

# Adobe<sup>®</sup> Photoshop<sup>®</sup> 6.0

User Guide



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Adobe® Photoshop® 6.0 User Guide for Windows and Macintosh

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# Contents

## Looking at the Work Area

### Chapter 1

Using the toolbox	1
Using the options bar	2
Using palettes	3
Using context menus	6
Viewing images	6
Displaying status information	9
Displaying file and image information	10
Jumping between applications	12
Setting preferences	14
Monitoring operations	15
Using plug-in modules	15
Previewing an image in a browser (ImageReady)	16
Closing files and quitting	17

## Getting Images into Photoshop and ImageReady

### Chapter 2

About bitmap images and vector objects	19
About image size and resolution	21
Changing image size and resolution	26
Scanning images	32
Creating new images	34
Opening files	35
Placing files	39
Managing files with WebDAV	40
Cropping images	40
Changing the size of the work canvas	42

## Working with Color Modes

### Chapter 3

About color modes and models (Photoshop)	45
Color gamuts (Photoshop)	49
Color channels (Photoshop)	50
Adjusting the monitor display	50
Converting between bit depths (Photoshop)	52

Choosing a color mode (Photoshop) .....	53
Converting between Grayscale mode and Bitmap mode (Photoshop) .....	54
Converting to indexed color (Photoshop) .....	56

## **Producing Consistent Color    Chapter 4**

Why colors sometimes don't match .....	63
About color management .....	63
Creating a viewing environment for color management .....	64
Setting up color management .....	65
Customizing color management settings .....	69
Specifying working spaces .....	69
Specifying color management policies .....	72
Customizing advanced color management settings .....	73
Saving and loading custom color management settings .....	75
Synchronizing color management between applications .....	76
Soft-proofing colors .....	76
Changing the color profile of a document .....	78
Embedding profiles in saved documents .....	79
Obtaining, installing, and updating color profiles .....	79
Creating an ICC monitor profile .....	81

## **Making Color and Tonal Adjustments    Chapter 5**

Basic steps for correcting images .....	85
Checking scan quality and tonal range (Photoshop) .....	87
Using the color adjustment tools .....	89
Comparing corrections in CMYK and RGB (Photoshop) .....	93
Using the Levels dialog box .....	95
Using the Curves dialog box (Photoshop) .....	97
Using target values to set highlights and shadows (Photoshop) ..	99
Adjusting the gamma value of an image (ImageReady) .....	102
About the color wheel .....	103
Using the Color Balance command (Photoshop) .....	103
Using the Hue/Saturation command .....	104
Using the Replace Color command (Photoshop) .....	106
Using the Selective Color command (Photoshop) .....	107
Making quick overall adjustments to an image .....	108



Applying special color effects to images .....	110
Sharpening an image .....	112

## Selecting

### Chapter 6

About selections .....	115
Making pixel selections .....	115
Adjusting pixel selections .....	121
Softening the edges of a selection .....	124
Selecting paths and vector objects (Photoshop) .....	125
Drawing paths for precise selections (Photoshop) .....	126
Adjusting paths (Photoshop) .....	135
Adding color to paths .....	139
Converting between paths and selection borders .....	140

## Editing and Retouching

### Chapter 7

Correcting mistakes .....	143
Reverting to any state of an image .....	144
Duplicating images .....	148
Using rulers, the measure tool, guides, and the grid .....	149
Moving, copying, and pasting selections and layers .....	152
Deleting selections .....	156
Removing fringe pixels from a selection (Photoshop) .....	156
Warping images .....	157
Transforming objects in two dimensions .....	161
Transforming objects in three dimensions .....	165
Painting with a sample of an image .....	167
Retouching images .....	169
Annotating images (Photoshop) .....	171

## Painting and Drawing

### Chapter 8

Using the painting tools .....	173
Using the drawing tools .....	174
Erasing .....	176
Using the art history brush tool (Photoshop) .....	179
Using the paint bucket tool .....	180
Using the gradient tools (Photoshop) .....	181
Customizing the brushes set .....	185

Setting options for painting and editing	188
Filling and stroking selections and layers	191
Defining preset colors, patterns, and shapes	194
Choosing foreground and background colors	195
Using the Adobe Color Picker	198
Using other color pickers	202

## Using Channels and Masks (Photoshop)

### Chapter 9

About channels	205
Using the Channels palette	206
Managing channels	207
Mixing color channels	210
Adding spot colors	211
About masks	214
Creating temporary masks in Quick Mask mode	215
Storing masks in alpha channels	217
Extracting objects from their background (Photoshop)	220

## Using Layers

### Chapter 10

About layers	223
About layer sets	224
Using the Layers palette	224
Creating a layered image	227
Grouping layers into sets	230
Moving the contents of layers	230
Editing layers	232
Specifying layer options	234
Creating clipping groups	237
Using layer masks	239
Selecting opaque areas on a layer	243
Using content layers (Photoshop)	244
Managing layered images	247
Using layer effects	249
Grouping layer effects into styles	253
Using channel calculations to blend layers and channels (Photoshop)	256

## Applying Filters for Special Effects

### Chapter 11

About plug-in filters .....	259
Using filters .....	259
Tips for creating special effects .....	261
Improving performance with filters .....	262
Choosing a filter effect .....	263
Artistic filters .....	265
Blur filters .....	266
Brush Stroke filters .....	267
Distort filters .....	267
Noise filters (Photoshop) .....	269
Pixelate filters .....	270
Render filters .....	271
Sharpen filters .....	272
Sketch filters .....	272
Stylize filters .....	273
Texture filters .....	275
Video filters .....	275
Other filters .....	276
Digimarc filters .....	277
Using the Lighting Effects filter .....	277

## Using Type

### Chapter 12

About type .....	281
Creating type .....	281
Working with type layers .....	284
Formatting characters .....	287
Formatting paragraphs .....	293
Controlling hyphenation and justification .....	295
Working with composition .....	296
Setting CJK options (Photoshop) .....	297

## Designing Web Pages

### Chapter 13

About designing Web pages with Photoshop and ImageReady .....	299
Creating and viewing slices .....	300
Selecting and modifying slices .....	303
Specifying slice options .....	307

	Creating and viewing image maps (ImageReady) . . . . .	313
	Selecting and modifying image maps (ImageReady) . . . . .	315
	Specifying image map options (ImageReady) . . . . .	317
	Selecting an image map type (ImageReady) . . . . .	318
	Working with rollovers (ImageReady) . . . . .	318
	Creating Web galleries (Photoshop) . . . . .	322
<b>Creating Animations (ImageReady)</b>	<b>Chapter 14</b>	
	About animation . . . . .	325
	Creating animations . . . . .	325
	Working with layers in animations . . . . .	330
	Viewing animations . . . . .	333
	Optimizing animations . . . . .	333
	Saving animations . . . . .	334
	Opening and importing files as animations . . . . .	335
<b>Optimizing Images for the Web</b>	<b>Chapter 15</b>	
	About optimization . . . . .	337
	Viewing images during optimization . . . . .	338
	Choosing a file format for optimization . . . . .	340
	Optimizing images . . . . .	342
	Optimizing colors in GIF and PNG-8 images . . . . .	349
	Working with hexadecimal values for color . . . . .	356
	Making transparent and matted images . . . . .	358
	Previewing and controlling dithering . . . . .	361
	Setting optimization preferences (ImageReady) . . . . .	365
	Using a droplet to automate optimization settings (ImageReady) . . . . .	366
	Saving optimized images . . . . .	367
	Setting output preferences and file information . . . . .	369
	Creating background images . . . . .	372
<b>Saving and Exporting Images</b>	<b>Chapter 16</b>	
	Saving files . . . . .	375
	Choosing a file format . . . . .	381
	Adding file information (Photoshop) . . . . .	389
	Adding digital copyright information . . . . .	390

