.

To create a new action:

1 Open a file.

2 In the Actions palette, click the New Action button ▣, or choose New Action from the Actions palette menu.

3 Enter a name for the action.

4 (Photoshop) Choose a set from the pop-up menu.

5 If desired, set one or both of the following options:

- Assign a keyboard shortcut to the action. You can choose any combination of a Function key, the Ctrl key (Windows) or Command key (Mac OS), and the Shift key (for example, Ctrl+Shift+F3), with these exceptions: In Windows, you cannot use the F1 key, nor can you use F4 or F6 with the Ctrl key.

- (Photoshop) Assign a color for display in Button Mode.

6 Click Record. The Record button in the Actions palette turns red ●.

Important: When recording the Save As command, do not change the filename. If you enter a new filename, Photoshop records the filename and uses that filename each time you run the action. Before saving, if you navigate to a different folder, you can specify a different location without having to specify a filename.

7 Choose the commands, and perform the operations you want to record.

8 To stop recording, either click the Stop button, choose Stop Recording from the Actions palette menu, or press the Escape key. To resume recording in the same action, choose Start Recording from the Actions palette menu.

Recording paths (Photoshop)

The Insert Path command lets you include a complex path (a path created with a pen tool or pasted from Adobe Illustrator) as part of an action. When the action is played back, the work path is set to the recorded path. You can insert a path when recording an action or after it has been recorded.

Note: *Playing actions that insert complex paths may require significant amounts of memory. If you encounter problems, increase the amount of memory available to Photoshop.*

To record a path:

1 Do one of the following:

- Start recording an action.

- Select an action's name to record a path at the end of the action.

- Select a command to record a path after the command.

2 Select an existing path from the Paths palette.

3 Choose Insert Path from the Actions palette menu.

If you record multiple Insert Path commands in a single action, each path will replace the previous one in the target file. To add multiple paths, record a Save Path command using the Paths palette after recording each Insert Path command.

Inserting stops

You can include stops in your action that let you perform a task that cannot be recorded (for example, using a painting tool). Once you've completed the task, click the Play button in the Actions palette to complete the task. You can insert a stop when recording an action or after it has been recorded.

You can also display a short message when the action reaches the stop. For example, you can remind yourself what needs to be done before continuing with the action. Photoshop gives you the option of including a Continue button in the message box. This lets you check for a certain condition in the file (for example, a selection) and continue if nothing needs to be done. ImageReady automatically provides the Continue button.

To insert a stop:

1 Choose where to insert the stop by doing one of the following:

- Select an action's name to insert a stop at the end of the action.

- Select a command to insert a stop after the command.

2 Choose Insert Stop from the Actions palette menu and choose Insert Stop. In ImageReady you can also click the Insert a Step button at the bottom of the palette.

3 Type the message you want to appear.

4 (Photoshop) If you want the option to continue the action without stopping, select Allow Continue.

5 Click OK.

Inserting Conditionals (ImageReady)

A *conditional* is a statement of a situation that must be met before the next step of an action can take place. You set both the condition situation and the steps to take if the condition is met. Conditionals are extremely useful in limiting the range of items an action will work on. For instance, say you have hundreds of images to import into a Web-based photo gallery, but you have to resize any that are too large for your specifications. You can add a conditional to your action that looks at all the files, checks the size, and changes only the ones that are too large, thus saving much time and space. Conditionals are also useful for nesting actions within actions, only playing the nested action under specified conditions.

To insert a conditional:

1 In the Actions palette, choose the step you want the conditional to appear after.

2 Choose Insert Conditional from the Actions palette menu, or click the Insert Step button ✦ at the bottom of the palette and choose Insert Conditional.
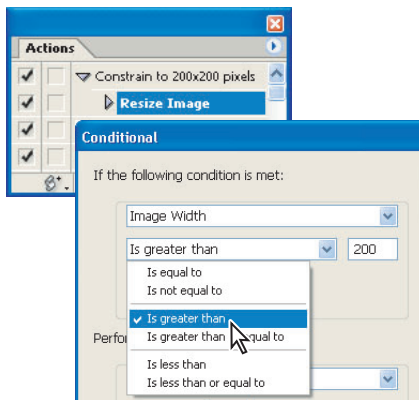
Setting up a conditional for a recorded action

3 Choose when to execute the conditional action steps:

• Always executes the condition actions every time.

• Ask pops up a dialog during the condition to ask the user if the condition has been met.

• Never does not execute the condition actions.

Note: *If you choose Always, Never, or Ask, you will not have the option of choosing one of the other conditions.*

In the If The Following Condition Is Met area of the dialog box, choose a condition. You can only choose one property to base your condition on. If you choose Image Width, for instance, you can't also choose another image property, nor can you choose a layer or a document property.

Image Aspect Ratio Lets you choose between Landscape, Portrait and Square, and lets you ask if the aspect ratio is or is not one of those.

Image Width   Sets the conditional to ask if the image width is equal to or not equal to, greater than, greater than or equal to, less than, or less than or equal to a width you can specify in the box.

Image Height   Sets the conditional to ask if the image height is equal to or not equal to, greater than, greater than or equal to, less than, or less than or equal to a width you can specify in the box.

Layer count   Sets the conditional to ask if the layer count is equal to or not equal to, greater than, greater than or equal to, less than, or less than or equal to a width you can specify in the box.

Layer type   Lets you choose between Pixel, Text, Adjustment, Fill and Layer Set, and lets you ask if the layer type is or is not one of those.

Layer name   Sets the conditional to ask if the name contains, does not contain, begins with, does not begin with, ends with, does not end with, or is equal to or not equal to a name you can specify in the box.

Document name   Sets the conditional to ask if the document name contains, does not contain, begins with, does not begin with, ends with, does not end with, or is equal to or not equal to a name you can specify in the box.

4 In the Perform the Following Actions area of the dialog box, choose an action to perform if the condition has been met:

• Play Action launches the action you choose from the pop-up menu.

• Include lets you specify the number of steps the action will continue before ending. The steps will be performed only if the condition is met, and ignored otherwise.

• Skip lets you specify a number of subsequent steps the action should ignore if the condition is met. If the skip condition is not met, the steps will be executed.

• Skip Remaining Steps in the Action finishes the action without executing the remaining steps if the condition is met; otherwise, all steps are executed.

• Cancel Playing the Action terminates the action at this point if the condition is met.

• Repeat lets you specify the number of times the chosen number of previous steps are to be repeated.

• Beep notifies you with an alert sound when the condition you specify has been met.

Editing conditionals

The conditionals you create appear in the Actions palette. Clicking the triangle to the left of the conditional action reveals its conditions and actions. You can edit the conditional by double-clicking any of its conditions or actions, which will open the Conditional dialog box.
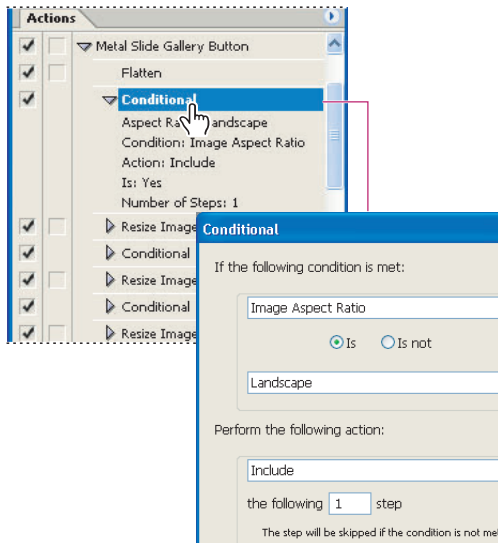
Actions palette showing a recorded action with a conditional

Setting modal controls

A *modal control* pauses an action so that you can specify values in a dialog box or use a modal tool. You can only set modal controls for actions that launch dialog boxes or activate modal tools. If you do not set a modal control, dialog boxes do not appear when you play the action, and you cannot change the recorded values.

A modal control is indicated by a dialog box icon ⊡ to the left of a command, action, or set in the Actions palette. Actions and sets in which some, but not all, available commands are modal display a red dialog box icon ⊡. In Photoshop, you must be in list mode—not button mode—to set a modal control.

To set a modal control:

Do one of the following:

- Click the box to the left of the command name to display the dialog box icon. Click again to remove the modal control.

- To turn on or disable modal controls for all commands in an action, click the box to the left of the action name.

- (Photoshop) To turn on or disable modal controls for all actions in a set, click the box to the left of the set name.

Excluding commands

You can exclude commands that you don't want to play as part of a recorded action. In Photoshop, you must be in list mode—not button mode—to exclude commands.

To exclude or include a command:

1 To expand the listing of commands in an action, click the triangle to the left of the action you want to work with.

2 Click the check mark to the left of the specific command you wish to exclude; click again to include the command. To exclude or include all commands in an action, click the check mark to the left of the action name.

When you exclude a command, its check mark disappears. In addition, the check mark of the parent action turns red to indicate that some of the commands within the action are excluded.

Inserting nonrecordable commands (Photoshop)

You cannot record the painting and toning tools, tool options, view commands, and window commands. However, you can insert many nonrecordable commands into an action using the Insert Menu Item command.

You can insert a command when recording an action, or after it has been recorded. An inserted command doesn't execute until the action is played, so the file remains unchanged when the command is inserted. No values for the command are recorded in the action. If the command has a dialog box, the dialog box appears during playback, and the action pauses until you click OK or Cancel.

Note: *When you use the Insert Menu Item command to insert a command that opens a dialog box, you cannot disable the modal control in the Actions palette.*

To insert a menu item in an action:

1 Choose where to insert the menu item:

• Select an action's name to insert the item at the end of the action.

• Select a command to insert the item at the end of the command.

2 Choose Insert Menu Item from the Actions palette menu.

3 With the Insert Menu Item dialog box open, choose a command from its menu.

4 Click OK.

Specifying an output folder (ImageReady)

If you include a Save Optimized step in your action or create a droplet from the action, you can specify the folder in which images are placed after the action is performed.

Note: *In Photoshop, you can set an output folder when using the Batch command to process files. (See* "Using the Batch command (Photoshop)" on page 641*.)*

To specify an output folder:

1 Select the action for which you want to specify an output folder in the Actions palette.

2 Choose Insert Set Output Folder from the Actions palette menu, or click the Insert Step button ⚙ at the bottom of the palette and choose Insert Set Output Folder.

3 Select a folder, and click OK.

Recording image size options (ImageReady)

Resizing images is a typical step in preparing irregularly sized images for use on the Web. You can automate this task by creating an action that includes the Image Size command. ImageReady provides several options that give you control over how an action resizes images.

To record Image Size options:

1 Start recording an action.

2 Choose Image > Image Size, and enter the desired image dimensions. (See "Changing the pixel dimensions of an image" on page 67.)

3 Select Action Options.

4 Choose an option from the Fit Image By menu:

• Width to constrain proportions using the new width value.

• Height to constrain proportions using the new height value.

• Width & Height to constrain proportions using either the new width value or the new height value.

• Percent to constrain proportions using the new percent value.

5 Select Do Not Enlarge to prevent images that are smaller than the new dimensions from being sized up.

6 Click OK and continue recording the action.

Inserting optimization settings for selected slices (ImageReady)

When you record a Save Optimized action step, ImageReady includes optimization settings for the entire image. You can insert optimization settings for individual slices using the Insert Set Optimization Settings command.

To insert optimization settings in an action:

1 Select the slice or slices for which you want to record optimization settings. (See "Selecting slices" on page 478.)

2 Select the action in which you want to insert the optimization settings.

3 Do one of the following:

• Choose Insert Set Optimization Settings to *current file format* from the Actions palette menu. (The command indicates the optimization file format currently applied to the selected slice.)

• Drag the droplet icon 🔽 from the Optimize palette onto the Actions palette.

• Click the Insert Step button ⚙ at the bottom of the Actions palette. Choose Insert Set Optimization Settings To, and choose a format.

Playing actions

Playing an action executes the series of commands you recorded in the active document. You can exclude specific commands from an action or play a single command. If the action includes a modal control, you can specify values in a dialog box or use a modal tool when the action pauses.
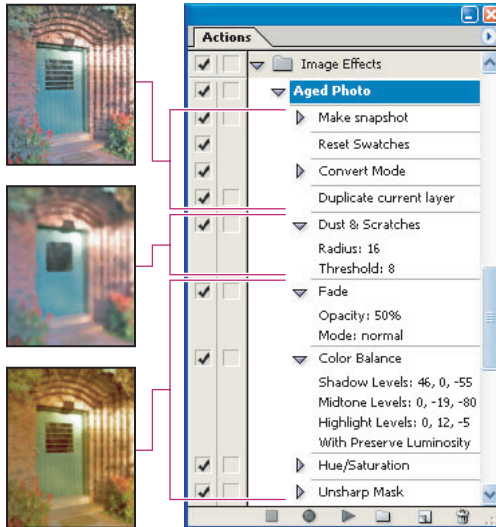
Action applied to an image

Note: In button mode, clicking a button executes the entire action—though commands previously excluded are not executed.

To play an action on a file:

1 Open the file.

2 Do one of the following:

• To play an entire action, select the action name, and click the Play button ▶ in the Actions palette, or choose Play from the palette menu.

• If you assigned a key combination to the action, press that combination to play the action automatically.

• To play part of an action, select the command from which you want to start playing, and click the Play button in the Actions palette, or choose Play from the palette menu.

To play a single command in an action:

1 Select the command you want to play.

2 Do one of the following:

• Ctrl-click (Windows) or Command-click (Mac OS) the Play button in the Actions palette.

• Press Ctrl (Windows) or Command (Mac OS), and double-click the command.

To undo an entire action:

Do one of the following:

- (Photoshop) Take a snapshot in the History palette before you play an action, and then select the snapshot to undo the action.

- (ImageReady) Choose Edit > Undo *Action Name.*

Setting playback options (Photoshop)

Sometimes a long, complicated action does not play properly, but it is difficult to tell where the problem occurs. The Playback Options command gives you three speeds at which to play actions, so that you can watch each command as it is carried out.

When working with actions that contain audio annotations, you can specify whether or not the action will pause for audio annotations. This ensures that each audio annotation completes playing before the next step in the action is initiated.

To specify how fast actions should play:

1 Choose Playback Options from the Actions palette menu.

2 Specify a speed:

- Accelerated to play the action at normal speed (the default).

- Step by Step to complete each command and redraw the image before going on to the next command in the action.

- Pause For to enter the amount of time Photoshop should pause between carrying out each command in the action.

3 Select Pause For Audio Annotation to ensure that each audio annotation in an action completes playback before the next step in the action is initiated. Deselect this option if you want an action to continue while an audio annotation is playing.

4 Click OK.

Editing actions

After you record an action, you can edit it in a variety of ways. You can rearrange actions and commands in the Actions palette; record additional commands in an action; rerecord, duplicate, and delete commands and actions; and change action options.

Rearranging actions and commands

You can rearrange actions in the Actions palette and rearrange commands within an action to change their order of execution.

To rearrange actions:

In the Actions palette, drag the action to its new location before or after another action. When the highlighted line appears in the desired position, release the mouse button.