Setting preferences for saving files (Photoshop) .....	392
Creating multiple-image layouts (Photoshop) .....	394
Placing Photoshop images in other applications (Photoshop) ..	395

## Printing (Photoshop)

### Chapter 17

About printing .....	399
Printing images .....	400
Using color management when printing .....	406
Creating color traps .....	408
Printing duotones .....	409
Printing color separations .....	413

## Automating Tasks

### Chapter 18

About actions .....	415
Using the Actions palette .....	416
Creating actions .....	416
Playing actions .....	421
Editing actions .....	422
Managing actions in the Actions palette .....	424
Using the Batch command (Photoshop) .....	426
Using droplets .....	427
Using the Automate commands (Photoshop) .....	431
External automation .....	431



# Chapter 1: Looking at the Work Area

**T**he Adobe Photoshop and Adobe ImageReady work area includes the command menus at the top of your screen and a variety of tools and palettes for editing and adding elements to your image. You can also add commands and filters to the menus by installing third-party software known as plug-in modules.

## Using the toolbox

The first time you start the application, the toolbox appears on the left side of the screen. The tools in the toolbox let you select, paint, edit, and view images. These tools have options that appear in the options bar. (See “Using the options bar” on page 2.) Other controls choose foreground and background colors and change the slice or screen display mode.

For more information on the foreground and background color controls, see “Choosing foreground and background colors” on page 195.



For an overview of each tool, see online help.

### To show or hide the toolbox:

Choose Window > Show Tools or Window > Hide Tools.

### To move the toolbox:

Drag the toolbox by its title bar.

## Selecting 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.

### To select a tool:

Do one of the following:

- To select a visible tool, click its icon.
- To select a hidden tool, position the pointer on the visible tool and hold down the mouse button until the tools list appears. Then, click the tool you want.



*Use the following tool shortcuts:*

- To select a tool quickly, press its shortcut key on the keyboard. To display the shortcut key for a tool, place the pointer over the tool in the toolbox.
- To cycle through a set of hidden tools, press Shift and press the visible tool’s shortcut key.

## Using the tool pointers

When you select most tools, the mouse pointer matches the tool’s icon. The marquee pointer appears by default as cross-hairs, and the text tool pointer as an I-beam.

Each default pointer has a different *hot spot*, where an effect or action in the image begins. With all tools except the move tool and the type tool, you can switch to precise pointers, which appear as cross-hairs centered around the hot spot.

**To set the tool pointer appearance:**

1 Do one of the following:

- (Photoshop) Choose Edit > Preferences > Display & Cursors.
- (ImageReady) Choose Edit > Preferences > Cursors.

2 Choose a tool pointer setting:

- 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, airbrush, paintbrush, 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, polygon lasso, magic wand, crop, slice, eyedropper, pen, gradient, line, paint bucket, magnetic lasso, magnetic 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. 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 or dock it at the top or bottom of the screen.

The options bar includes an area for docking other palettes, providing quick access to palettes that you reference briefly while using the application, such as Swatches and Actions. The docking area is only available when the options bar is docked at top or bottom of your screen, and when using a resolution of at least 800 pixels x 600 pixels.

**To display the options bar:**

Do one of the following:

- Choose Window > Show Options.
- Double-click a tool in the toolbox (except the zoom or hand tool).



*Magic Wand options bar <<Art OK at 40%? or choose a shorter options bar?>>*



**To return to a tool's default settings:**

Do one of the following:

- Choose Reset Tool from the context menu located over the tool icon on the options bar or in the Windows menu.
- To return all the tools to their default settings, choose Reset All Tools from the context menu located over the tool icon on the options bar or in the Windows menu.

**To move the options bar:**

Drag the title bar on the left edge of the options bar. The title bar will become a gripper bar when the options bar is docked at the top or bottom of the screen.

**To dock other palettes in the options bar:**

- 1 Drag the options bar to the top or bottom of the screen until the docking well appears.
- 2 Drag the desired palette's tab into the docking well so that the docking well is highlighted.

Palettes are technically hidden when in the docked in the options bar. The Window menu item associated with a docked palette will say Show when it is docked. Showing a palette while it is in the well only shows the palette until you click outside the palette.

**Note:** *If you undock the options bar while palettes are docked, palettes will no longer be visible. When you show the palette again, it will move to the upper right corner of the screen.*

## Using palettes

Palettes help you monitor and modify images. By default, these palettes appear stacked together in groups. You can display or hide them as you work.

**To show or hide palettes:**

Do one of the following:

- To show or hide all open palettes, the options bar, and the toolbox, press Tab.
- To show or hide all palettes and the options bar, press Shift+Tab.

**To show or hide one palette:**

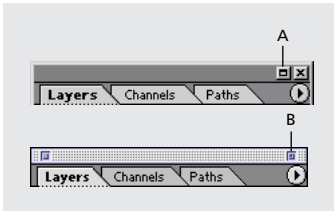
Choose Window > Show to display the selected palette at the front of its group. Choose Window > Hide to conceal the entire group of which the selected palette is a part.

## Changing the palette display

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

- To make a palette appear at the front of its group, click the palette's tab, or choose Window > Show
- 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 hold down 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, if the palette is currently at minimum size. You can still access the menu of a collapsed palette.




Click to collapse or expand palette.  
A. Windows B. Mac OS

- (ImageReady) To show or hide options for palettes that include hidden options (the Optimize, Color, Type, 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.

## Docking palettes together

Docking palettes together lets you view multiple palettes at the same time and move them as a group.

**Note:** You cannot dock palette groups together.

 In Photoshop, you can also dock palettes in the options bar. (See “Using the options bar” on page 2.)

### To dock palettes together:

Drag a palette's tab to the bottom of another palette so that the bottom of the second palette is highlighted.

To move an entire docked group, drag its title bar.

## Setting the positions of palettes and dialog boxes

The positions of all open palettes and moveable dialog boxes are saved when you exit the program. Alternatively, you can always start with default palette positions or restore default positions at any time.

### To reset palettes to the default positions:

Do one of the following:

- Choose Edit > Preferences > General, and click Reset Palette Locations to Default.
- (ImageReady) Choose Window > Arrange > Reset Palettes.

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

- 1 Choose Edit > 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).

### To use a pop-up slider:

Do one of the following:

- Position the pointer over the triangle next to the setting, hold down the mouse, and drag the slider or angle radius to the desired value.
- 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 Esc.

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

## 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 > Show Info.

(Photoshop) 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 94.)
- When you use the marquee tool, the Info palette displays the *x*- and *y*-coordinates of your starting 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 “Previewing color values” on page 111.)  
<<X-ref destination?>>  
(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.

## Using context menus

In addition to the menus at the top of your screen, context-sensitive menus display commands relevant to the active tool, selection, or palette.