You can edit conditionals in actions. See "Editing conditionals" on page 633.

To rearrange commands:

In the Actions palette, drag the command to its new location within the same or another action. When the highlighted line appears in the desired position, release the mouse button.

Recording additional commands

You can add commands to an action using the Record button or the Start Recording command in the Actions palette.

To record additional commands:

1 Do one of the following:

- Select the action name to insert a new command at the end of the action.

- Select a command in the action to insert a command after it.

2 Click the Record button, or choose Start Recording from the Actions palette menu.

3 Record the additional commands.

4 Click the Stop button to stop recording.

In ImageReady, you can drag any nonitalicized command from the History palette to the Actions palette without clicking the Record button or choosing Start Recording from the Actions palette menu.

Rerecording and duplicating actions and commands

Rerecording an action or command lets you set new values for it. Duplicating an action or command lets you make changes to it without losing the original version.

To record an action again (Photoshop):

1 Select an action, and choose Record Again from the Actions palette menu.

2 For a modal tool, do one of the following:

- Use the tool differently, and Press Enter (Windows) or Return (Mac OS) to change the tool's effect.

- Press Cancel to retain the same settings.

3 For a dialog box, do one of the following:

- Change the values, and click OK to record them.

- Click Cancel to retain the same values.

To record a single command again:

1 In the Actions palette, double-click the command.

2 Enter the new values, and click OK.

To duplicate an action or command:

Do one of the following:

• Alt-drag (Windows) or Option-drag (Mac OS) the action or command to a new location in the Actions palette. When the highlighted line appears in the desired location, release the mouse button.

• Select an action or command. Then choose Duplicate from the Actions palette menu. The copied action or command appears after the original.

• Drag an action or command to the New Action button at the bottom of the Actions palette. The copied action or command appears after the original.

In Photoshop, you can duplicate sets as well as actions and commands.

Deleting actions and commands

If you no longer need an action or command, you can delete it from the Actions palette.

To delete an action or command:

1 In the Actions palette, select the action or command you want to delete.

2 Delete the action or command:

• Click the Trash button 🗑 on the Actions palette. Click OK to delete the action or command.

• Alt-click (Windows) or Option-click (Mac OS) the Trash button to delete the selected action or command without displaying a confirmation dialog box.

• Drag the action or command to the Trash button on the Actions palette to delete the selected action or command without displaying a confirmation dialog box.

• Choose Delete from the Actions palette menu.

To delete all actions in the Actions palette (Photoshop):

Choose Clear All Actions from the Actions palette menu.

Even after clearing all actions, the Actions palette can be restored to its default set of actions. See "Saving and loading actions" on page 640.

Changing action options

You can change the name, keyboard shortcut, and button color (Photoshop) for an action in the Action Options dialog box.

To rename an action:

Double-click the action name in the Actions palette and enter a new name.

To change action options:

1 Do one of the following:

• Select the action, and choose Action Options from the Actions palette menu.

2 Type a new name for the action, or change other options. For more information about action options, see "Recording actions" on page 628.

3 Click OK.

Managing actions in the Actions palette

By default, the Actions palette displays predefined actions (shipped with the application) and any actions you create. You can also load additional actions into the Actions palette.

Note: *Photoshop actions are not compatible with ImageReady, and vice versa.*

Saving and loading actions

Actions are automatically saved to the Actions Palette folder in the Adobe Photoshop or Adobe ImageReady CS Settings folder. If this file is lost or removed, the actions you created are lost. You can save your actions to a separate actions file so that you can recover them if necessary. You can also load a variety of action sets that are shipped with Photoshop (Photoshop).

Note: *The default location of the Adobe Photoshop CS Settings folder varies by operating system. Use your operating system's Find command to locate this folder.*

To save a set of actions:

1 Select a set.

2 Choose Save Actions from the Actions palette menu.

3 Type a name for the set, choose a location, and click Save.

You can save the set anywhere. However, if you place the file in the Presets/Photoshop Actions folder inside the Photoshop program folder, the set will appear at the bottom of the Actions palette menu after you restart the application.

Press Ctrl+Alt (Windows) or Command+Option (Mac OS) when you choose the Save Actions command to save the actions in a text file. You can use this file to review or print the contents of an action. However, you can't reload the text file back into Photoshop.

To load a set of actions:

Do one of the following:

• Choose Load Actions from the Actions palette menu. Locate and select the action set file, and then click Load. (In Windows, Photoshop action set files have the extension .atn.)

• Select an action set from the bottom of the Actions palette menu.

To restore actions to the default set:

1 Choose Reset Actions from the Actions palette menu.

2 Click OK to replace the current actions in the Actions palette with the default set, or click Append to add the set of default actions to the current actions in the Actions palette.

Organizing sets of actions (Photoshop)

To help you organize your actions, you can create sets of actions and save the sets to disk. You can organize sets of actions for different types of work—such as print publishing and online publishing—and transfer sets to other computers.

Although ImageReady doesn't allow you to create sets, you can manually organize actions in the ImageReady Actions folder. For example, if the Actions palette contains too many actions, create a new folder inside the ImageReady Actions folder and move less-used actions from the ImageReady Actions folder to this new folder. The relocated actions are removed from the palette until you return them to the ImageReady Actions folder.

To create a new set of actions:

1 In the Actions palette, click the New Set button ▭, or choose New Set from the palette menu.

2 Enter the name of the set, and click OK.

To move an action to a different set:

In the Actions palette, drag the action to a different set. When the highlighted line appears in the desired position, release the mouse button.

To rename a set of actions:

1 In the Actions palette, choose Set Options from the pop-up menu.

2 Enter the name of the set, and click OK.

Using the Batch command (Photoshop)

The Batch command lets you play an action on a folder of files and subfolders. If you have a digital camera or a scanner with a document feeder, you can also import and process multiple images with a single action. Your scanner or digital camera may need an *acquire* plug-in module that supports actions. (If the third-party plug-in wasn't written to import multiple documents at a time, it may not work during batch-processing or if used as part of an action. Contact the plug-in's manufacturer for further information.)

You can also import PDF images from Acrobat Capture or other software programs.

When batch-processing files, you can leave all the files open, close and save the changes to the original files, or save modified versions of the files to a new location (leaving the originals unchanged). If you are saving the processed files to a new location, you may want to create a new folder for the processed files before starting the batch.

For better batch performance, reduce the number of saved history states and deselect the Automatically Create First Snapshot option in the History palette.

To batch-process files using the Batch command:

1 Choose File > Automate > Batch.

2 For Play, choose the desired set and action from the Set and Action pop-up menus.

3 For Source, choose a source from the pop-up menu:

- Folder to play the action on files already stored on your computer. Click Choose to locate and select the folder.

- Import to import and play the action on images from a digital camera, scanner, or PDF document.

- Opened Files to play the action on all open files.

- File Browser to play the action on the selected files in the File Browser.

4 Select Override Action "Open" Commands if you want Open commands in the action to refer to the batched files, rather than the filenames specified in the action. If you select this option, the action must contain an Open command because the Batch command will not automatically open the source files.

Deselect Override Action "Open" Commands if the action was recorded to operate on open files or if the action contains Open commands for specific files that are required by the action.

5 Select Include All Subfolders to process files in subfolders.

6 Select Suppress File Open Options Dialogs to hide File Open Options dialogs. This is useful when batching actions on camera raw files. The default or previously specified settings will be used. For more information on using the Batch command to open camera raw image files, see "Creating an action to open camera raw image files" on page 84.

7 Select Suppress Color Profile Warnings to turn off display of color policy messages.

8 Choose a destination for the processed files from the Destination menu:

- None to leave the files open without saving changes (unless the action includes a Save command).

- Save and Close to save the files in their current location, overwriting the original files.

Note: *If you choose the Save and Close option, you can select the Override Action "Save As" Commands option. This option causes the Batch command to override any action Save As commands, and saves the file back to its original filename in its original folder.*

- Folder to save the processed files to another location. Click Choose to specify the destination folder.

9 Select Override Action "Save As" Commands if you want the Save As instructions from the Batch command instead of the Save As instructions in the action. If you select this option, the action must contain a a Save As command because the Batch command will not automatically save the source files. This is useful for saving documents with options not available in the Batch command (such as JPEG compression or TIFF options, etc.)

Note: *No matter how you've recorded your action's Save As steps (with or without filename specifications), if this option is selected, the file is saved to the folder **and** the filename in the Batch command.*

Deselect Override Action "Save As" Commands will save the files processed by the Batch command in the location specified as the destination in the Batch dialog box.

Note: *You can record an action that saves with a specified filename and folder. If you've done this, and have Override Action "Save As" Commands off, the same file will be overwritten each time. If you've recorded your Save As step in the action without specifying a filename, the Batch command will save it to the same folder each time, but will use the filename of the document being saved.*

10 If you chose Folder as the destination, specify a file-naming convention and select file compatibility options for the processed files:

• For File Naming, select elements from the pop-up menus or enter text into the fields to be combined into the default names for all files. The fields let you change the order and formatting of the filename parts. You must include at least one field that is unique for every file (for example, filename, serial number, or serial letter) to prevent files from overwriting each other. Starting serial number specifies the starting number for any serial number fields. Serial letter fields always start with the letter "A" for the first file.

• For File Name Compatibility, choose Windows, Mac OS, and UNIX to make filenames compatible with Windows, Mac OS, and UNIX operating systems.

Saving files using the Batch command options usually saves the files in the same format as the original files. To create a batch process that saves files in a new format, record the Save As command followed by the Close command as part of your original action. Then choose Override Action "Save In" Commands for the Destination when setting up the batch process.

11 Select an option for error processing from the Errors pop-up menu:

• Stop for Errors to suspend the process until you confirm the error message.

• Log Errors to File to record each error in a file without stopping the process. If errors are logged to a file, a message appears after processing. To review the error file, open with a text editor after the batch command has run.

To batch-process using multiple actions, create a new action that plays all the other actions, and then batch process that one (you can nest actions within actions). To batch-process multiple folders, create aliases within a folder to the other folders you want to process, and select the Include All Subfolders option.

To batch process files in nested folders into different formats:

1 Process your folders as you would normally, until the Destination step.

2 Choose "Save and Close" for the destination. You can select the Override Action "Save As" Commands options to do the following:

• If the "Save As" step in the action contains a filename, this overrides it with the name of the document being saved; all "Save As" steps are treated as if they were recorded without a filename.

• The folder you specified in the "Save As" action step is overridden with the document's original folder.

Note: *For this to work properly, you must have a "Save As" step in the action; the Batch command does not automatically save files.*

This procedure lets you, for instance, sharpen, resize and save the images as JPEGs back into their original folders. You create an action that has a sharpen step, a resize step, and then a "Save As JPEG" step. When you batch process this action, you set "Include All Subfolders," make the destination "Save and Close," and you set "Override Action "Save As" Commands" to on.

Using droplets

A *droplet* is a small application that applies an action to one or more images that you drag onto the droplet icon ⬇ in Photoshop or ⬇ in ImageReady. You can save a droplet on the desktop or to another location on disk.

Creating a droplet from an action

Actions are the basis for creating droplets—you must create the desired action in the Actions palette prior to creating a droplet. (See "Recording actions" on page 628.)

In ImageReady, you can also create droplets with the Optimize palette, so that you can apply Optimize palette settings to single images or batches of images.

To create a droplet from an action (Photoshop):

1 Choose File > Automate > Create Droplet.

2 Click Choose in the Save Droplet In section of the dialog box, and select a location to save the droplet.

3 Select the desired set and action from the Set and Action menus.

4 Set Play options for the droplet:

• Select Override Action "Open" Commands if you want Open commands in the action to refer to the batched files, rather than the filenames specified in the action. Deselect Override Action "Open" Commands if the action was recorded to operate on open files or if the action contains Open commands for specific files that are required by the action.

• Select Include All Subfolders to process files in subdirectories.

• Select Suppress Color Profile Warnings to turn off display of color policy messages.

• Select Suppress File Open Options Dialogs to hide File Open Options dialogs. This is useful when batching actions on camera raw image files. The default or previously specified settings will be used. For information about using droplets to open camera raw image files, see "Creating an action to open camera raw image files" on page 84.

5 Select a destination for the processed files from the Destination menu:

• None to leave the files open without saving changes (unless the action included a Save command).

• Save and Close to save the files in their current location.

Note: *If you selected the Save and Close option, you can select the "Override Action "Save As" Commands option." This option causes the droplet to override any action Save As commands and saves the file back to its original filename in its original folder.*

6 Select Folder to save the process files to another location. Select Override Action "Save As" Commands if you want the Save As instructions from the droplet instead of the Save As instructions in the action. If you select this option, the action must contain a a Save As command, because the droplet will not automatically save the source files. This is useful for saving documents with options not available in the droplet (such as JPEG compression or TIFF options).

Note: No matter how you've recorded your action's Save As steps (with or without filename specifications), if this option is selected, the file is saved to the folder and the filename in the droplet.

Deselect Override Action "Save As" Commands will save the files processed by the droplet in the location specified as the destination in the Create Droplet dialog box.

Note: You can record an action that saves with a specified filename and folder. If you've done this, and have Override Action "Save As" Commands off, the same file will be overwritten each time. If you've recorded your Save As step in the action without specifying a filename, the droplet will save it to the same folder each time but will use the filename of the document being saved.

7 If you chose Folder as the destination, specify a file-naming convention and select file compatibility options for the processed files:

• For File Naming, select elements from the pop-up menus or enter text into the fields to be combined into the default names for all files. Elements include document name, serial number or letter, file creation date, and file extension. Starting serial number specifies the starting number for any serial number fields. Serial letter fields always start with the letter "A" for the first file.

• For Compatibility, choose Windows, Mac OS, and UNIX to make filenames compatible with Windows, Mac OS, and UNIX operating systems.

8 Select an option for error processing from the Errors pop-up menu:

• Stop for Errors to suspend the process until you confirm the error message.

• Log Errors to File to record each error in a file without stopping the process. If errors are logged to a file, a message appears after processing. To review the error file, open it in a text editor after the batch command has executed.

To create a droplet from an action (ImageReady):

1 For best results, make sure that the action contains at least one Set Optimization command. To add a Set Optimization command, adjust the settings in the Optimize palette, and then drag the droplet icon 🪣 from the Optimize palette onto the part of the Actions palette where you want to add that command. Or click the Insert Step button ✦ at the bottom of the Actions palette and choose Add Set Optimization Settings.

If you do not add a Set Optimization command to the droplet, ImageReady will process files using the optimization settings in place at the time the droplet was created.

2 Create the droplet:

- Drag the name of the action from the Actions palette onto the desktop. The droplet has the same name as the action it was created from. You can rename the droplet as you do other desktop icons.

- Select an action, and choose Create Droplet from the Actions palette menu. Name the droplet, choose a location where the droplet will be saved, and click Save.

Creating droplets for use on different operating systems

When creating droplets that may be used in both Windows and Mac OS, keep the following compatibility issues in mind:

- After moving a Photoshop droplet created in Windows to Mac OS, drag the droplet onto the Photoshop icon. Photoshop will launch and update the droplet for use in Mac OS.