### To display context menus:

- 1 Position the pointer over an image or palette item.

- 2 Click with the right mouse button (Windows) or hold down Control and press the mouse button (Mac OS).

## Viewing images

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. You can also change the screen display mode to change the appearance of the Photoshop or ImageReady work area.

### Changing the screen display mode

The window controls let you change the screen display mode, including menu bar, title bar, and scroll bar options.

#### To change the screen display mode:

Click a screen mode button in the toolbox:

- The left button (☰) displays the default window with a menu bar at the top and scroll bars on the sides.
- The center button (☒) displays a full-screen window with a menu bar and a 50% gray background, but no title bar or scroll bars.
- The right button (☑) displays a full-screen window with a black background, but no title bar, menu bar, or scroll bars.

### Using the document window

<<Still need to doc Uber hide in here.>>

The document window is where your image appears. Depending on the screen display mode (see “Changing the screen display mode” on page 6), the document window may include a title bar and scroll bar.

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. For information on changing the view in the document window, see “Viewing images during optimization” on page 338.

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.

**To open multiple views of the same image:**

Do one of the following:

- Choose View > New View.
- (ImageReady) Drag any tab away from the document window.

**To arrange multiple windows (Windows only):**

Do one of the following:

- Choose Window > Cascade (Photoshop) or Window > Arrange > Cascade (ImageReady) to display windows stacked and cascading from the upper left to the lower right of the screen.
- Choose Window > Tile (Photoshop) or Window > Arrange > Tile (ImageReady) to display windows edge to edge.

- Choose Window > Arrange Icons (Photoshop) or Window > Arrange > Arrange Icons (ImageReady) to display image icons at the bottom of the ImageReady work area.

**To close windows:**

Choose a command:

- Choose File > Close to close the active window.
- (Windows) Choose Window > 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.

 *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 > Show 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 as described in “Using the Adobe Color Picker” on page 198.

3 Click OK.

**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 “About image size and resolution” on page 21.*

**To zoom in:**

Do one of the following:

- Select the zoom tool (Q). 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 6400%, the magnifying glass appears empty.
- Choose View > Zoom In to magnify to the next preset percentage. When the image has reached its maximum magnification level, the command is dimmed.
- (ImageReady) Click on the Zoom Level pop-up menu at the bottom left of the document window, and choose a zoom level.
- (Photoshop) Enter a magnification level in the Zoom text box at the lower left of the window.

**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 of 3.13%, the magnifying glass appears empty.
- Choose View > Zoom Out to reduce to the previous preset percentage. When the image reaches its maximum reduction level, the command is dimmed.

- (ImageReady) Click on the Zoom Level pop-up menu at the bottom left of the document window, and choose a zoom level.
- (Photoshop) Enter a reduction level in the Zoom text box at the lower left of the window.

**To magnify by dragging:**

- 1 Select the zoom tool.
- 2 Drag over the part of the image you want to magnify.

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 space bar 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 view and the window size to fit the available screen space. If the image is smaller than the monitor size, the image is displayed at 100%.

**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), ImageReady maintains a constant window size regardless of the image's magnification. This can be helpful when using smaller monitors or working with tiled views.

## Displaying status information

The status bar at the bottom of the program 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 > Show Status Bar or Window > Hide Status Bar.

## Displaying file and image information

Information about the current file size and other features of the image is displayed at the bottom of the document window.

*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 images during optimization” on page 338.*

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 section 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 document window.

<<keep art?>>



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. For more information on how layers affect file size, see “Managing layered images” on page 247.
- Document Profile to display the name of the color profile used by the image.



- Scratch Sizes to display information on the amount of RAM 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 Photoshop operations being performed using RAM (as compared to using scratch disk space). 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.

<<update source art?>>



- 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. For more information on using digital watermarks, see “Adding digital copyright information with the Digimarc filter” in online Help.
- Undo/Redo Status to view the number of undos and redos that are available for the image.

<<*Reviewers—Please provide descriptions of Original in Bytes, Optimized in Bytes, and Optimized Savings options.*>>

- Size/Download Time (14.4Kbps/28.8Kbps/56.6Kbps) 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:**

Do one of the following:

- (Photoshop) Choose File > File Info. For section, choose the attribute you want to view.
- (ImageReady) Choose File > Image 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.

<<*conditionalize below “PrintOnly” for see online help?*>>



For information on adding Digimarc watermarks to images, see “Adding digital copyright information” on page 390.

## Jumping between applications

You can jump between ImageReady and Photoshop 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.

### To jump between ImageReady and Photoshop:

Do one of the following:

- Click the Jump To button () in the toolbox.
- Choose File > Jump To > Photoshop.

<<Clarify and document dialog>>

Jumping to another application saves the original file.

## Jumping to other applications (ImageReady)

You can jump to graphics-editing applications and HTML-editing applications from within ImageReady.

When you install 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. You can also specify which application will be launched when using a keyboard shortcut.

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.

### To jump to another application from ImageReady:

**1** Choose a method for jumping to the destination application:

- To launch a graphics-editing application, choose Ctrl+Shift+M (Windows) or Command+Shift+M (Mac OS). ImageReady launches the application you have specified. (See instructions in this section for specifying an application to be launched by the Jump To keyboard shortcut.)

- Choose File > Jump To > Other Graphics Editor or File > Jump To > Other HTML Editor, and select an application from the submenu.

**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 folder.

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

**To specify an application to be launched by the Jump To keyboard shortcut:**

Place brackets ([ ]) around the name of the application in the Jump To folder, located in the Helpers folder in the Photoshop folder. The bracketed application is launched when you press Ctrl+Shift+M (Windows) or Command+Shift+M (Mac OS). The brackets do not appear in the Jump To submenu. If no application is bracketed, the keyboard shortcut launches Photoshop.

## Setting preferences

Numerous program settings are stored in a *preferences* file, located in the registry (Windows) or the Preferences folder in your System Folder (Mac OS). 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 dialog boxes that can be opened through the Preferences submenu in the Edit menu. Preference settings are saved each time you exit the application.

Unexpected behavior may indicate damaged preferences. You can restore preferences to their default settings to remove damaged preferences. Restoring default preferences deletes any custom preference settings you had applied.

**To open a preferences dialog box:**

1 Choose the desired preference set from the Edit > Preferences 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:**

In Windows, press and hold Alt+Control+Shift immediately after launching Photoshop or ImageReady. Click Yes to restore preferences.

In Mac OS, open the Preferences folder in the System Folder, and drag the following files to the Trash:

- (Photoshop) In the Adobe Photoshop 6 Settings folder, Adobe Photoshop 6 Prefs and Color Settings
- (ImageReady) Adobe ImageReady 3.0 Prefs

<<reviewers—note inconsistency in file names.  
Please let us know if you make a change.>>

A new Preferences file will be created the next time you start ImageReady.

## 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 (Windows) or press Command+period (Mac OS).

### To set notification for completion of operations:

- 1 Choose Edit > 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.

## Using plug-in modules

<<Reviewers--Where best to describe function of Photoshop Only and ImageReady Only folders inside the Plug-ins folder?>>

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 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 in 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. Plug-ins may also add new items to command menus, new palettes, new toolbars, and other new interface features.

*Note: <<Reviewers—Is this still true?>> If many plug-in modules are installed, Photoshop or ImageReady may not be able to list all the plug-ins in their appropriate menus. Newly installed plug-ins will 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 folder.

- (Mac OS) Option-drag a copy of the module to the appropriate Plug-ins folder inside the Photoshop folder.

*Note:* When you copy or drag the plug-in files into the Plug-ins folder, make sure that the files are uncompressed.

**To install a third-party plug-in module:**

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

**To select an additional plug-ins folder:**

- 1 Choose Edit > 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 Select (Mac OS).
- 5 Restart Photoshop or ImageReady for the plug-ins to take effect.

**To view information about installed plug-ins:**

Choose Help > About Plug-In and select a plug-in from the submenu.

## Previewing an image in a browser (ImageReady)

You can open a browser while working in ImageReady and preview an optimized image in the browser. 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.

When you install ImageReady, all browsers currently on your system are added to the Preview In menu. You can add additional browsers to the menu, and specify which browser will be launched when using a keyboard shortcut.

**To preview an optimized image in a browser:**

Launch a browser:

- Press Ctrl+Alt+P (Windows) or Command+Option+P (Mac OS). ImageReady launches the browser you have specified to be used for previewing or the first browser in the Preview In alphabetical submenu.
- Select File > Preview In. Then choose a browser from the submenu, and click OK. (Choose Other to select a browser not listed in the submenu.)

**To add a browser to the Preview In menu:**

- 1 Create a shortcut (Windows) or an alias (Mac OS) for the browser you want to add to the menu.
- 2 Drag the icon for the shortcut or alias into the Preview In folder, located in the Helpers folder in the Photoshop program folder.

3 Restart ImageReady to view the browser in the Preview In menu.

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

**To specify a browser to be launched by the Preview In keyboard shortcut:**

Place brackets ([ ]) around the name of the browser in the Preview In folder, located in the Helpers folder in the Photoshop folder. The bracketed browser is launched when you press Ctrl+Alt+P (Windows) or Command+Option+P (Mac OS). The brackets do not appear in the Preview In submenu. If no browser is bracketed, the keyboard shortcut launches the first browser in the Preview In submenu. The shortcut specification takes effect the next time you launch ImageReady.

## Closing files and quitting

**To close a file:**

- 1 Choose File > Close.
- 2 Choose whether 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 to save any open files:
  - Click Yes (Windows) or Save (Mac OS) for each open file to save the file.





# Chapter 2: Getting Images into Photoshop and ImageReady

**Y**ou can get digital images from a variety of sources—you can create new images, import them from another graphics application, or capture them from video. Often you will begin by scanning a photograph, a slide, or an image. To create effective artwork, you must understand some basic concepts about how to work with digital images, how to produce high-quality scans, how to work with a variety of file formats, and how to adjust the resolution and size of images.

## About bitmap images and vector objects

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

**Bitmap images** Bitmap images—also called *raster images*—use a grid of small squares known as pixels to represent images. Each pixel is assigned a specific location and color value. For example, a bicycle tire in a bitmap image is made up of a mosaic of pixels in that location. When working with bitmap images, you edit pixels rather than objects or shapes.

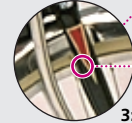
A bitmap image is resolution-dependent—that is, it contains a fixed number of pixels to represent its image data. As a result, a bitmap image can lose detail and appear jagged if viewed at a high magnification on-screen or printed at too low a resolution. Bitmap images are the best choice for representing subtle gradations of shades and color—in photographs or painted images, for example.

**Vector objects** Vector graphics are made of lines and curves defined by mathematical objects called *vectors*. Vectors describe an image according to its geometric characteristics. For example, a bicycle tire in a vector graphic is made up of a mathematical definition of a circle drawn with a certain radius, set at a specific location, and filled with a specific color. You can move, resize, or change the color of the tire without losing the quality of the graphic.

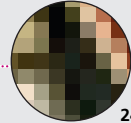
A vector object is resolution-independent—that is, it can be scaled to any size and printed on any output device at any resolution without losing its detail or clarity. As a result, vector objects are the best choice for representing bold graphics that must retain crisp lines when scaled to various sizes—for example, logos.

Because computer monitors represent images by displaying them on a grid, both vector and bitmap images are displayed as pixels on-screen.

**BITMAP VS. VECTOR** A bitmap image is composed of a grid of small squares known as pixels. A vector graphic is defined by mathematical objects called vectors.

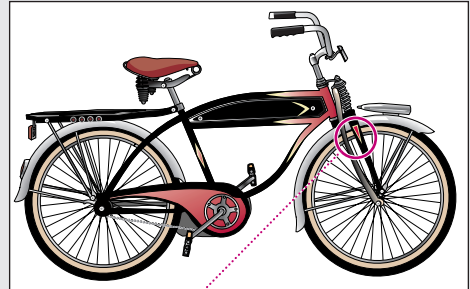


3:1



24:1

*Bitmap images are good at reproducing subtle gradations of color, as in photographs. They can show jagged edges when printed at too large a size or displayed at too high a magnification.*



3:1



24:1

*Vector graphics are good at reproducing crisp outlines, as in logos or illustrations. They can be printed or displayed at any resolution without losing detail.*

## About image size and resolution

In order to produce high-quality images, it is important to understand how the pixel data of images is measured and displayed.

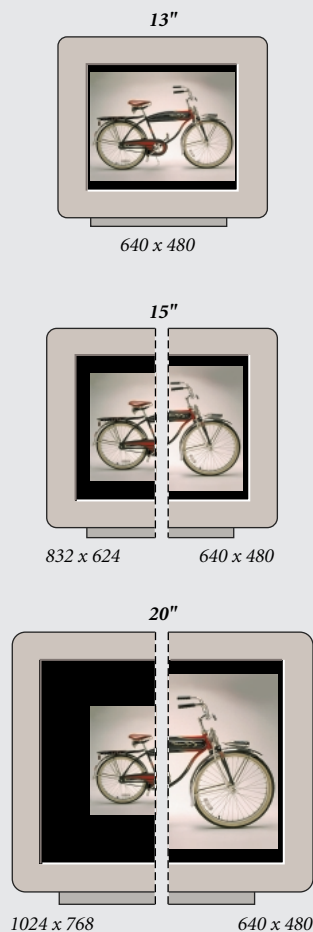
**Pixel dimensions** The number of pixels along the height and width of a bitmap image constitutes the image's *pixel dimensions*. The display size of an image on-screen is determined by the pixel dimensions of the image plus the size and setting of the monitor.

A typical 13-inch monitor displays 640 pixels horizontally and 480 vertically. An image with dimensions of 640 pixels by 480 pixels would fill this small screen. On a larger monitor with a 640-pixels-by-480-pixels setting, the same image (with 640-pixels-by-480-pixels dimensions) would still fill the screen, but each pixel would appear larger. Changing the setting of this larger monitor to 1152 pixels by 870 pixels would display the image at a smaller size, occupying only part of the screen.

When preparing an image for online display (for example, a Web page that will be viewed on a variety of monitors), pixel dimensions become especially important. Because your image may be viewed on a 13-inch monitor, you may want to limit the size of your image to 600 pixels by 400 pixels to allow room for the Web browser window controls.

**ON-SCREEN DISPLAY SIZE** How large an image appears on-screen depends on a combination of factors—the pixel dimensions of the image, the monitor size, and the monitor resolution setting.