- After moving an ImageReady droplet from Windows to Mac OS, drag the droplet onto the ImageReady icon for use on the Mac OS.

- When creating a droplet in Mac OS, use the .exe extension to make droplets compatible with both Windows and Mac OS.

- References to filenames are not supported between operating systems. Any action step that references a file or folder name (such as an Open command, Save As command, or adjustment command that loads its settings from a file) will pause and prompt the user for a filename.

Using droplets to process files

To use a droplet, simply drag a file or folder onto the droplet icon ⬇ in Photoshop or ⬇ in ImageReady. If the application you used to create the droplet is not currently running, the droplet launches it.

In ImageReady, you can control droplet processing in the following ways:

- To temporarily pause processing, click Pause. Click Resume to continue the processing.

- To cancel processing, click Stop.

Editing droplets (ImageReady)

In ImageReady, you can edit the commands in a droplet in the same ways you edit the commands in an action. You can also set batch options for a droplet before or after you create it. For example, you can set the droplet to operate in the background during execution, so that you can work in other applications while ImageReady processes images.

To edit a droplet:

1 Double-click the droplet or Choose File > Open and select the action to open the droplet window. The droplet window looks like a simplified version of the Actions palette.

2 Edit the droplet in the same ways you would edit an action:

- Change the order of commands by dragging them in the droplet list.

- Delete commands by dragging them to the Trash button 🗑.

- Add a command by dragging a state from the History palette to the area in which you want the command recorded in the droplet window.

To adjust droplet batch options:

1 Do one of the following:

• Before you create the droplet, select an action and choose Batch Options from the Actions palette menu.

• After you create the droplet, double-click the droplet to open the droplet window, and double-click Batch Options at the top of the droplet list.

2 Select Original (same name and folder) to save the original file with the same name and in the same folder.

3 Select Optimized to save an optimized version of the file. Then do any of the following:

• For In, choose the location in which you want to save the optimized file.

• For If Duplicate File Name, choose how and whether to append numbers or letters to indicate the optimized file in cases of duplicate filenames.

• For Modify File Name For, choose whether ImageReady appends or rewrites the filename using Windows, Mac OS 9, or UNIX file-naming conventions.

4 Select playback options:

• Run In Background to hide ImageReady during droplet execution, so that you can work in other applications while processing takes place. When you select Run In Background, other playback options requiring user input during processing are turned off, unless you have specifically set the dialog to pop ImageReady back up. ImageReady appears when the droplet completes execution.

Note: *ImageReady is not available for creating and modifying current images while background processing is taking place.*

• Display Image to show the images as they are being processed.

• Pause Before Save to stop the processing of each image before saving it.

5 Choose error options from the Errors menu:

• Stop to suspend the process until you confirm the error message.

• Skip Step to not process steps in which errors are encountered.

• Skip File to not process files in which errors are encountered.

Using droplets to automate optimization settings (ImageReady)

You can save Optimize palette settings for use on individual images or batches of images by creating a droplet for the settings. The droplet lets you apply the compression settings to an image or batch of images that you drag onto the droplet icon.

To create a droplet for automating Optimize palette settings:

1 With an image displayed in the image window, choose a compression format and desired compression options in the Optimize palette. (See "Optimizing images" on page 531.)

2 Create a droplet:

• Drag the droplet icon 🛅 from the Optimize palette onto the desktop.

The droplet is named with a brief description of the compression settings, including file format and color palette or quality setting information. You can rename the droplet as you do other desktop icons.

• Click the droplet icon on the Optimize palette. Name the droplet, choose a location where the droplet will be saved, and click Save.

• Choose Create Droplet from the Optimize palette menu. Name the droplet, choose a location where the droplet will be saved, and click Save.

💡 You can add optimization settings to an action by dragging the droplet icon in the Optimize palette to the Actions palette.

Using the Automate commands (Photoshop)

The Automate commands simplify complex tasks by combining them into one or more dialog boxes. You can send files directly from the file browser to any of the automation plug-ins that process multiple images.

To use an automated command:

Choose File > Automate, and then choose any of the commands:

• PDF slideshow creates a PDF slideshow from multiple documents.

• Conditional Mode Change changes the color mode of an image to the mode you specify, based on the original mode of the image. Record this command in an action to ensure that images use the correct color mode and avoid generating unwanted error messages.

• Contact Sheet II produces a series of thumbnail previews on a single sheet from the files in the selected folder. (See "Creating contact sheets" on page 594.)

• Crop and Straighten (Photoshop) finds, separates and straightens one or more photographs from a single scan.

• Fit Image fits the current image to the width and height you specify, without changing its aspect ratio.

Note: This will resample the image, changing the amount of data in the image.

• Multi-Page PDF to PSD converts each page of a PDF document you select to a separate Photoshop file. (See "Opening and importing PDF files" on page 102.)

• Picture Package places multiple copies of a source image on a single page, similar to the photo packages traditionally sold by portrait studios. (See "Creating picture packages" on page 595.)

• Web Photo Gallery generates a Web site from a set of images—complete with a thumb-nails index page, individual JPEG image pages, and navigable links. (See "Creating Web photo galleries (Photoshop)" on page 500.)

• Photomerge merges multiple overlapping images into panoramas.

External automation

Photoshop supports some external automation using OLE Automation (Windows) or AppleScript (Mac OS). Using either of these methods lets you start Adobe Photoshop and execute actions externally.

Using external automation lets you perform such tasks as:

- Having another scriptable application generate a series of files, and having Photoshop batch-process them.

- Having Photoshop batch-process files and save them to your Web site.

- Writing a script that runs an action and then shuts down your computer late at night after you've gone home.

Supported Scripting Languages and Platform Issues

In Windows, you can use any scripting language that supports OLE automation, such as Visual Basic. In Mac OS, you can use Applescript. These languages are not cross-platform but can control multiple applications such as Adobe Photoshop, Adobe Illustrator, and Microsoft Office.

You can also use Javascript on either platform. Javascript support lets you write scripts that will run on either Windows or Mac OS but can only control Photoshop. Photoshop includes a script editor and debugger for Javascript, but for other scripting languages you must use external tools to edit and debug the scripts.

Note: *Please refer to the scripting documentation included with your Photoshop application installation: AppleScript Reference Guide.pdf, JavaScript Reference Guide.pdf, Photoshop Scripting Guide.pdf, and VisualBasic Reference Guide.pdf. These guides can be found in Photoshop CS/Scripting Guide.*

If you have further questions about OLE, contact Microsoft Corporation. For questions about AppleScript, see your Mac OS documentation or contact Apple Computer.

Creating templates for data-driven graphics (ImageReady)

Templates for data-driven graphics streamline how designers and developers work together in high-volume publishing environments.

About data-driven graphics

Data-driven graphics make it possible to produce multiple versions of an image quickly and accurately. Let's say, for example, that you need to produce 500 different Web banners based on the same template. In the past, you had to manually populate the template with data (images, text, and so on). With data-driven graphics, you can quickly generate Web banners using variables and data sets.

You can turn any image into a template for data-driven graphics by defining variables for layers in the image. In addition, you can create different sets of variable data to view what your template will look like when it is rendered.
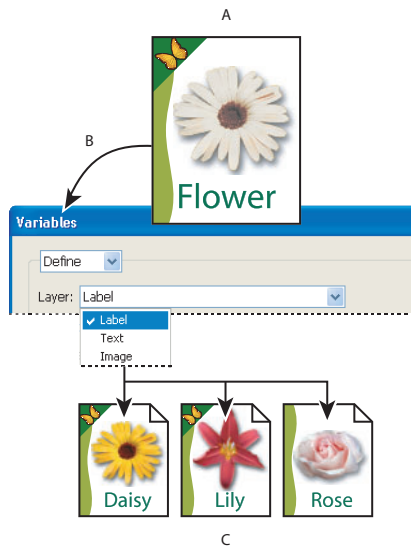
Creating different versions of an image using variables
A. Source file template **B.** User defines layers as variables **C.** Different versions of the image can be created, each with a different variable data set

Using variables

You use variables to define which elements in a template are dynamic (changeable). A variable's type corresponds to the type of data you want to change in a template. Visibility variables let you show or hide the content of a layer. Pixel Replacement variables let you replace the pixels in the layer with pixels from another image file. Text Replacement variables let you replace a string of text in a type layer.

Note: *You can use Photoshop to designate text as a variable for Adobe GoLive, if you put your variable text in the topmost text layer. Otherwise, you can use ImageReady to explicitly denote variables. GoLive recognizes all ImageReady text and visibility variables, but not pixel replacement variables.*
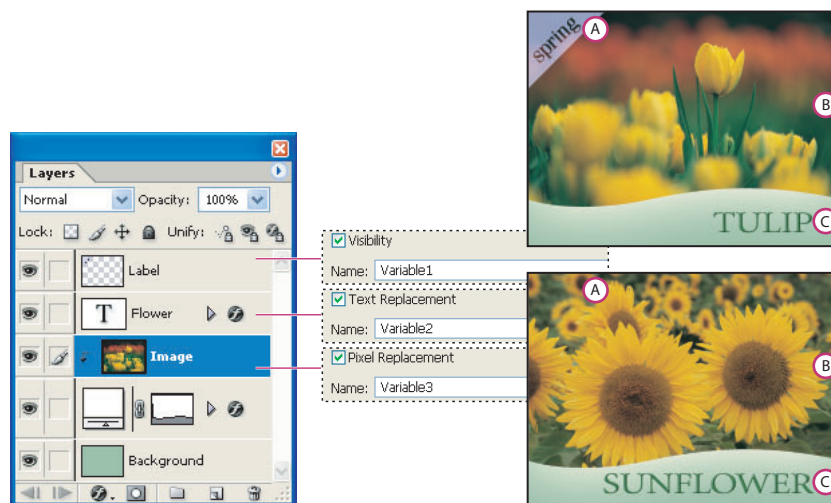
Two versions of a Web image based on the same template
A. Visibility variable **B.** Pixel Replacement variable **C.** Text Replacement variable

To define variables:

1 In the Layers palette, select a layer for which you want to define variables.

Note: You cannot define variables for the Background layer.

2 Choose Image > Variables > Define, or choose Variables from the Layers palette menu.

3 Select one or more types of variables:

• Visibility to show or hide the content of the layer.

• Pixel Replacement to replace the pixels in the layer with pixels from another image file.

Note: You specify the replacement image (as well as the replacement text and visibility states) when you define a data set. (See "Using data sets" on page 652*.)*

• Text Replacement to replace a string of text in a type layer.

4 If desired, enter names for the variables. Variable names must begin with a letter, underscore, or colon and cannot contain spaces or special characters (except for periods, hyphens, underscores, and colons).

5 For Pixel Replacement variables, click Pixel Replacement Options, and do the following:

• Choose a method for scaling the replacement image: Fit to scale the image to fit within the bounding box (which may leave parts of the bounding box empty), Fill to scale the image to entirely fill the bounding box (which may cause the image to extend beyond the bounding box), As Is to not scale the image, and Conform to scale the image non-proportionally to fit within the bounding box.

• Click a handle on the alignment icon ▦ to choose an alignment for placing the image inside the bounding box.

• Select Clip to Bounding Box to clip areas of the image that do not fit within the bounding box. This option is only available when the Fill replacement method or As Is replacement method is selected.

6 To define variables for an additional layer, choose a layer from the Layer pop-up menu. Repeat Steps 3 through 5.

7 Click OK.

To rename a variable:

1 Choose Image > Variables > Define, or choose Variables from the Layers palette menu.

2 Choose the layer that contains the variable from the Layer pop-up menu.

3 Enter a name in the Name text box. Variable names must begin with a letter, underscore, or colon and cannot contain spaces or special characters (except for periods, hyphens, underscores, and colons).

Note: If you are using data sets and want to rename a variable globally (in all layers), change the name in the Data Sets section of the Variable dialog box. (See "Using data sets" on page 652*.)*

To remove variables:

1 Choose Image > Variables > Define, or choose Variables from the Layers palette menu.

2 Choose a layer from the Layer pop-up menu.

3 Deselect one or more variables.

4 Repeat Steps 2 and 3 to remove variables from additional layers, and then click OK.

Using data sets

A *data set* is a collection of variables and associated data. You can switch between data sets to upload different data into your template.
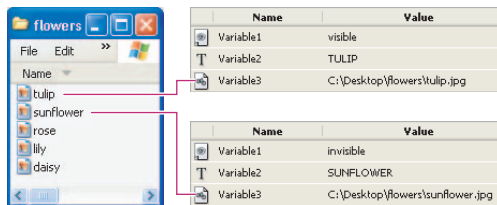
Assigning data values to variables to create two data sets

To edit the default data set:

1 Do one of the following:

• Choose Image > Variables > Data Sets.

• If the Variables dialog box is open, choose Data Sets from the pop-up menu at the top of the dialog box, or click Next.

• Choose Variables from the Layers palette menu. Then choose Data Sets from the pop-up menu at the top of the dialog box, or click Next.

Note: *You must define at least one variable before you can edit the default data set.*

2 Select a variable from the Name pop-up menu or the list at the bottom of the dialog box.

3 Edit the variable data:

• For Visibility variables ⊡, select Visible to show the layer's content or Invisible to hide the layer's content.

• For Pixel Replacement variables ⊡, click Browse (Windows) or Choose (Mac OS) and select a replacement image file.

• For Text Replacement variables T, enter a text string in the Value text box.

4 Repeat Steps 2 and 3 for every variable in the template.

5 Click OK, or click Next.

To create a new data set:

1 Click the New Data Set button ⊡.

2 Edit the variable data.

3 Click OK.

To rename a data set:

Enter a name in the Data Set text box.

To select a data set:

Do one of the following:

- Choose a data set from the Data Set pop-up menu.
- Click the Previous Data Set button ◀ to select the previous set in the list.
- Click the Next Data Set button ▶ to select the next set in the list.

To change the data in a data set:

1 Select the data set you want to modify.

2 Edit the variable data.

3 Click OK.

To delete a data set:

1 Select the data set you want to delete.

2 Click the Trash button 🗑.

Applying data sets

You can apply a data set's contents to the base document while leaving all the variables and data sets intact. This changes the look of the PSD document to contain the values of the data set.

Note: Applying a data set overwrites your original document.

To apply a data set: Do one of the following:

1 Choose Image > Variables > Data Sets. Select the data set to apply from the list of data sets you've created or imported and click the Apply or OK button.

2 Choose Image > Apply Data Set. Select the data set to apply from the list of data sets and click OK.

Previewing data-driven graphics

Preview Document mode lets you preview how a template will look when it is rendered using different sets of data.

To enable or disable Preview Document mode:

Do one of the following:

- Choose Image > Preview Document. A check mark appears next to the command when Preview Document mode is enabled.
- Click the Preview Document button in the tool box.

To preview data-driven graphics:

1 Enable Preview Document mode.

2 In the options bar, choose a data set from the Data Set pop-up menu, click the Previous Data Set button ◀, or click the Next Data Set button ▶.