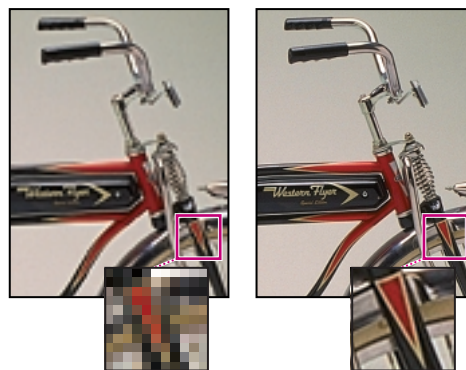
The examples below show a 620 x 400 pixel image displayed on monitors of various sizes and resolutions.



**Image resolution** The number of pixels displayed per unit of printed length in an image, usually measured in pixels per inch (ppi).

**Important:** You cannot change the resolution of an image in ImageReady. This is because the ImageReady application is tailored to creating images for online media, not print media.

An image with a high resolution contains more, and therefore smaller, pixels than an image of the same printed dimensions with a low resolution. For example, a 1-inch-by-1-inch image with a resolution of 72 ppi contains a total of 5184 pixels (72 pixels wide x 72 pixels high = 5184). The same 1-inch-by-1-inch image with a resolution of 300 ppi would contain a total of 90,000 pixels.



72-ppi and 300-ppi images; inset zoom 200%

Because they use more pixels to represent each unit of area, higher-resolution images usually reproduce more detail and subtler color transitions than lower-resolution images when printed. However, increasing the resolution of an image scanned or created at a lower resolution only spreads the original pixel information across a greater number of pixels; it rarely improves image quality.

To determine the image resolution to use, consider the medium of final distribution for the image. If you're producing an image for online display, the image resolution needs only to match the typical monitor resolution (72 or 96 ppi). However, using too low a resolution for a printed image results in *pixelation*—output with large, coarse-looking pixels. Using too high a resolution (pixels smaller than the output device can produce) increases the file size and slows the printing of the image; furthermore, the device will be unable to print the image at the high resolution.

**Monitor resolution** The number of pixels or dots displayed per unit of length on the monitor, usually measured in dots per inch (dpi). Monitor resolution depends on the size of the monitor plus its pixel setting. The typical resolution of a PC monitor is about 96 dpi, of a Mac OS monitor 72 dpi.

Understanding monitor resolution helps explain why the display size of an image on-screen often differs from its printed size. Image pixels 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. For example, when you display a 1-inch-by-1-inch, 144-ppi image on a 72-dpi monitor, it appears in a 2-inch-by-2-inch area on-screen. Because the monitor can display only 72 pixels per inch, it needs 2 inches to display the 144 pixels that make up one edge of the image.

**Printer resolution** The number of ink dots per inch (dpi) produced by an imagesetter or laser printer. For best results, use an image resolution that is proportional to, but not the same as, printer resolution. Most laser printers have output resolutions of 300 dpi to 600 dpi and produce good results with images from 72 ppi to 150 ppi.

High-end imagesetters can print at 1200 dpi or higher and produce good results with images from 200 ppi to 300 ppi.

### IMAGE RESOLUTION AND SCREEN FREQUENCY

To ensure high-quality output when printing with a halftone screen, you need to choose an image resolution based on the screen frequency of the printing device. In general, an image resolution from 1.5 to 2 times the screen frequency gives the best results.

*65 lpi: Coarse screen typically used to print newsletters and grocery coupons.*

*85 lpi: Average screen typically used to print newspapers.*



*133 lpi: High-quality screen typically used to print four-color magazines.*

*177 lpi: Very fine screen typically used for annual reports and images in art books.*

**Screen frequency** 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 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.

**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.*


**File size** The digital size of an image, 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. For instance, a 1-inch-by-1-inch 200-ppi image contains four times as many pixels as a 1-inch-by-1-inch 100-ppi image and so has four times the file size. 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 the 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. Image optimization thus becomes a compromise between image quality (capturing all the data you need) and file size.

Photoshop supports a maximum file size of 2 GB and maximum pixel dimensions of 30,000 by 30,000 pixels per image. This restriction places limits on the print size and resolution available to an image. For example, an image 100 by 100 inches can have a resolution of at most 300 ppi (30,000 pixels / 100 inches = 300 ppi).

## Changing image size and resolution

Once you have scanned or imported an image, you may want to adjust its size. The Image Size command lets you adjust the pixel dimensions, print dimensions (Photoshop), and resolution (Photoshop) 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 printed or online display.

### To display the current image size:

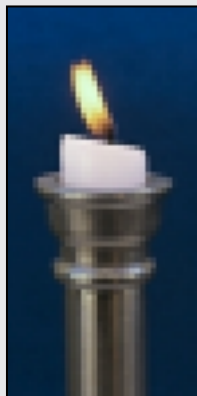
Do one of the following:

- (Photoshop) Press Alt (Windows) or Option (Mac OS), position the pointer over the file information box at the bottom of the document window, 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.

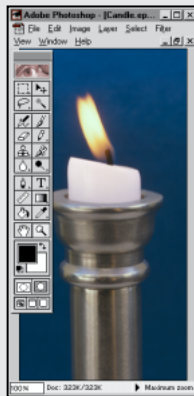


- (ImageReady) Click an image information box at the bottom of the document window, and select Image Dimensions from the pop-up menu. The box displays the width and height of the image in pixels.

**RESOLUTION, FILE SIZE, AND OUTPUT** The file size of an image refers to the total amount of pixel information in the image. For example, a 1-inch-by-2-inch high-resolution image has more pixels, and thus a larger file size, than a 1-inch-by-2-inch low-resolution image. In print, a high-resolution image has more detail than the same image at low resolution. On-screen, a high-resolution image appears larger. (See “Image resolution” on page 23.) The enlarged on-screen display does not affect the dimensions of the printed image.



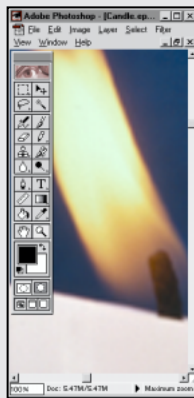
1 in. x 2 in. @ 72 ppi;  
file size 323K



100% view on-screen



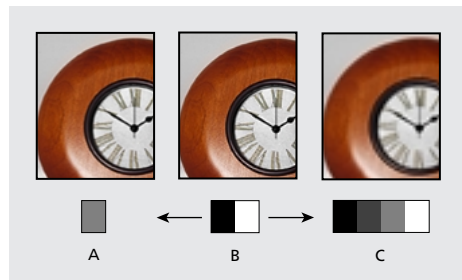
1 in. x 2 in. @ 300 ppi;  
file size 5.47 MB



100% view on-screen

## About resampling

*Resampling* refers to changing the pixel dimensions (and therefore display size) of an image. When you *downsample* (or decrease the number of pixels), information is deleted from the image. When you *resample up* (or increase the number of pixels), new pixel information is added based on color values of existing pixels. You specify an *interpolation* method to determine how pixels are added or deleted. (See “Choosing an interpolation method” on page 29.)



A. Downsampled B. Original C. Resampled up  
(Selected pixels displayed for each image.)

Keep in mind that resampling can result in poorer image quality. For example, when you resample an image to smaller 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 an image” on page 112.)