The data changes in the document window.

Saving templates for use with other Adobe products

You can save a template in PSD format for use with other Adobe products, such as Adobe Graphics Server (available only in English) and Adobe GoLive. For example, a GoLive user can place a PSD template in a page layout, bind its variables to a database using dynamic links, and then use Graphics Server to generate iterations of the artwork. Likewise, a developer working with Graphics Server can bind the variables in the PSD file directly to a database or another data source.

For more information on using PSD templates to create data-driven graphics, see the *Adobe GoLive User Guide*, GoLive online Help, and the *Adobe Graphics Server Developer Guide*.

Processing all data sets

Once you have variables and one or more data sets defined, you can output, in batch mode, images using the data set values. You can output images as PSD files, optimized images, or SWF images.

To process data sets:

1 Choose File > Export > Data Sets as Files.

2 Enter a base name for all files generated. You may create your own file-naming scheme if you want.

3 Click the Choose button to select a destination directory for your files.

4 Choose data sets to export.

5 In the Save As text box, choose an export format and set the format-dependent export parameters.

6 Click OK.

Note: When exporting to SWF format, you can see multiple images in one HTML file. This is useful for quick visual scans. For instance, you can check if text was truncated, or choose a version from multiple data sets you've exported all to one file.

Importing data sets from external files

You can quickly create a large number of data sets by creating an external text file that contains all the variable information and loading that file into a PSD document containing variables. One good way to accomplish this is to enter your data into a text file and then export it to a tab or comma-separated file.

The syntax of the external text file is as follows (where each line that starts with "Variable" or "Value" is an entire line by itself in your file):

```
VariableName1<sep>VariableName2<sep> <sep>VariableNameN <nl>

Value1-1<sep>Value2-1<sep> <sep>ValueN-1<nl>

Value1-2<sep>Value2-2<sep> <sep>ValueN-2<nl>

Value1-M<sep>Value2-M<sep> <sep>ValueN-M<nl>
```

All the variable names are listed on the first line, in the order that the values are given in subsequent lines. Each subsequent line represents one data set, with the values for each variable given.

External Text File Syntax Elements	
<sep>	Either a comma-separated (CSV) or a tab (tab-delimited) file that separates each variable name or value.
<nl>	A newline that ends each data set and can be a line feed, carriage return, or both.
"true" and "false"	Allowed values for a visibility variable.
Spaces	Around the delimiter are removed when parsing the file; between words in a value string (e.g., two of a kind) are maintained and leading and trailing spaces are maintained if enclosed in double quotes (e.g., "one kind ").
Double quotes	Can be part of a value if preceded by another double quote (e.g., ""B"" would be "B" in the data set).

If <sep> or <nl> is part of the variable value, then the entire value must be enclosed in double quotes.

All variables defined in the PSD document must be defined in the text file. An error will be displayed if the number of variables in the text file does not match the document.

Example data set:

Using a template for flowers that holds variables for tulip and sunflower, you can set up a text file that looks like this:

```
{contents of FlowerShow.txt}
Variable1, Variable2, Variable3
true, TULIP, c:\My Documents\tulip.jpg
false, SUNFLOWER, c:\MyDocuments\sunflower.jpg
false, CALLA LILY, c:\My Documents\calla.jpg
true, VIOLET, c:\My Documents\violet.jpg
```

To import a data set:

1 Do one of the following

• Choose File > Import > Variable Data Sets.

• Choose Image > Variables > Data Sets.

2 Click the Import button.

3 Enter the name of the text file to import.

4 Set up your import options. There is a check box to use the first column value as the data set name. This is useful if your first variable is an identifier like a name or product number and you want to name your data sets with that value. Otherwise, the data sets are named "Data Set 1, Data Set 2, etc.." There is also a check box to delete all current data sets before importing new data sets.

5 Set the encoding of the text file or leave as "Automatic."

6 Click OK.

Keyboard Shortcuts

Keys for selecting tools

* Not in ImageReady

§ ImageReady only

*In Photoshop, shortcuts are customizable by using the Keyboard Shortcuts command. Choose Edit > Keyboard Shortcuts. For more information, see "Customizing keyboard shortcuts" on page 54.

§Mac OS X users: In ImageReady, when the Use System Shortcuts preference is enabled, certain ImageReady keyboard shortcuts are usurped by OS X keyboard shortcuts. (For example, with the preference on, Command + H hides the application. With the preference off, Command + H shows/hides Extras.) To prevent this, press the Control key in addition to the shortcut or choose ImageReady > Preferences > General and deselect Use System Shortcuts.

Result	Windows	Mac OS
Cycle through tools with the same shortcut key	Shift-press shortcut key (*when Use Shift Key for Tool Switch preference is disabled)	Shift-press shortcut key (*when Use Shift Key for Tool Switch preference is disabled)
Cycle through hidden tools	Alt-click + tool (*except add anchor point, delete anchor point, and convert point tools)	Option-click + tool (*except add anchor point, delete anchor point, and convert point tools)
Rectangular Marquee tool† Rounded Rectangle Marquee tool§ Elliptical Marquee tool Single Row Marquee tool Single Column Marquee tool	M M§ M§	M M§ M§
Move tool	V	V
Lasso tool Polygonal Lasso tool Magnetic Lasso tool*	L	L
Magic Wand tool	W	W
Crop tool	C	C
Slice tool Slice Select tool	K K*, O§	K K*, O§

Result	Windows	Mac OS
Healing Brush tool* Patch tool* Color Replacement tool*	J	J
Brush tool Pencil tool	B	B
Clone Stamp tool Pattern Stamp tool*	S*, B§ S	S*, B§ S
History Brush tool* Art History Brush tool*	Y	Y
Eraser tool† Background Eraser tool* Magic Eraser tool	E	E
Gradient tool* Paint Bucket tool	G	G
Blur tool* Sharpen tool* Smudge tool*	R	R
Dodge tool* Burn tool* Sponge tool*	O	O
Path Selection tool* Direct Selection tool*	A	A
Horizontal Type tool Vertical Type tool* Horizontal Type mask tool* Vertical Type mask tool*	T	T
Pen tool* Freeform Pen tool*	P	P
Rectangle tool Rounded Rectangle tool Ellipse tool Polygon tool* Line tool Custom Shape tool*	U U*, S§	U U*, S§

Result	Windows	Mac OS
Notes tool* Audio Annotation tool*	N	N
Eyedropper tool† Color Sampler tool* Measure tool*	I	I
Hand tool†	H	H
Zoom tool†	Z	Z
Rectangle Image Map tool§ Circle Image Map tool§ Polygon Image Map tool§	P	P
Image map Select tool§	J	J
Tab Rectangle tool§ Pill Rectangle tool§	R	R

†Use same shortcut keys for Extract*, Liquify, and Pattern Maker*

Keys for selecting tools in the Extract toolbox (Photoshop)

Result	Windows	Mac OS
Edge Highlighter tool	B	B
Fill tool	G	G
Eyedropper tool	I	I
Cleanup tool	C	C
Edge Touchup tool	T	T

Keys for selecting tools in the Liquify toolbox

Result	Windows	Mac OS
Forward Warp tool	W	W
Reconstruct tool	R	R
Twirl Clockwise tool	C	C
Pucker tool	S	S
Bloat tool	B	B
Push Left tool	O	O
Mirror tool	M	M

Result	Windows	Mac OS
Turbulence tool	T	T
Freeze Mask tool	F	F
Thaw Mask tool	D	D

Keys for working with Extract*, Liquify, and Pattern Maker*

* Not in ImageReady

Result (Extract*, Liquify, and Pattern Maker*)	Windows	Mac OS
Cycle through controls on right from top	Tab	Tab
Cycle through controls on right from bottom	Shift + Tab	Shift + Tab
Temporarily activate Hand tool	Spacebar	Spacebar
Change Cancel to Reset	Alt	Option
Result (Extract* and Liquify)	**Windows**	**Mac OS**
Decreases or increases brush size	[or]	[or]
Result (Extract* and Pattern Maker*)	**Windows**	**Mac OS**
Fit in window	Control + 0	Command + 0
Temporarily selects Zoom In tool	Control + Spacebar	Command + Spacebar
Select Zoom Out tool	Alt + Spacebar	Option + Spacebar
Result (Extract* only)	**Windows**	**Mac OS**
Toggle between Edge Highlighter tool and Eraser tool	Alt	Option
Toggle Smart Highlighting	Control with Edge Highlighter tool selected	Command with Edge Highlighter tool selected
Remove current highlight	Alt + Delete	Option + Delete
Highlight entire image	Control + Delete	Command + Delete
Fill foreground area and preview extraction	Shift-click with Fill tool selected	Shift-click with Fill tool selected

Result (Extract* only)	Windows	Mac OS
Move mask when Edge Touchup tool is selected	Control-drag	Command-drag
Add opacity when Cleanup tool is selected	Alt-drag	Option-drag
Toggle Show menu options in preview between Original and Extracted	X	X
Enable Cleanup and Edge Touchup tools before preview	Shift + X	Shift + X
Cycle through Display menu in preview from top to bottom	F	F
Cycle through Display menu in preview from bottom to top	Shift + F	Shift + F
Decrease/increase brush size by 1	Down Arrow/Up Arrow in Brush Size text box[†]	Down Arrow or Up Arrow in Brush Size text box[†]
Decrease/increase brush size by 1	Left Arrow/Right Arrow with Brush Size Slider showing[†]	Left Arrow/Right Arrow with Brush Size Slider showing[†]
Set strength of Cleanup or Edge Touch-up tool	0–9	0–9
Result (Liquify only)	**Windows**	**Mac OS**
Reverse direction for Bloat, Pucker, Push Left, and Mirror tools	Alt + tool	Option + tool
Continually sample the distortion	Alt + drag in preview with reconstruct tool, Displace, Amplitwist or Affine mode selected	Option + drag in preview with reconstruct tool, Displace, Amplitwist or Affine mode selected
Decrease/increase brush size by 2, or density, pressure, rate, or turbulent jitter by 1	Down Arrow/Up Arrow in Brush Size, Density, Pressure, Rate, or Turbulent Jitter text box[†]	Down Arrow/Up Arrow in Brush Size, Density, Pressure, Rate, or Turbulent Jittertext box[†]
Decrease/increase brush size by 2, or density, pressure, rate, or turbulent jitter by 1	Left Arrow/Right Arrow with Brush Size, Density, Pressure, Rate, or Turbulent Jitter slider showing[†]	Left Arrow/Right Arrow with Brush Size, Density, Pressure, Rate, or Turbulent Jitter slider showing[†]
Redo last step	Control + Z	Command + Z

Result (Pattern Maker* only)	Windows	Mac OS
Delete current selection	Control + D	Command + D
Undo a selection move	Control + Z	Command + Z
Generate or generate again	Control + G	Command + G
Intersect with current selection	Shift + Alt + select	Shift + Option + select
Toggle view: original/generated pattern	X	X
Go to first tile in Tile History	Home	Home
Go to last tile in Tile History	End	End
Go to previous tile in Tile History	Left Arrow, Page Up	Left Arrow, Page Up
Go to next tile in Tile History	Right Arrow, Page Down	Right Arrow, Page Down
Delete current tile from Tile History	Delete	Delete
Nudge selection when viewing the original	Right Arrow, Left Arrow, Up Arrow, or Down Arrow	Right Arrow, Left Arrow, Up Arrow, or Down Arrow
Increase selection nudging when viewing the original	Shift + Right Arrow, Left Arrow, Up Arrow, or Down Arrow	Shift + Right Arrow, Left Arrow, Up Arrow, or Down Arrow

†Hold down Shift to decrease/increase by 10

Keys for using the File Browser (Photoshop)

Result	Windows	Mac OS
Open file browser	Control + Shift + O	Command + Shift + O
Move up a folder (in folder view) or a row	Up Arrow	Up Arrow
Move down a folder (in folder view) or a row	Down Arrow	Down Arrow
Move up a level (in folder view)	Control + Up Arrow	Command + Up Arrow
Move left one item	Left Arrow	Left Arrow
Move right one item	Right Arrow	Right Arrow
Move to the first item	Home	Home
Move to the last item	End	End

Result	Windows	Mac OS
Commit an inline renaming	Enter	Return
Add to selection (discontiguous)	Control-click	Command-click
Refresh tree and thumbnail panes	F5	F5
Add an item to the selection	Shift + Right Arrow, Left Arrow, Up Arrow, or Down Arrow	Shift + Right Arrow, Left Arrow, Up Arrow, or Down Arrow
Rotate clockwise	Control +]	Command +]
Rotate counter-clockwise	Control + [	Command + [
Open a file and close the File Browser	Alt + Enter or Alt-double-click file	Option + Return or Option-double-click file
Launch File Browser palette in maximized state and auto-hide palettes	Control-click the Toggle File Browser icon in the options bar	Command-click the Toggle File Browser icon in the options bar
Open a file and suppress open option and color warning dialogs	Shift + Enter or Shift-double-click File Browser thumbnail	Shift + Enter or Shift-double-click File Browser thumbnail

Keys for using the Filter Gallery

Result	Windows	Mac OS
Apply a new filter on top of selected	Alt-click on a filter	Option-click on a filter
Open/close all disclosure triangles	Alt-click on a disclosure triangle	Option-click on a disclosure triangle
Change Cancel button to Default	Control	Command
Change Cancel button to Reset	Alt	Option
Undo/Redo	Control + Z	Command + Z
Step forward	Control + Shift + Z	Command + Shift + Z
Step backward	Control + Alt + Z	Command + Option + Z

Keys for using the Camera Raw dialog box (Photoshop)

Result	Windows	Mac OS
Display highlights that will be clipped in Preview	Alt-drag Exposure or Shadows sliders	Option-drag Exposure or Shadows sliders
Skip file conversion when selecting multiple files (turn OK button to Skip)	Shift	Shift
Update raw settings without opening file (turn OK button to Update)	Alt	Option

Keys for using Photomerge (Photoshop)

Result	Windows	Mac OS
Select Image tool	A	A
Rotate Image tool	R	R
Set Vanishing Point tool	V	V
Zoom tool	Z	Z
Hand tool	H	H
Switch to Hand tool	Spacebar	Spacebar
Step backward	Control + Z	Command + Z
Step forward	Control + Shift + Z	Command + Shift + Z
Move selected image 1 pixel	Right Arrow, Left Arrow, Up Arrow, or Down Arrow	Right Arrow, Left Arrow, Up Arrow, or Down Arrow
Change Cancel to Reset	Alt	Option
Show individual image border	Alt-move pointer over image	Option-move pointer over image

Keys for working with blending modes

* Not in ImageReady

Result	Windows	Mac OS
Cycle through blending modes	Shift + Alt + + (plus) or – (minus)	Shift + Option + + (plus) or – (minus)
Normal	Shift + Alt + N	Shift + Option + N
Dissolve	Shift + Alt + I	Shift + Option + I