You can avoid the need for resampling by scanning in 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 it creates, based on the color values of existing pixels in the image. The more sophisticated the method, the more quality and detail from the original image are preserved.

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 Choose Edit > Preferences > General.
- 2 For Interpolation, choose one of the following options:
  - Nearest Neighbor (Jagged) 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.
  - (Photoshop) Bilinear for a medium-quality method.
  - Bicubic (Smooth) for the slow but most precise method, resulting in the smoothest tonal gradations.

## 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 “About image size and resolution” on page 21; “About resampling” on page 28.)

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

- 1 Choose Image > Image Size.
- 2 Make sure that Resample Image is selected, and choose an interpolation method. (See “Choosing an interpolation method” on page 29.)
- 3 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.
- 4 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.

5 Click OK to change the pixel dimensions and resample the image.

 For best results in producing a smaller image, resample down 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 Constrain the image proportions by selecting:
  - Width to constrain proportions using the new width value.
  - Height to constrain proportions using the new height value.
  - Either to constrain proportions using either the new width value or the new height value. Use the Either option when resizing a batch of images of different sizes or proportions that need to fit into a standard new image size.
  - Percent to constrain proportions while resizing the image by a percent value.
- 4 Under New Size, enter values for Width, Height, or Percent.

The New Size text field displays the new file size for the image.

5 Select a resampling method from the Quality pop-up menu.

6 Select Do Not Enlarge to prevent images that are smaller than the new dimensions from being sized up. This option is useful when resizing a batch of irregularly sized images.

7 Click OK to change the pixel dimensions and resample the image.

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

When preparing images for print, it's useful to specify image size in terms of the printed dimensions and the image resolution. These two measurements determine the total pixel count and therefore the file size of the image. (See "About image size and resolution" on page 21.)

If you turn on resampling for the image, you can change print dimensions and resolution independently. If you turn resampling off, 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.

*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 change the print dimensions and resolution of an image:**

- 1 Choose Image > Image Size.

2 Change the print dimensions or 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, as described in “Choosing an interpolation method” on page 29.
- 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 Print 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. (See “Using rulers, the measure tool, guides, and the grid” on page 149.)

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

6 Click OK.



*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:**

Choose View > Print Size.

The magnification of the image is adjusted to display its approximate printed size, as specified in the Print Size section of the Image Size dialog box.

## **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 “About image size and resolution” on page 21.)

#### **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 Page Setup dialog box.*

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.

5 Click OK.

## 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, you should predetermine the scanning resolution and dynamic range your image requires. These preparatory steps can also prevent unwanted colors casts from being introduced by your scan.

Scanner drivers are provided and supported by the manufacturers of the scanners, not Adobe Systems. If you have problems with scanning, make sure that you are using the latest version of the appropriate scanner driver.

## Importing scanned images

You can import scanned images directly from any scanner that has an Adobe 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. (See “Using plug-in modules” on page 15 for general plug-in information.)

If your scanner does not have an Adobe Photoshop-compatible scanner driver, import the scanner using the TWAIN interface. (See “Importing an image using the TWAIN interface” on page 32.)

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 an image 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.

Photoshop and ImageReady support the current TWAIN\_32 standard for scanning. However, the TWAIN software used with Windows 3.1 is not supported. Contact your scanner manufacturer for information on the availability of TWAIN\_32 source modules.

### To import an image using the TWAIN interface:

- 1 If you're using the TWAIN device for the first time with Photoshop or ImageReady, choose File > Import > Select TWAIN\_32 Source (Windows) or TWAIN Select (Mac OS). Then select the device you're using. 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 Select Source command.
- 2 To import the image, choose File > Import > TWAIN\_32 (Windows) or TWAIN Acquire (Mac OS).

## Scanning using the resolution setting (Photoshop)

You can determine the settings for your scan using the original and final image dimensions and the screen frequency of your output device to calculate a *scan resolution* to enter in the scanner settings. This scan resolution translates into image resolution when you open the scan.

The quality of final output depends not only on the scan resolution but also on the resolution of your output device and the size of the original image compared with the final image. (See “About image size and resolution” on page 21.)

### To estimate scan resolution:

- 1 Multiply the screen frequency by 2 (the typical ratio of image resolution to screen frequency needed to produce a high-quality image).
- 2 Multiply the result in step 1 by the ratio of final image dimensions to original dimensions to determine an estimated scan resolution.

For example, suppose you are scanning a 2-inch-by-3-inch image, you want to produce a final 6-inch-by-9-inch image, and you are using a screen frequency of 85 lpi. First multiply 85 (the screen frequency) by 2 to get 170. Then multiply 170 by 3 (the ratio of final image dimensions to original ones) to get a scan resolution of 510 ppi.

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 Open Adobe Photoshop, and 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. (See “About color modes and models (Photoshop)” on page 45.) The New dialog box then 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 megabytes.

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 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 "Step 3: Set the highlight and shadow values" on page 118.) <<Xref destination?>>

### 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 your monitor" on page 86.) <<Xref destination?>>
- 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 > Adjust > 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.

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, untitled image.

#### To create a new image:

- 1 Do one of the following:
  - To base the image dimensions and resolution (Photoshop) on the Clipboard contents, choose File > New.
  - (Photoshop) To base the image size on the default dimensions and resolution or the last entered settings, hold down Alt (Windows) or Option (Mac OS) as you choose File > New.
- 2 Type a name for the image, and if desired, set the width and height



- 3 (Photoshop) Set the resolution and mode. (See “About image size and resolution” on page 21 and “About color modes and models (Photoshop)” on page 45.)
- 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 195.)
  - Transparent to make the background or first layer transparent, with no color values.
- 5 Click OK.

## Opening files

You can open and import images in various file formats. The available formats appear in the Open dialog box, the Open As dialog box (Windows), or the Import submenu. (See “About file formats” on page 382.)

**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 15.)*

### To open a file:

- 1 Choose File > Open.

2 Select the name of the file you want to 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 In Mac OS, click Show Preview to preview the selected file. This option requires the Apple QuickTime extension.

**Important:** *Previews are only available if they are saved with the file. In Photoshop, select Always Save for Image Previews in the Saving Files Preferences to save a preview.*

4 Click Open. In some cases, a dialog box appears, letting you set the open options. The formats requiring an open dialog box are described in the following sections.

**Note:** *If the Profile Mismatch dialog box appears, specify whether to convert the file’s color profile. (See “Managing ICC profiles in files” on page 104.)*  
<<Xref destination?>>

### To open a recently used file:

Choose File > Open Recent, and select a file from the submenu.

### To specify the file format in which to open a file (Photoshop):

Do one of the following:

- In Windows, choose File > Open As, select the desired format, and click Open.

- In Mac OS, choose File > Open, select the desired file format from the Show pop-up menu, and click Open.

*Note: 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 PDF files

Portable Document Format (PDF) is a versatile file format that can represent both vector and bitmap graphics and can contain electronic document search and navigation features. PDF is the primary format for Adobe Illustrator 9.0 and Adobe Acrobat. For more information on PDF format, see “About file formats” on page 382.

Some PDF files contain a single image. Other PDF files (called Generic PDF files) may contain multiple pages and images. The distinction between *images* and *pages* in a PDF file is an important one—it will determine what method you use to open the file.