Result	Windows	Mac OS
Behind	Shift + Alt + Q	Shift + Option + Q
Clear	Shift + Alt + R	Shift + Option + R
Darken	Shift + Alt + K	Shift + Option + K
Multiply	Shift + Alt + M	Shift + Option + M
Color Burn	Shift + Alt + B	Shift + Option + B
Linear Burn	Shift + Alt + A	Shift + Option + A
Lighten	Shift + Alt + G	Shift + Option + G
Screen	Shift + Alt + S	Shift + Option + S
Color Dodge	Shift + Alt + D	Shift + Option + D
Linear Dodge	Shift + Alt + W	Shift + Option + W
Overlay	Shift + Alt + O	Shift + Option + O
Soft Light	Shift + Alt + F	Shift + Option + F
Hard Light	Shift + Alt + H	Shift + Option + H
Vivid Light	Shift + Alt + V	Shift + Option + V
Linear Light	Shift + Alt + J	Shift + Option + J
Pin Light	Shift + Alt + Z	Shift + Option + Z
Hard Mix	Shift + Alt + L	Shift + Option + L
Difference	Shift + Alt + E	Shift + Option + E
Exclusion	Shift + Alt + X	Shift + Option + X
Hue	Shift + Alt + U	Shift + Option + U
Saturation	Shift + Alt + T	Shift + Option + T
Color	Shift + Alt + C	Shift + Option + C
Luminosity	Shift + Alt + Y	Shift + Option + Y
Desaturate*	Sponge tool + Shift + Alt + D	Sponge tool + Shift + Option + D
Saturate*	Sponge tool + Shift + Alt + S	Sponge tool + Shift + Option + S
Dodge/burn shadows*	Dodge tool/Burn tool + Shift + Alt + S	Dodge tool/Burn tool + Shift + Option + S
Dodge/burn midtones*	Dodge tool/Burn tool + Shift + Alt + M	Dodge tool/Burn tool + Shift + Option + M

Result	Windows	Mac OS
Dodge/burn highlights*	Dodge tool/Burn tool + Shift + Alt + H	Dodge tool/Burn tool + Shift + Option + H
Set blending mode to Threshold for bitmap images, Normal for all other images*	Shift + Alt + N	Shift + Option + N

Keys for viewing images

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Cycles through open documents	Control + Tab	Control + Tab
Toggle between Standard mode and Quick mask mode*	Q	Q
Toggle between Standard screen mode, Full screen mode and Full screen mode with menu bar	F	F
Toggle image maps visibility§	A	A
Toggle slices visibility§	Q	Q
Preview document§	Y	Y
Preview in default browser§	Control + Alt + P	Command + Option + P
Edit in ImageReady* Edit in Photoshop§	Control + Shift + M	Command + Shift + M
Fit image in window	Double-click Hand tool	Double-click Hand tool
Magnify 100%	Double-click zoom tool	Double-click zoom tool
Switch to Hand tool (when not in text-edit mode)	Spacebar	Spacebar
Switch to Zoom In tool	Control + Spacebar	Command + Spacebar
Switch to Zoom Out tool	Alt + Spacebar	Option + Spacebar
Move zoom marquee while dragging with the zoom tool*	Spacebar-drag	Spacebar-drag
Apply zoom percentage, and keep zoom percentage box active*	Shift + Enter in Navigator palette	Shift + Return in Navigator palette

Result	Windows	Mac OS
Zoom in on specified area of an image*	Control-drag over preview in Navigator palette	Command-drag over preview in Navigator palette
Scroll image with Hand tool*	Spacebar-drag, or drag view area box in Navigator palette	Spacebar-drag, or drag view area box in Navigator palette
Scroll up or down 1 screen	Page Up or Page Down†	Page Up or Page Down†
Scroll up or down 10 units	Shift + Page Up or Page Down†	Shift + Page Up or Page Down†
Move view to upper left corner or lower right corner	Home or End	Home or End
Toggle layer mask on/off as rubylith*	\ (backslash)	\ (backslash)

†Hold down Control (Win) or Command (Mac OS) to scroll left (Page Up) or right (Page Down)

Keys for selecting and moving objects

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Reposition marquee while selecting‡	Any marquee tool (except single column and single row) + spacebar-drag	Any marquee tool (except single column and single row) + spacebar-drag
Add to, subtract from, or inter-sect a selection	Any selection tool + Shift or Alt-drag	Any selection tool + Shift or Option-drag
Constrain marquee to square or circle (if no other selections are active)‡	Shift-drag	Shift-drag
Draw marquee from center (if no other selections are active)‡	Alt-drag	Option-drag
Constrain shape and draw marquee from center‡	Shift + Alt-drag	Shift + Option-drag
Switch to Move tool	Command (except when Hand, Slice, Path*, Shape*, Rectangle Image map§, Circle Image Map§, Polygon Image Map§, or any Pen* tool is selected)	Command (except when Hand, Slice, Path*, Shape*, Rectangle Image map§, Circle Image Map§, Polygon Image Map§, or any Pen* tool is selected)
Switch from Magnetic Lasso tool to Lasso tool*	Alt-drag	Option-drag
Switch from Magnetic Lasso tool to polygonal Lasso tool*	Alt-click	Option-click

Result	Windows	Mac OS
Apply/cancel an operation of the Magnetic Lasso*	Enter/Esc	Return/Esc or Command + period
Move copy of selection	Move tool + Alt-drag selection‡	Move tool + Option-drag selection‡
Move selection area 1 pixel	Any selection + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†	Any selection + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†
Move selection 1 pixel	Move tool + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†‡	Move tool + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†‡
Move layer 1 pixel when nothing selected on layer	Control + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†	Command + Right Arrow, Left Arrow, Up Arrow, or Down Arrow†
Increase/decrease detection width*	Magnetic Lasso tool + [or]	Magnetic Lasso tool + [or]
Accept cropping or exit cropping	Crop tool + Enter or Esc	Crop tool + Return or Esc
Toggle crop shield off and on*	/ (forward slash)	/ (forward slash)
Make protractor*	Measure tool + Alt-drag end point	Measure tool + Option-drag end point
Snap guide to ruler ticks (*except when View > Snap is unchecked)	Shift-drag guide	Shift-drag guide
Convert between horizontal and vertical guide	Alt-drag guide	Option-drag guide

†Hold down Shift to move 10 pixels

‡Applies to shape tools

Keys for editing paths (Photoshop)

Result	Windows	Mac OS
Select multiple anchor points	Direction selection tool + Shift-click	Direction selection tool + Shift-click
Select entire path	Direction selection tool + Alt-click	Direction selection tool + Option-click
Duplicate a path	Pen (any pen tool), Path Selection or Direct Selection tool + Control + Alt-drag	Pen tool + Command + Option-drag

Result	Windows	Mac OS
Switch from Path Selection, Pen, Add Anchor Point, Delete Anchor Point, or Convert Point tools, to Direct Selection tool	Control	Command
Switch from Pen tool or Free-form Pen tool to Convert Point tool when pointer is over anchor or direction point	Alt	Option
Close path	Magnetic Pen tool-double-click	Magnetic Pen tool-double-click
Close path with straight-line segment	Magnetic Pen tool + Alt-double-click	Magnetic Pen tool + Option-double-click

Keys for painting objects

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Eyedropper tool	Any painting tool + Alt or any shape tool + Alt (*except when Paths option is selected)	Any painting tool + Option or any shape tool + Option (*except when Paths option is selected)
Select background color	Eyedropper tool + Alt-click	Eyedropper tool + Option-click
Color sampler tool*	Eyedropper tool + Shift	Eyedropper tool + Shift
Deletes color sampler*	Color sampler tool + Alt-click	Color sampler tool + Option-click
Sets opacity, tolerance, strength, or exposure for painting mode	Any painting or editing tool + number keys (e.g., 0 = 100%, 1 = 10%, 4 then 5 in quick succession = 45%) (*When airbrush option is enabled, use Shift + number keys)	Any painting or editing tool + number keys (e.g., 0 = 100%, 1 = 10%, 4 then 5 in quick succession = 45%) (*When airbrush option is enabled, use Shift + number keys)
Sets flow for painting mode*	Any painting or editing tool + Shift + number keys (e.g., 0 = 100%, 1 = 10%, 4 then 5 in quick succession = 45%) (*When airbrush option is enabled, omit Shift)	Any painting or editing tool + Shift + number keys (e.g., 0 = 100%, 1 = 10%, 4 then 5 in quick succession = 45%) (*When airbrush option is enabled, omit Shift)
Cycles through blending modes	Shift + + (plus) or – (minus)	Shift + + (plus) or – (minus)

Result	Windows	Mac OS
Fills selection/layer with foreground or background color	Alt + Backspace, or Control + Backspace†	Option + Delete, or Command + Delete†
Fills from history*	Control + Alt + Backspace†	Command + Option + Delete†
Displays Fill dialog box	Shift + Backspace	Shift + Delete
Lock transparent pixels on/off	/ (forward slash)	/ (forward slash)
Connects points with a straight line	Any painting tool + Shift-click	Any painting tool + Shift-click

†Hold down Shift to preserve transparency

Keys for transforming selections, selection borders, and paths

Result	Windows	Mac OS
Transform from center or reflect	Alt	Option
Constrain	Shift	Shift
Distort	Control	Command
Apply	Enter	Return
Cancel	Control + . (period) or Esc	Command + . (period) or Esc
Free transform with duplicate data	Control + Alt + T	Command + Option + T
Transform again with duplicate data	Control + Shift + Alt + T	Command + Shift + Option + T

Keys for selecting, editing, and navigating through text

* Not in ImageReady

Result	Windows	Mac OS
Move type in image	Control-drag type when Type layer is selected	Command-drag type when Type layer is selected
Select 1 character left/right or 1 line down/up, or 1 word left/right	Shift + Left Arrow/Right Arrow or Down Arrow/Up Arrow, or Control + Shift + Left Arrow/Right Arrow	Shift + Left Arrow/Right Arrow or Down Arrow/Up Arrow, or Command + Shift + Left Arrow/Right Arrow
Select characters from insertion point to mouse click point	Shift-click	Shift-click

Result	Windows	Mac OS
Move 1 character left/right, 1 line down/up, or 1 word left/right	Left Arrow/Right Arrow, Down Arrow/Up Arrow, or Control + Left Arrow/Right Arrow	Left Arrow/Right Arrow, Down Arrow/Up Arrow, or Command + Left Arrow/Right Arrow
Create a new text layer, when editing text	Shift-click	Shift-click
Select word, line, paragraph, or story	Double-click, triple-click, quadruple-click, or quintuple-click	Double-click, triple-click, quadruple-click, or quintuple-click
Show/Hide selection on selected type	Control + H	Command + H
Display the bounding box for transforming text when editing text, or activate Move tool if cursor is inside the bounding box*	Control	Command
Scale text within a bounding box when resizing the bounding box*	Control-drag a bounding box handle	Command-drag a bounding box handle
Move text box while creating text box	Spacebar-drag	Spacebar-drag

Keys for formatting type

* Not in ImageReady

Result	Windows	Mac OS
Align left, center, or right*	Horizontal type tool + Control + Shift + L, C, or R	Horizontal type tool + Command + Shift + L, C, or R
Align top, center, or bottom*	Vertical type tool + Control + Shift + L, C, or R	Vertical type tool + Command + Shift + L, C, or R
Return to default font style	Control + Shift + Y	Command + Shift + Y
Choose 100% horizontal scale*	Control + Shift + X	Command + Shift + X
Choose 100% vertical scale*	Control + Shift + Alt + X	Command + Shift + Option + X
Choose Auto leading*	Control + Shift + Alt + A	Command + Shift + Option + A
Choose 0 for tracking*	Control + Shift + Q	Command + Control + Shift + Q

Result	Windows	Mac OS
Justify paragraph, left aligns last line*	Control + Shift + J	Command + Shift + J
Justify paragraph, forces last line*	Control + Shift + F	Command + Shift + F
Toggle paragraph hyphenation on/off*	Control + Shift + Alt + H	Command + Control + Shift + Option + H
Toggle single/every-line composer on/off*	Control + Shift + Alt + T	Command + Shift + Option + T
Decrease or increase type size of selected text 2 pts/px	Control + Shift + < or >[†]	Command + Shift + < or >[†]
Decrease or increase leading 2 pts/px	Alt + Down Arrow or Up Arrow[††]	Option + Down Arrow or Up Arrow[††]
Decrease or increase baseline shift 2 pts/px	Shift + Alt + Down Arrow or Up Arrow[††]	Shift + Option + Down Arrow or Up Arrow[††]
Decrease or increase kerning/ tracking 20/1000 ems	Alt + Left Arrow or Right Arrow[††]	Option + Left Arrow or Right Arrow[††]

[†]Hold down Alt (Win) or Option (Mac OS) to decrease/increase by 10

[††]Hold down Control (Win) or Command (Mac OS) to decrease/increase by 10

Keys for slicing and optimizing

[§] ImageReady only

Result	Windows	Mac OS
Toggle browser dither for selected image pane in Optimized view[§]	Control + Shift + Y	Command + Shift + Y
Toggle through gamma previews in selected image pane[§]	Control + Alt + Y	Command + Option + Y
Toggle through Optimized/ 2up/4up/Original window[§]	Control + Y	Command + Y
Toggle between Slice tool and Slice Selection tool	Control	Command
Draw square slice	Shift-drag	Shift-drag
Draw from center outward	Alt-drag	Option-drag

Result	Windows	Mac OS
Draw square slice from center outward	Shift + Alt-drag	Shift + Option-drag
Reposition slice while creating slice	Spacebar-drag	Spacebar-drag
Open context-sensitive menu	Right-click on slice	Control-click on slice

Keys for using palettes

* Not in ImageReady

Result	Windows	Mac OS
Set options (except for Actions, Styles, Brushes*, Tool Presets*, and Layer Comps palettes)	Alt-click New button	Option-click New button
Delete without confirmation (except for the Brushes* palette)	Alt-click Trash button	Option-click Trash button
Apply value and keep text box active*	Shift + Enter	Shift + Return
Load as a selection	Control-click channel, layer, or path thumbnail. Control + Alt-click layer in ImageReady	Command-click channel, layer, or path thumbnail. Command + Option-click layer in ImageReady
Add to current selection	Control + Shift-click channel, layer, or path thumbnail. Control + Shift + Alt-click layer in ImageReady	Command + Shift-click channel, layer, or path thumbnail. Command + Shift + Option-click layer in ImageReady
Subtract from current selection*	Control + Alt-click channel, layer, or path thumbnail	Command + Option-click channel, layer, or path thumbnail
Intersect with current selection*	Control + Shift + Alt-click channel, layer, or path thumbnail	Command + Shift + Option-click channel, layer, or path thumbnail
Show/Hide all palettes	Tab	Tab
Show/Hide all palettes except the toolbox and options bar	Shift + Tab	Shift + Tab

Result	Windows	Mac OS
Highlight options bar	Select tool and press Enter	Select tool and press Return
Increase/decrease units by 10 in a pop-up menu	Shift + Up Arrow/Down Arrow	Shift + Up Arrow/Down Arrow

Keys for using the Actions palette

* Not in ImageReady

Result	Windows	Mac OS
Turn command on and all others off, or turns all commands on*	Alt-click the check mark next to a command	Option-click the check mark next to a command
Turn current modal control on and toggle all other modal controls*	Alt-click	Option-click
Change action set options	Alt + double-click action set	Option + double-click action set
Display Options dialog box	Double-click set or actions. Alt + double-click set or action in ImageReady	Double-click set or actions. Alt + double-click set or action in ImageReady
Play entire action	Control + double-click an action	Command + double-click an action
Collapse/expand all components of an action	Alt-click the triangle	Option-click the triangle
Play a command	Control-click the Play button	Command-click the Play button
Create new action and begin recording without confirmation	Alt-click the New Action button	Option-click the New Action button
Select contiguous items of the same kind*	Shift-click the action/command	Shift-click the action/command
Select non-contiguous items of the same kind*	Control-click the action/command	Command-click the action/command

Keys for using the Animation palette (ImageReady)

Result	Windows	Mac OS
Select/deselect multiple contiguous frames	Shift-click on second frame	Shift-click on second frame
Select/deselect multiple discontiguous frames	Control-click on multiple frames	Command-click multiple frames
Replace destination frame with copied frames	Shift + Alt + Paste Frames command from the palette pop-up menu	Shift + Option + Paste Frames command from the palette pop-up menu
Paste using previous settings without displaying the dialog	Alt + Paste Frames command from the palette pop-up menu	Option + Paste Frames command from the palette pop-up menu

Keys for using the Brushes palette

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Delete brush*	Alt-click brush	Option-click brush
Rename brush*	Double-click brush	Double-click brush
Decrease/increase brush size*	[or]	[or]
Decrease/increase brush softness/hardness in 25% increments*	Shift + [or]	Shift + [or]
Select previous/next brush size*	, (comma) or . (period)	, (comma) or . (period)
Select previous/next brush size§	[or]	[or]
Select first/last brush*	Shift + , (comma) or . (period)	Shift + , (comma) or . (period)
Select first/last brush§	Shift + [or]	Shift + [or]
Display precise cross hair for brushes	Caps Lock	Caps Lock
Toggle airbrush option*	Shift + Alt + P	Shift + Option + P

Keys for using the Channels palette (Photoshop)

Result	Windows	Mac OS
Set options for Save Selection as Channel button	Alt-click button	Option-click button
Create a new spot channel	Control-click Create New Channel button	Command-click Create New Channel button
Select/deselect multiple color-channel selection	Shift-click color channel	Shift-click color channel
Select/deselect alpha channel and show/hide as a rubylith overlay	Shift-click alpha channel	Shift-click alpha channel
Display channel options	Double-click alpha or spot channel thumbnail	Double-click alpha or spot channel thumbnail
Display composite	~ (tilde)	~ (tilde)

Keys for using the Color palette

Result	Windows	Mac OS
Select background color	Alt-click color in color bar	Option-click color in color bar
Display Color Bar menu	Right-click color bar	Control-click color bar
Cycle through color choices	Shift-click color bar	Shift-click color bar

Keys for using the Color Table palette (ImageReady)

Result	Windows	Mac OS
Select background color	Alt-click swatch	Option-click swatch
Select multiple contiguous colors; last color clicked becomes foreground color	Shift-click a second swatch	Shift-click a second swatch
Select discontiguous colors; last color clicked becomes foreground color	Control-click multiple swatches	Command-click multiple swatches
Add current background color	Alt-click New Color button or drag color proxy from Tools palette onto color table	Option-click New Color button or drag color proxy from Tools palette onto color table
Add current foreground color	Click New Color button or drag color proxy from Tools palette to New Color button	Click New Color button or drag color proxy from Tools palette to New Color button

Keys for using the History palette

* Not in ImageReady

Result	Windows	Mac OS
Rename snapshot*	Double-click snapshot name	Double-click snapshot name
Step forward through image states	Control + Shift + Z	Command + Shift + Z
Step backward through image states*	Alt + Shift + Z	Option + Shift + Z
Duplicate any image state, except the current state*	Alt-click the image state	Option-click the image state
Permanently clear history (no Undo)*	Alt + Clear History (in History palette pop-up menu)	Option + Clear History (in History palette pop-up menu)

Keys for using the Info palette

* Not in ImageReady

Result	Windows	Mac OS
Change color readout modes*	Click eyedropper icon	Click eyedropper icon
Change measurement units*	Click cross-hair icon	Click cross-hair icon

Keys for using the Layer Comps palette

Result	Windows	Mac OS
Create new layer comp without dialog	Alt-click Create New Layer Comp button	Option-click Create New Layer Comp button
Opens Layer Comp Options dialog	Double-click layer comp	Double-click layer comp
Rename inline	Double-click layer comp name	Double-click layer comp name
Select/deselect multiple contiguous layer comps	Shift-click	Shift-click
Select/deselect multiple discontiguous layer comps	Control-click	Command-click

Keys for using the Layers palette

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Load layer transparency as a selection	Control-click layer thumbnail	Command-click layer thumb-nail
Merge visible layers	Control + Shift + E	Command + Shift + E
Create new empty layer with dialog	Alt-click New Layer button	Option-click New Layer button
Create new layer below target layer	Control-click New Layer button	Command-click New Layer button
Activate bottom/top layer	Shift + Alt + [or]	Shift + Option + [or]
Select next layer down/up	Alt + [or]	Option + [or]
Move target layer down/up	Control + [or]	Command + [or]
Merge a copy of all visible layers into target layer	Control + Shift + Alt + E	Command + Shift + Option + E
Merge down	Control + E	Command + E
Bring target layer to back/front (or back/front) of set	Control + Shift + [or]	Command + Shift + [or]
Pass through blending mode for layer set	Shift + Alt + P	Shift + Option + P
Copy current layer to layer below	Alt + Merge Down command from the palette pop-up menu	Option + Merge Down command from the palette pop-up menu
Copy all visible layers to active layer	Alt + Merge Visible command from the palette pop-up menu	Option + Merge Visible command from the palette pop-up menu
Copy visible linked layers to active layer	Alt + Merge Linked command from the palette pop-up menu	Option + Merge Linked command from the palette pop-up menu
Show/hide this layer/layer set only or all layers/layer sets	Right-click the eye icon	Control-click the eye icon
Show/hide all other currently visible layers	Alt-click the eye icon	Option-click the eye icon
Toggle lock transparency for target layer, or last applied lock	/ (forward slash)	/ (forward slash)
Edit layer effect/style, options	Double-click layer effect/style	Double-click layer effect/style

Result	Windows	Mac OS
Hide layer effect/style	Alt-double-click layer effect/style	Option-double-click layer effect/style
Reveal/hide all layers and effects	Alt-click layer set expansion triangle	Option-click layer set expansion triangle
Edit layer style	Double-click layer thumbnail	Double-click layer thumbnail
Disable/enable vector mask	Alt-click vector mask thumbnail	Option-click vector mask thumbnail
Toggle vector mask on/off	Shift-click vector mask thumbnail	Shift-click vector mask thumbnail
Open Layer Mask Display Options dialog	Double-click layer mask thumbnail	Double-click layer mask thumbnail
Toggle layer mask on/off	Shift-click layer mask thumbnail	Shift-click layer mask thumbnail
Toggle between layer mask/composite image	Alt-click layer mask thumbnail	Option-click layer mask thumbnail
Toggle rubylith mode for layer mask on/off*	\ (backslash), or Shift + Alt-click	\ (backslash), or Shift + Option-click
Select all type; temporarily select type tool	Double-click type layer thumbnail	Double-click type layer thumbnail
Create a clipping mask	Alt-click the line dividing two layers	Option-click the line dividing two layers
Rename layer	Double-click the layer name	Double-click the layer name
Create new layer set below current layer/layer set	Control-click New Layer Set button	Command-click New Layer Set button
Create new layer set with dialog	Alt-click New Layer Set button	Option-click New Layer Set button
Create layer mask that hides all/selection	Alt-click Add Layer Mask button	Option-click Add Layer Mask button
Create vector mask that reveals all/selection	Control-click Add Layer Mask button	Command-click Add Layer Mask button
Create vector mask that hides all/selection	Control + Alt-click Add Layer Mask button	Command + Option-click Add Layer Mask button
Display layer set properties	Right-click on layer set	Control-click the layer set
Display layer options§	Alt + double-click layer thumbnail	Option + double-click layer thumbnail

Result	Windows	Mac OS
Select/deselect multiple contiguous layers[§]	Shift-click	Shift-click
Select/deselect multiple discontiguous layers[§]	Control-click	Command-click

Keys for using the Paths palette (Photoshop)

Result	Windows	Mac OS
Add path to selection	Control + Shift-click path name	Command + Shift-click path name
Subtract the path from selection	Control + Alt-click path name	Command + Option-click path name
Retain intersection of path as a selection	Control + Shift + Alt-click path name	Command + Shift + Option-click path name
Hide path	Control + Shift + H	Command + Shift + H
Set options for Fill Path with Foreground Color button, Stroke Path with Brush button, Load Path as a Selection button, Make Work Path from Selection button, and Create New Path button	Alt-click button	Option-click button

Keys for using the Swatches palette

* Not in ImageReady

[§] ImageReady only

Result	Windows	Mac OS
Create new swatch from foreground color*	Click in empty area of palette	Click in empty area of palette
Select background color	Control-click swatch	Command-click swatch
Delete color	Alt-click swatch	Option-click swatch
Select multiple contiguous colors[§]	Shift-click on a second color	Shift-click on a second color
Select multiple discontiguous colors[§]	Control-click on multiple colors	Command-click on multiple colors

Keys for using the Web Content palette (ImageReady)

Result	Windows	Mac OS
Edit image map name and show Image Map palette	Double-click image map thumbnail	Double-click image map thumbnail
Edit mouse action for rollover state	Double-click rollover state thumbnail	Double-click rollover state thumbnail
Edit image slice name and show Slice palette	Double-click image slice thumbnail	Double-click image slice thumbnail
Toggle visibility of animation frames	Right-click state with an animated frame icon and select new state from context menu	Control-click state with an animated frame icon and select new state from context menu
Create an image map rollover	Control-click Create Layer-based Rollover button	Command-click Create Layer-based Rollover button

Function keys

* Not in ImageReady

§ ImageReady only

Result	Windows	Mac OS
Invoke Help	F1	
Undo/Redo*		F1
Cut*	F2	F2
Copy*	F3	F3
Paste*	F4	F4
Show/Hide Brushes palette* Show/Hide Slice palette§	F5	F5
Show/Hide Color palette	F6	F6
Show/Hide Layers palette	F7	F7
Show/Hide Info palette	F8	F8
Show/Hide Actions palette*	F9	Option + F9*, Control + F9§
Show/Hide Optimize palette§	F10	Control + F10
Show/Hide Animation palette§	F11	Control + F11
Revert	F12	F12

Result	Windows	Mac OS
Fill*	Shift + F5	Shift + F5
Feather Selection*	Shift + F6	Shift + F6
Inverse Selection*	Shift + F7	Shift + F7

Tutorials

Image correction made easy with the Levels command

Does your photo look dull, lacking contrast? Or, does it have a color cast? Is it reddish or greenish? Adobe Photoshop's Levels command lets you correct the tonal range and color balance of an image by adjusting intensity levels of the image's shadows, midtones, and highlights. In this tutorial, you'll learn how to adjust the tonality and color in your images using the Levels command.

1. Open an Image in Photoshop.

Choose File > Open or double-click a thumbnail in the File Browser. Before you start making adjustments, evaluate the image tonality. Is it too light or dark? Does it have too much or too little contrast? Is there a color cast?

2. Create a new Levels adjustment layer.

Choose Layer > New Adjustment Layer > Levels, and then click OK in the New Layer dialog box. You can also open the Levels command by choosing Image > Adjustments > Levels. However, with an adjustment layer, you are applying the tonal correction on a separate layer. The original image is untouched. If you decide you don't like your changes, you can change them at any time or simply discard the adjustment layer and return to your original image.

A useful tool for evaluating an image's tonality is the histogram displayed in the Levels dialog box. A histogram illustrates how pixels in an image are distributed by graphing the number of pixels at each color intensity level. This can show you whether the image contains enough detail in the shadows (shown in the left part of the histogram), midtones (shown in the middle), and highlights (shown in the right part) to create good overall contrast in the image.
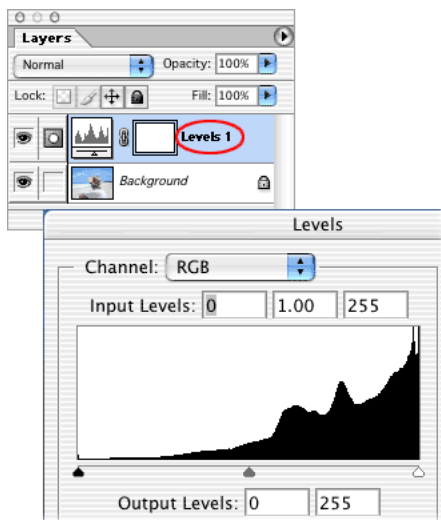
3. Set the shadows and highlights.

Move the Black Point Input slider and the White Point Input slider (located directly beneath the histogram) inward from the edges of the histogram. Moving the Black Point Input slider maps all image values at its position or below to the Output Levels black point (set by default to 0, or pure black). Moving the White Point Input slider maps image values at its position or above to the Output Levels white point (set by default to 255, or pure white).

For example, if your image is too dark, try moving the Input White Point slider to the left. This maps more values in the image to 255 (the Output Levels white point), making them lighter.
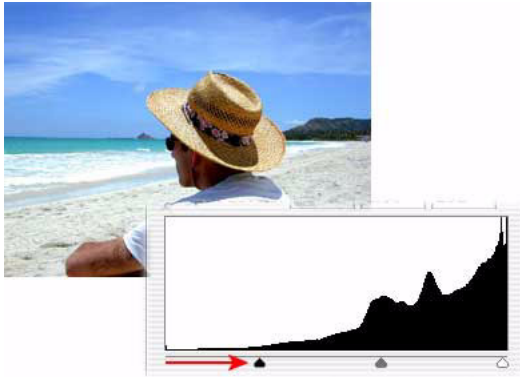
4. Adjust the midtones.

Move the middle Input slider to the left to lighten the image or to the right to darken the image.

The middle Input slider adjusts the gamma in the image. It moves the midtone (level 128) and changes the intensity values of the middle range of gray tones without dramatically altering the highlights and shadows.

5. Remove the color cast.

Select the Set Gray Point Eyedropper tool in the Levels dialog box. Click an area in the image that contains only a gray tone, or an area containing as few colors as possible. It's easier to color balance an image by first identifying an area that should be neutral and then removing the color cast from that area. With such a correction, all other colors in the image should be color balanced, too. The eyedropper tools work best on an image with easily identified neutrals.