- Use the Open command to open all types of PDF files.
- Use the Import > PDF Image command to open one or all *images* in a multiple-image PDF file.
- (Photoshop) Use the Automate > Multi-Page PDF to PSD command to open each *page* in a multiple-page PDF file and save them as separate Photoshop files.

You can also use the Place and Paste commands to bring PDF data into Photoshop or ImageReady. (See “Placing files” on page 39 and “Using drag and drop to copy between applications” on page 155.)

<<Documentation—Update Paste/Drag + Drop XREF.>>


#### 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 file show by selecting an option from the File of Types (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, and click OK.
  - Indicate the desired dimensions, resolution, and mode.
  - 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.
  - Click OK.

#### To import images from a PDF file:

- 1 Choose File > Import > PDF Image.
- 2 Select the file you want to import images from, and click Open.
- 3 Do one of the following:
  - Select a specific image to open, and click OK. You can use the arrows to scroll through the images, or click Go to Image to enter an image number.

- Click Import All Images to open each image as a separate file.

 Press the Escape key to cancel the import operation before all images are imported.

### To open a multiple-page PDF file as a separate files (Photoshop):

Choose File > Automate > Multi-Page PDF to PSD.

### Opening Illustrator and EPS files

*<<Reviewers—I'm still working on clarifying Illustrator workflow issues in terms of PDF-based .ai format and older .ai format. Any information you can provide is appreciated.>>*

When you open an Adobe Illustrator or EPS (Encapsulated PostScript®) file containing vector art, it is *rasterized*—the mathematically defined lines and curves of the vector image are converted into the pixels or bits of a bitmap image.

You can also use the Place and Paste commands to bring Illustrator or EPS artwork into Photoshop or ImageReady.

*<<Documentation—Update Paste/Drag + Drop XREF.>>*

#### To open an Adobe Illustrator or 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.

5 Click OK.

### Turning off anti-aliasing for PDF and EPS files

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 helps maintain the hard edges of line art as it is rasterized.

#### To turn off the Anti-alias Postscript option:

- 1 Choose Edit > 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™ files, including high-resolution files from Pro Photo CD discs, directly in Photoshop or ImageReady.

*Note:* You cannot save files in the Photo CD format from Photoshop or ImageReady.

#### To open a Photo CD file:

- 1 Choose File > Open.
- 2 Select the file you want to open, and click Open. If the file does not appear, select the option for showing all files from the File of Types (Windows) or Show (Mac OS) pop-up menu.

- 3 Choose a resolution.
- 4 Click Source. Choose a device profile and an attribute from the list, and then click Open.

The first time you open a Photo CD file, it opens using the default Source and Destination profiles. After you choose the profiles, they remain selected until you change them.

<<*Documentation—Verify following two steps. Document choosing an image size and resolution.*>>

- 5 Click Destination, and for Device, choose an RGB profile; then click Open.
- 6 To display scanner information about the image, click Image Info; then click OK.
- 7 Click OK to open the image.

### Opening Raw files (Photoshop)

The Raw format is designed to accommodate images saved in undocumented formats, such as those created by scientific applications. Compressed files, such as PICT, and GIF, cannot be opened using this format.

#### To open a file using the Raw format:

- 1 Choose File > Open As (Windows) or File > Open (Mac OS).
- 2 Choose Raw from the file format list, and click Open.
- 3 For Width and Height, enter values for the dimensions of the file.
- 4 To reverse the order of the width and height, click Swap.

- 5 Enter the number of channels.
- 6 Select Interleaved if the file was saved with an interlaced data option.
- 7 Select a color depth and, if necessary, a byte order.
- 8 For Header, enter a value.
- 9 If you are missing the dimensions or header value, you can have Photoshop estimate the parameters. Either enter the correct height and width values to estimate the header size, or enter the correct header size to estimate the height and width, and then click Guess.
- 10 To have Photoshop retain the header when you save the file, select Retain When Saving.
- 11 Click OK.

### 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.

## 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 and, for Format, choosing PICT Resource. 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 Place command to place images from other applications into a new layer in the existing image. In Photoshop, you can place PDF, Adobe Illustrator, and EPS files; in ImageReady, you can place files of any supported format, with the exception files containing CMYK images.

***Note:** When you place a PDF, Adobe Illustrator, or EPS file, it is rasterized. You will not be able to edit text or vector art.*

### 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 Open.

- 3 If you are placing a PDF file that contains multiple pages, select the page you want to place, and click OK.

The placed artwork appears as a new layer inside a bounding box at the center of the Photoshop image. The artwork maintains its original aspect ratio.

- 4 Adjust the placed artwork:

- To move, position the pointer inside the bounding box, and drag.
- To scale, drag one of the handles at the corners or sides of the bounding box. Hold down Shift as you drag to constrain the proportions.
- To rotate, position the pointer outside the bounding box (the pointer turns into a curved arrow), and drag. To adjust the point around which the marquee is rotated, drag the circle at the center of the bounding box.
- To skew, hold down Ctrl (Windows) or Command (Mac OS) and drag a side handle of the bounding box.

- 5 To confirm the placement of the artwork, press Enter (Windows) or Return (Mac OS). To cancel the placement, press Esc.

### To place a file (ImageReady):

- 1 Open the ImageReady image into which you want to place the image.

- 2 Choose File > Place.

- 3 Select offset options:

- From the Horizontal pop-up menu, choose an option for placing the file horizontally with respect to the ImageReady 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 ImageReady 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 ImageReady image), type a hyphen (-) before the number.

4 Click Choose, and select the file you want to place. Then click Open.

5 Click OK.

6 If you are placing a PDF, Adobe Illustrator, or EPS file, choose Rasterize options:

- Enter Width and Height values for Image Size.
- Click Anti-alias to blend edges.
- Click Constrain Proportions to preserve image proportions when resizing.

7 Click OK.

## Managing files with WebDAV

Photoshop and ImageReady offer support for a server technology known as Web Distributed Authoring and Versioning (WebDAV). You can easily connect to a WebDAV server, lock files so others cannot work on them at the same time as you are, download and upload files, and obtain information about files. Using a WebDAV server lets you work in a collaborative environment without fear that files will be accidentally overwritten or updates lost.

### Getting started with WebDAV

To use WebDAV, you must have connection to a server with WebDAV capability. That includes:

- Microsoft IIS 5 (included with Windows 2000)
- Apache (with mod\_dav module installed)
- Novell NetWare 5.1 (announced January 10, 2000)



You can find detailed information and the latest news about WebDAV at [www.webdav.org](http://www.webdav.org).

*<<Reviewers—WebDAV information to be completed. Will provide this section for review on a separate schedule.>>*

## Cropping images

*<<Reviewers—This section doesn't reflect the new Photoshop crop tool functionality/workflow. Will provide this section for review on a separate schedule.>>*

You can use the following methods to crop images:

- Use the Crop command or the crop tool () set to Delete to discard the area outside of a rectangular selection.
- Use the Crop command or the crop tool () set to Hidden or Hide to hide the area outside of a rectangular selection. Use this feature when creating animations with elements that move from offscreen into the live image area.



An image with the Crop command applied using the Hidden option and repositioned using the move tool.




An image with the Crop command applied using the Delete option and repositioned using the move tool.