Advanced users often use the Levels command to adjust individual channels and remove a color cast. Choose a channel from the Channel menu of the Levels dialog box and then adjust the Input sliders.
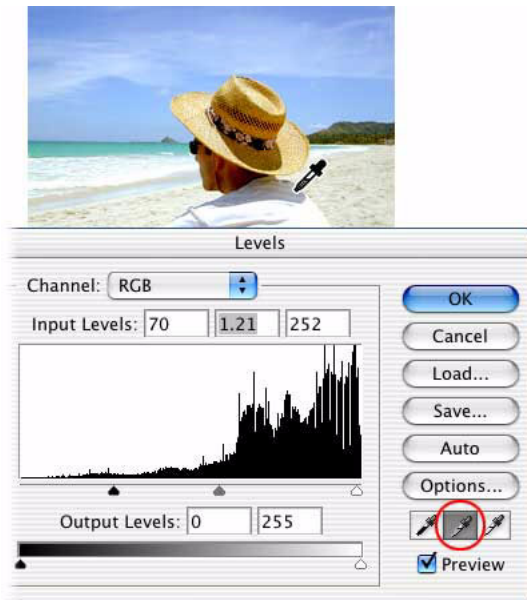
6. Apply the Levels adjustment.

Click OK.

Remove red-eye in images

There's nothing more frustrating than having a great picture ruined when a person's eyes come out bright red. Adobe Photoshop gives you a simple way to fix red-eye using the Color Replacement tool. In this tutorial, you'll learn how to use the tool to fix red-eye in just a few steps.

1. Open your image.

Open the image that you want to repair. Try zooming in so you can easily see the red eyes that need to be fixed. Then, select the Color Replacement tool (located in the toolbox with the Healing Brush and Patch tool).
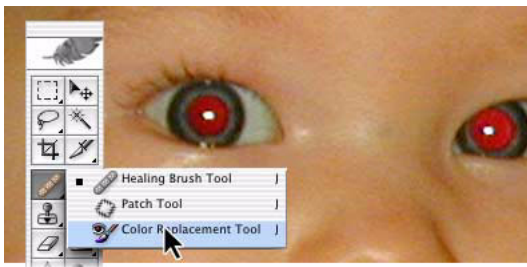
2. Choose a brush tip.

Choose a brush tip from the options bar. The brush tip should be smaller than the red area of the eye to make correcting the red-eye easier.
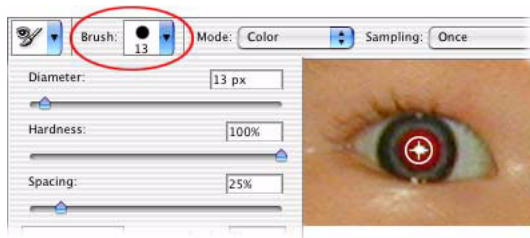
3. Set options for the Color Replacement tool.

In the options bar, you can choose settings that help you fix red-eye. For Mode, make sure that Color is selected. For the Sampling option, choose Once to erase only areas containing the color that you target. For the Limits option, select Discontiguous to replace the sampled color wherever it occurs under the brush. Drag the Tolerance slider to a low value (around 30 percent) to replace only the few colors very similar to the pixels you click.

4. Choose a color to replace the red.

Typically, black is a good choice, but you could try other colors to more closely resemble a person's eye color. To choose a color, click the foreground color swatch in the toolbox. In the color picker, choose a color that looks good, and then click OK.

5. Repair your photo.

Click once on the color you want to replace in the image. Drag over the red with black to repair the image. If all the red isn't removed, try increasing the Tolerance level in the options bar to correct more shades of red.

Once you're happy with the correction, save your image. Red-eye will never present a problem again!
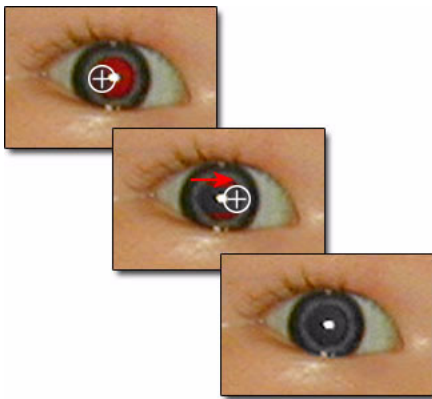
Create an image using layers

When you build an image from different pieces—background color, text, shapes, and photographs—Adobe Photoshop layers give you complete creative control. In this tutorial you'll create a multilayered image, apply a layer mask, and then add a text layer.

1. Open an Image in Photoshop.

Choose File > Open or double-click a thumbnail in the File Browser.

By default, the Layers palette should show. If not, choose Window > Layers. The Layers palette displays all the layers in your document with the layer name and a thumbnail of the layer's image.
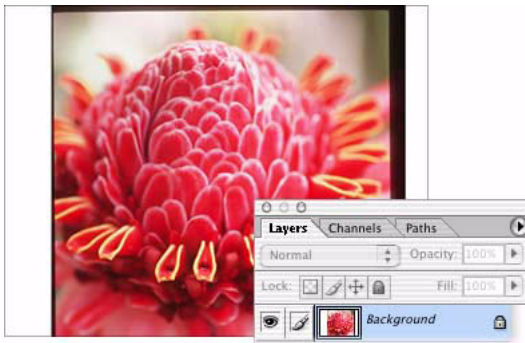
2. Convert the background layer.

In the Layers palette, double-click the background layer. Click OK in the New Layer dialog. Converting the background into a regular layer lets you use transparency in this layer. You can now view or hide the layer using the eye icon. Click the eye icon on a layer. Notice that the icon disappears and the layer is hidden. Click the empty icon box again. Both the eye icon and the layer's content reappear.
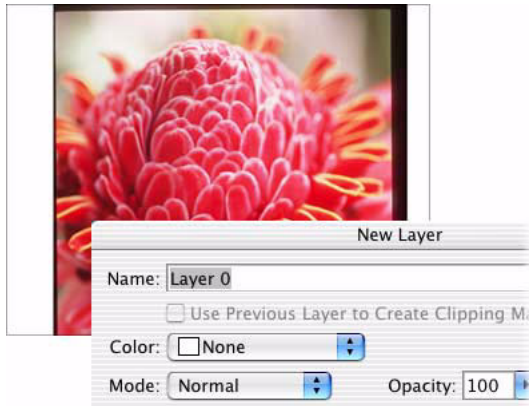
3. Apply a layer mask.

A layer mask lets you select and display just the part of the image you want to use, without altering the image. Here we'll mask out all of the image except a circular area of the flower. Click and hold the Rectangular Marquee tool, and then select the Elliptical Marquee tool from the pop-up menu. Hold down the Shift key to constrain the selection to a circle, and then drag an area on the image. In the Layers palette, click the Add Layer Mask icon.

Now only the area you selected is visible. You can change the visible area by moving the mask around the image. First click the link icon to unlink the mask from the layer. Select the Move tool, and then click inside the mask and drag to reposition it. Once you have your final position, click the link icon to relink the mask and the layer. Now you can move the layer and the mask will move with it.
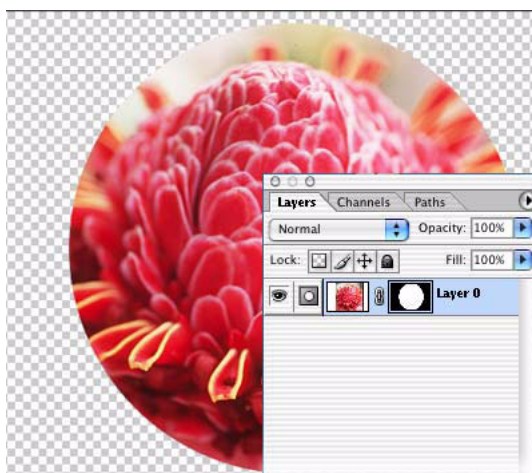
4. Add a stroke effect.

Click the Add a Layer Style button at the bottom of the Layers palette, and select Stroke from the menu. Choose stroke settings in the Layer Style dialog box, including color, size, and position of the stroke.
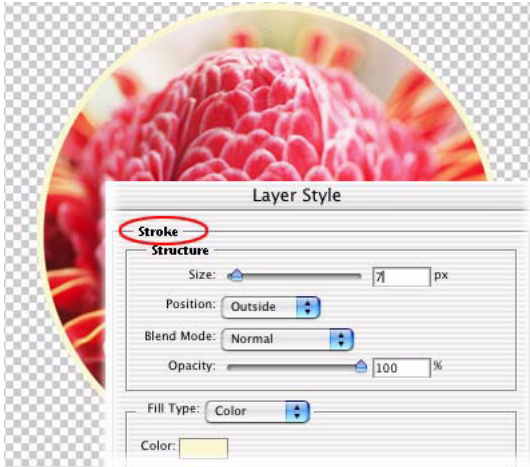
5. Create a new layer.

Click the Create a New Layer button to add a new layer to the image. The new layer is added on top of existing layers and becomes the selected layer. Click the Foreground color swatch and select a color with the Color Picker. Select the Paint Bucket tool (located in the toolbox with the Gradient tool) and click anywhere in the image to create the fill.

6. Reorder the layers.

Click the new layer and drag it beneath the lower layer. Changing the stacking order of your layers makes certain parts of the image appear in front of or behind other layers.
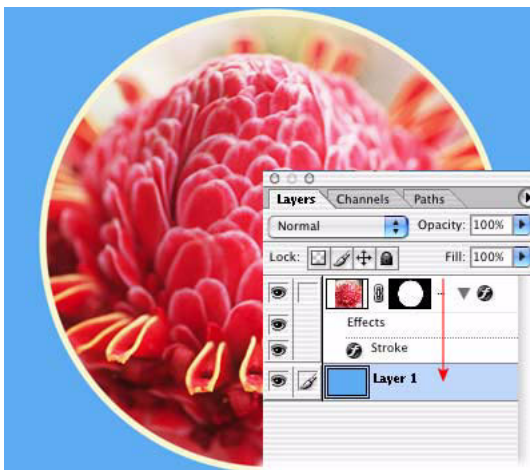
7. Add a text layer.

In the Layers palette, click the top layer. Select the Text tool, and then click on the image. The text cursor appears. In the options bar, change text size, font, style, or color to your liking. When you add text, Photoshop automatically places it on its own layer, where you can edit it separately from the rest of the image.

To edit the text, select it with the Text tool, and then change any of the settings in the options bar. To move the text, select the Move tool and then drag the text.
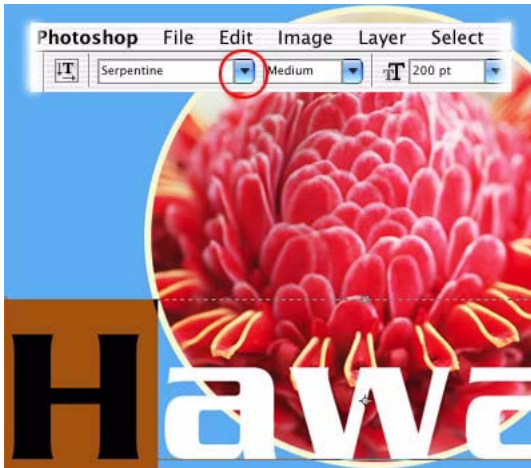
8. Add an effect to the text.

Click the Add a Layer Style button and select Drop Shadow from the menu. You can change the color or angle of the shadow or make other adjustments in the Layer Style dialog box.

In the Layers palette, the layer effect shows under the layer name. You can turn display of the layer effect on or off by clicking the eye icon next to the effect.
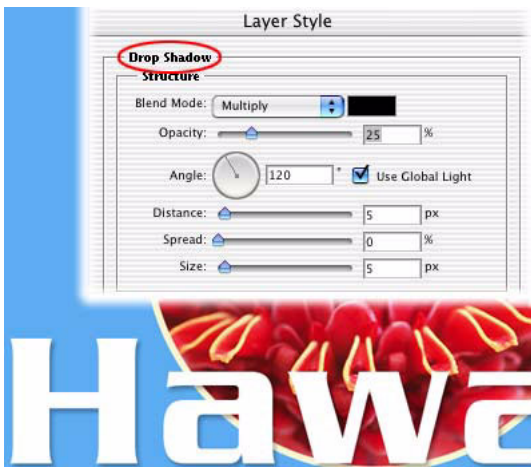
Using Photoshop selection tools

Having trouble deciding how to select part of your image? Adobe Photoshop gives you several tools that help you target just the areas you need to select. In this tutorial, you'll learn about the best way to use each of the selection tools. You can practice with the eagle image, located in the Photoshop CS/Samples folder.
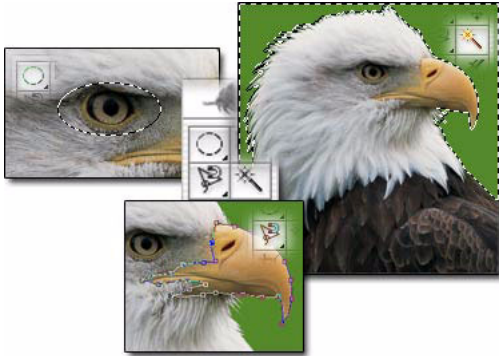
1. Use the Magic Wand tool to select the background of the image.

Since the eagle in our image has a well-defined shape, and since the colors in the eagle are different than the green background, we can select it using the Magic Wand tool. Select the Magic Wand tool, and then click anywhere in the green background. The green area is surrounded by a marquee and is now editable. Try dragging a paintbrush over the whole image to see how the eagle is protected.
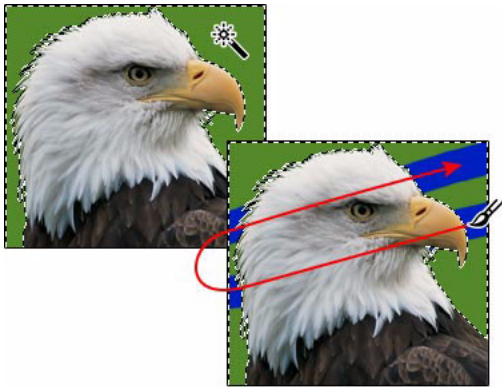
2. Invert your selection.

Because our background was so easy to select, we'll invert the selection so that just the eagle is selected. Choose Select > Inverse. You'll see the selection border change so that the eagle is surrounded. This is an easy method to make a selection when you have an image like the eagle. You could now work with the eagle without disturbing the background of the image. For now, choose Select > Deselect so we can try out another tool.

3. Use the Elliptical Marquee tool to select the eagle's eye.

Select the Elliptical Marquee tool, and then drag to draw a selection border around the eagle's eye. To reposition the selection border while you're drawing it, hold the spacebar and drag the selection border into a new position. To move the selection border after it's created, click anywhere inside the border and drag.
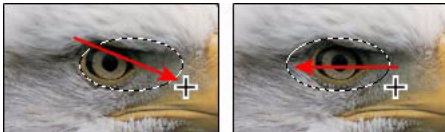
4. Use the Magnetic Lasso to select the eagle's beak.

Select the Magnetic Lasso tool (located in the toolbox with the Lasso tool), and then click and drag around the beak. The Magnetic Lasso tool makes free-form selections easier because it traces around an object. It works best when you have a clearly defined edge, like the eagle's beak. The tool places anchors while you drag (you can remove anchors while you're dragging by pressing the Delete key). To finish the selection border, click the starting anchor point (or double-click). Try moving the beak using the Move tool. Choose Edit > Undo to return the beak to its correct position. Then choose Select > Deselect to deselect the beak.
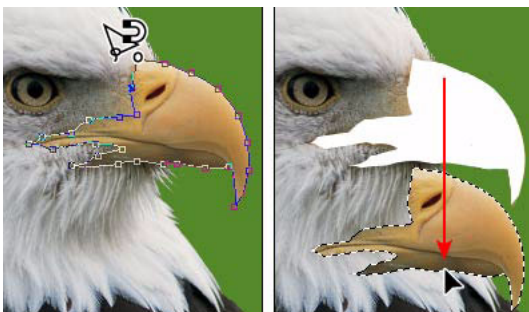
5. Add to a selection.

Select the Marquee tool, and make a rough selection of the eagle's body. Once you've made a selection, you can add to the selection border without having to start over. Select the Magnetic Lasso tool, and click the Add to Selection icon in the options bar. Refine your selection by dragging around the outside of the eagle (you'll notice a small plus sign below the tool pointer). Release the mouse. The selection border now includes the area you selected with the Magnetic Lasso tool.
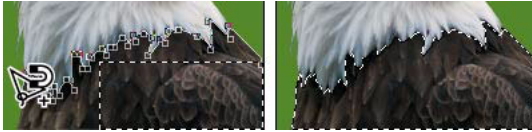
Produce great prints using Print with Preview

What's a great way to produce color prints from your inkjet printer? Use the Print with Preview command in Adobe Photoshop. The Print with Preview command lets you preview how your photo will print so the results are more predictable. You'll learn how to add a simple border around your photo and then transform it into a frame by adding a texture and layer style.
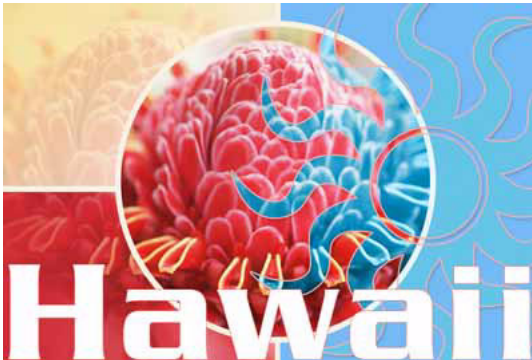
1. Open the photo you want to print.

Choose File > Open or double-click a thumbnail in the File Browser.

You should do any retouching or tonal correction to your photo before printing it.

2. Choose the Print with Preview command.

Choose File > Print with Preview.

The Print with Preview command lets you see a preview of how an image will print on a page and control how it will print. The preview updates as you specify the position and scale of the image.
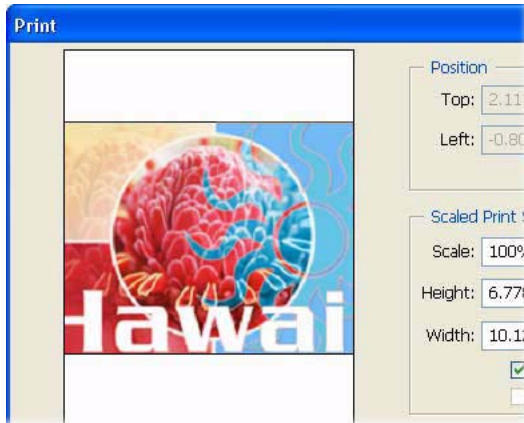
3. Position the image.

Deselect the Center Image option so that you can enter Top and Left values to reposition the image. You can also drag the preview image to the desired position. If the page is not correctly oriented for the image, you can click the Page Setup button and select an orientation in the Page Setup dialog box.

Don't specify a scaling percentage in the Page Setup dialog box. Instead, use the scale controls in the Print dialog box. Specifying the scaling in both the Page Setup dialog box and the Print dialog box will apply scaling twice, and your image will not print at the size you expect.
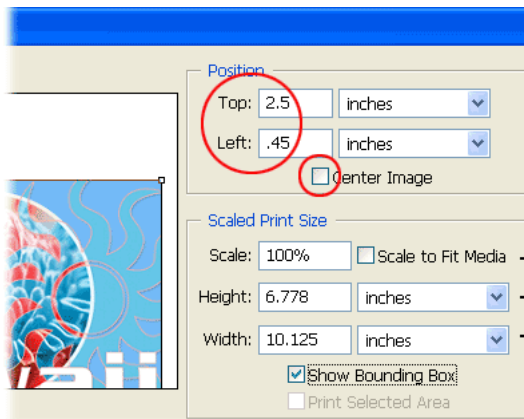
4. Scale the image.

You can scale the image in several ways. Select the Scale to Fit Media option and Photoshop automatically fits the image to the page. You can also manually enter values for the Scale, Height and Width. Or, you can grab one of the handles in the preview image and scale the photo.
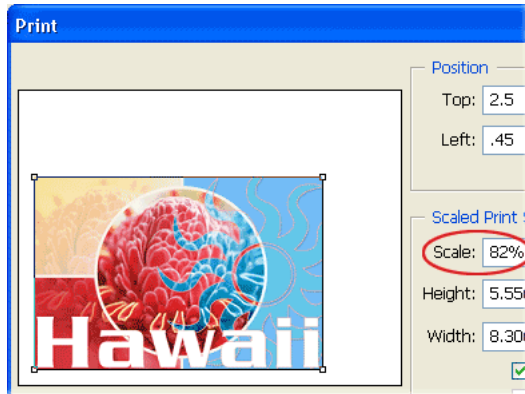
5. Set the color management options and click the Print button.

Select Show More Options. Choose Color Management from the menu in the More Options area. Select Document for the Source Space. If you want Photoshop to handle color management during printing, choose your printer's profile from the Profile menu in the Print Space area. If you prefer to let your printer's driver handle the color management, then choose Printer Color Management from the Profile menu. Click the Print button. The Print dialog box closes, and a second Print dialog box opens.

Color management is essential for producing consistent color when printing. Whether you let Photoshop or your printer driver control color management, you'll get the best results using a custom profile for your printer and the specific type of paper you're printing on.
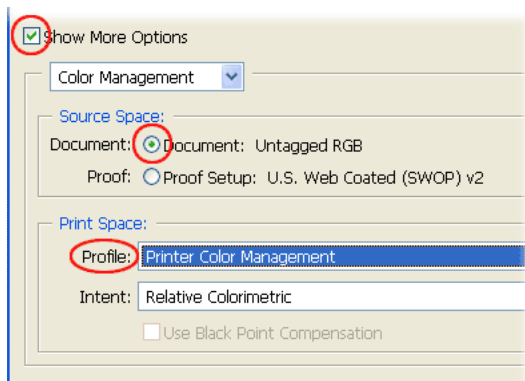
6. Specify the printer settings.

In the second Print dialog box, choose your printing options. On Windows, click the Properties button, then the Advanced button, to access the printer driver options. On Mac OS, use the pop-up menu to access the printer driver options. If you chose Printer Color Management in the previous step, specify the color management settings. If you're letting Photoshop control the color management, then make sure any color management options are turned *off*.

Do not apply color management twice to your image. Unpredictable print color will result if color management is done with both Photoshop and the printer driver simultaneously.

7. Print the image.

Once all the settings have been made in the printer options dialog box, click the Print button.

Using Photoshop shapes

Adobe Photoshop makes it easy to add shapes to an image: you can draw them using a variety of shape tools, or select from a large assortment of predrawn shapes. You can arrange vector shapes on separate layers for easy modification and overlay effects. In this tutorial, you'll add both background and foreground shapes to an image and create some flair with gradient and layer effects.
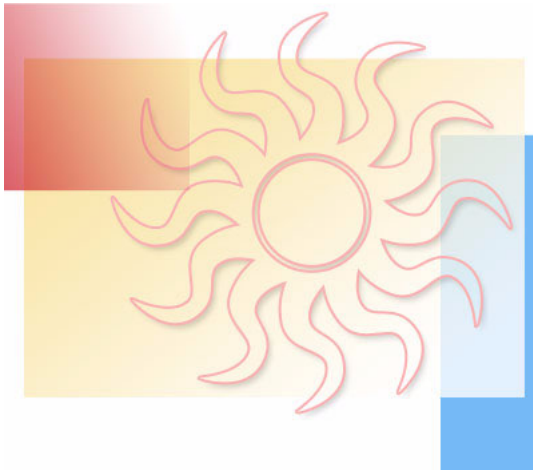
1. Open an Image in Photoshop.

Choose File > Open or double-click a thumbnail in the File browser. For this tutorial, you might want to start with an image that has at least two layers. First we'll add shapes to build a more interesting background for the image.

2. Select the rectangle tool.

Select the Rectangle tool from the toolbox. By default, the Shape Layers button in the options bar is selected. Use this option to create a vector shape, which is automatically placed on a new layer. (Adjacent icons in the palette let you create a path or a rasterized shape on the current layer.)
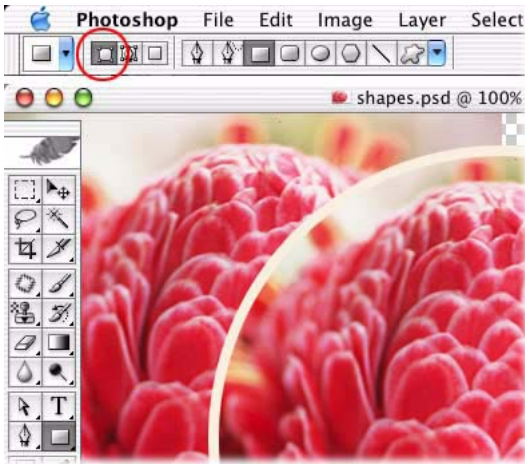
3. Create a rectangle shape.

In the Layers palette, select the bottom layer in your image. Click and drag to create a rectangle covering the right half of the image. The rectangle uses the foreground color by default. To change the color, double-click the layer thumbnail to bring up the color picker and select a new color.
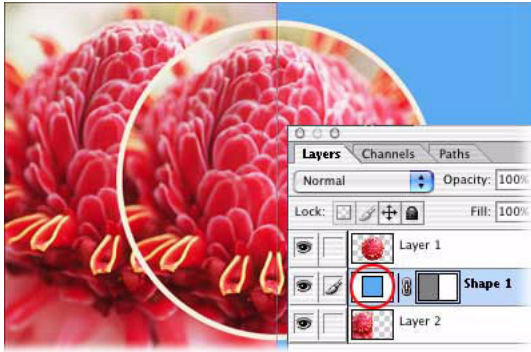
4. Add gradients to a shape.

Now we'll add two more rectangle shapes, this time with gradient effects. Using the Rectangle Shape tool, drag a new rectangle to cover the top left quarter of the image. Click the foreground color swatch and select a new color for this rectangle. Choose Layer > Change Layer Content > Gradient. Leave Gradient at the default selection, Foreground to Transparent. Set Style to Linear and the angle to –50. Repeat these steps to create a second rectangle, this time with an angle of 20.
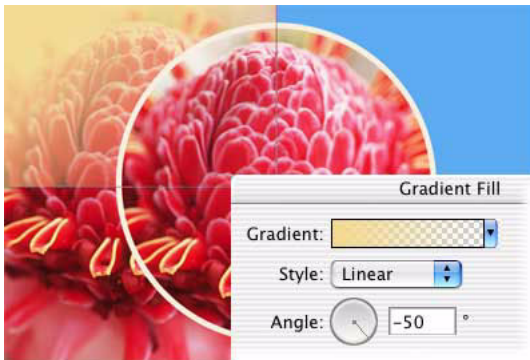
5. Load custom shapes.

Select the Custom Shape tool in the toolbox. In the options bar, click the down arrow to open the Custom Shape Picker. Click the black triangle to open the palette menu and select All, and then click Append. This loads all of Photoshop's predrawn shapes into the Custom Shapes palette.
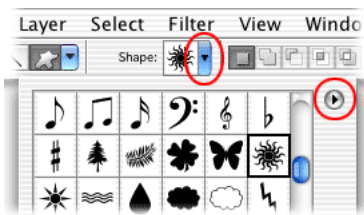
6. Draw a custom shape.

Now we'll add a custom shape to the foreground for an overlay effect. Select the top layer of the image, and use the foreground color swatch to select a color for the new shape. Select a custom shape from the Custom Shapes palette. (For our image, we chose the sunburst shape.) Holding down the Shift key to constrain proportions, click and drag in the image to draw the shape.

Since it's a vector shape on its own level, the sunburst is easy to move or resize. Select the layer and then use the Move tool to move the shape, or choose Edit > Free Transform to resize, rotate, flip, or skew it.
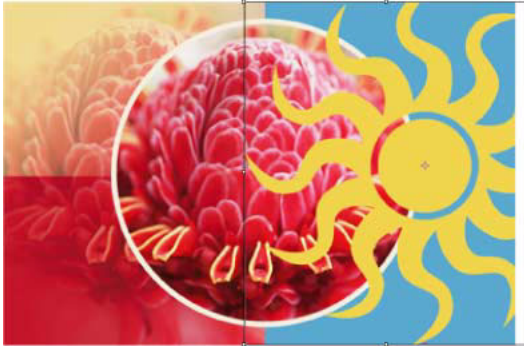
7. Fill the custom shape with a pattern.

Next we'll apply one of Photoshop's pattern effects to make our shape more interesting. Select the new shape in the layers palette, and then choose Layer > Change Layer Content > Pattern. Click the pattern in the Pattern Fill dialog box to open the Patterns palette. Click the black triangle to open the palette menu.

The palette menu shows different sets of patterns—Artist Surfaces, Color Paper, Nature Patterns, and so on—that you can add to your basic patterns palette. Select a set, and then click Append. Click a pattern to apply it to the custom shape. To change your shape back to a solid color or to a gradient, choose the Layer > Change Layer Content command again.

8. Add a layer effect to the shape.

To enhance your shape further, you can add layer effects to it. With the shape layer selected, click the Add a Layer Style button. Choose Stroke from the menu. In the Layer Style dialog box, choose settings for the stroke color, width, and position, and then click OK.

Experiment with different blending modes for the layer, such as Hue, Darken, or Multiply, using the mode menu in the Layers palette. To remove a layer effect, select the effect in the Layers palette and drag it to the Delete Layer icon.
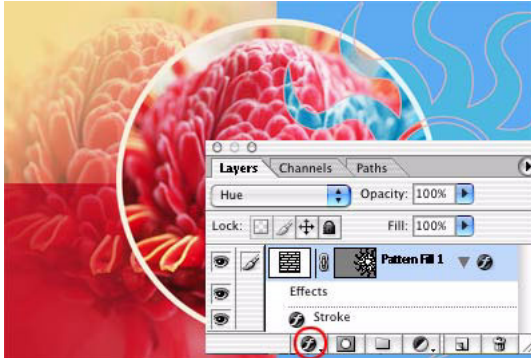
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