- Use the Trim command to discard a border area around the edge of the image, based on transparency or edge color.

When using the crop tool, you can rotate the selected area before you perform the cropping operation. You can also specify a fixed size for the target image created from the cropped selection. (You cannot rotate the cropped selection when you use the Fixed Target Size option.)

#### To use the crop tool:

- 1 Select the crop tool () .
- 2 In the options bar, select an option to remove the cropped area:
  - Delete to permanently discard the cropped area.
  - Hide to hide the cropped area but preserve the area in the image file.
- 3 Drag over the part of the image you want to keep.

When you release the mouse button, the crop marquee appears as a bounding box with handles at the corners and sides.


- 4 Adjust the crop marquee:

- To move the marquee to another position, position 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 adjust the point around which the marquee is rotated, drag the circle at the center of the bounding box.

**Note:** In Photoshop, you can't rotate the crop tool marquee for an image in Bitmap mode.

- 5 To crop the image, press Enter (Windows) or Return (Mac OS). To cancel the cropping operation, press Esc.

#### To specify the size of the cropped area:



- 1 Select the crop tool () .

- 2 In the options bar, select Fixed Target Size.
- 3 To begin with the size values of the current image, click Front Image.
- 4 Enter values for the size you want for the cropped area.

In Photoshop, you can also set the resolution you want for the cropped area. If you specify size but not resolution, the resolution changes automatically to compensate for the size change. If you specify resolution but not size, the size changes automatically to compensate for the resolution change.

- 5 Drag over the area you want to keep with the crop tool, and then press Enter (Windows) or Return (Mac OS).

#### **To crop an image using the Crop command:**

- 1 Use the rectangle marquee tool () to select the part of the image you want to keep. Make sure the Feather option in the options bar is set to 0 pixels. For more information about setting marquee options, see “Using the marquee tools” on page 115.
- 2 Choose Image > Crop.
- 3 Choose an option to hide or delete the cropped area:
  - Select Hidden to hide the cropped areas of the image. The cropped areas are still in the image file and can be made visible by moving the layer with the move tool ()
  - Select Deleted to delete the cropped areas.
- 4 Click OK.

#### **To crop an image using the Trim command:**

- 1 Choose Image > Trim.
- 2 Crop the border:
  - Select Transparent Pixels to remove an area of transparent pixels from the image.
  - Select Top Left Pixel Color to remove an area the color of the upper left pixel from the image.
  - Select 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 be trimmed: Top, Bottom, Left, or Right.
- 4 Click OK.

## **Changing the size of the work canvas**

The Canvas Size command lets you add or remove work space around an existing image. You can crop an image by decreasing the canvas area. Added canvas appears in the same color or transparency as the background.

#### **To change the size of the work canvas:**

- 1 Choose Image > Canvas Size.
- 2 In Photoshop, choose the units of measurement you want. The Columns option measures width in terms of the columns specified in the Rulers & Units preferences.
- 3 Enter the dimensions for Width and Height. A new file size appears.
- 4 In ImageReady, select the Relative option to



<<*Reviewers—What is function of Relative option?*>>

**5** For Anchor, click a square to position the existing image on the new canvas.

**6** Click OK.



# Chapter 3: Working with Color Modes

**F**amiliarity with color theory and terminology can help you understand how color is measured and how Adobe Photoshop and Adobe ImageReady use this information to define, display, and print color values.


<<What is the default mode in ImageReady?>>

## About color modes and models (Photoshop)

A color mode determines the color model used to display and print images. Photoshop bases its color modes on established models for describing and reproducing color. Common models include HSB (for hue, saturation, brightness); RGB (for red, green, blue); CMYK (for cyan, magenta, yellow, black); and CIE L\*a\*b. Photoshop also includes modes for specialized color output such as indexed color and duotones.

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.

<<Move information on specific color modes to webstudio or help only.>>

 Depending on how your Info palette is set up, you can select any tool, position the pointer over any part of an image, and determine the color value under the pointer. You can customize the Info palette and color samplers to express color values using the HSB, RGB, CMYK, Lab, or Grayscale modes without changing the mode of the image itself. For more information on measuring color with the Info palette and color samplers, see “Seeing the color values of pixels” on page 91 and the procedure to change Info palette options in “Using the Info palette” on page 5.

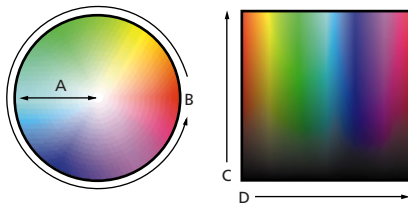
## HSB model

Based on the human perception of color, the HSB model describes three fundamental characteristics of color:

- *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.
- *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).

Although you can use the HSB model in Photoshop to define a color in the Color palette or Color Picker dialog box, there is no HSB mode available for creating and editing images.

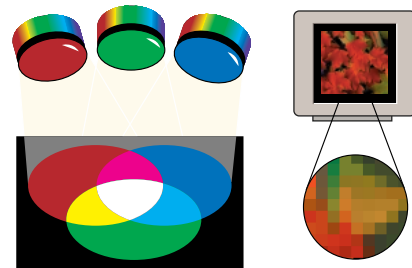


A. Saturation B. Hue C. Brightness D. All hues

### RGB model

A large percentage of the visible spectrum can be represented by mixing red, green, and blue (RGB) colored light in various proportions and intensities. Where the colors overlap, they create cyan, magenta, and yellow.

Because the RGB colors combine to create white, they are also called *additive colors*. Adding all colors together creates white—that is, all light is reflected 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 (RGB)

### RGB mode

Photoshop's RGB mode uses the RGB model, assigning an intensity value to each pixel ranging from 0 (black) to 255 (white) for each of the RGB 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 gray. When the value of all components is 255, the result is pure white; when the value is 0, pure black.

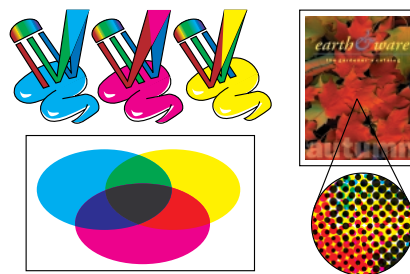
RGB images use three colors to reproduce up to 16.7 million colors on-screen. RGB images are three-channel images, so they contain 24 (8 x 3) bits per pixel. RGB is the default mode for new Photoshop images. Computer monitors always display colors using the RGB model. This means that when working in color modes other than RGB, such as CMYK, Photoshop temporarily converts data into RGB data for display on-screen.

### CMYK model

The CMYK model is based on the light-absorbing quality of ink printed on paper. As white light strikes translucent inks, part of the spectrum is absorbed and part is reflected back to your eyes.

In theory, pure cyan (C), magenta (M), and yellow (Y) pigments should combine to absorb all color and produce black. For this reason these colors are called *subtractive* colors. Because all printing inks contain some impurities, these three inks actually produce a muddy brown and must be combined with black (K) ink to produce a true black. (K is used instead of B to avoid confusion with blue.) Combining these inks to reproduce color is called *four-color process printing*.

The subtractive (CMY) and additive (RGB) colors are *complementary colors*. Each pair of subtractive colors creates an additive color, and vice versa.



*Subtractive colors (CMYK)*

### CMYK 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%.

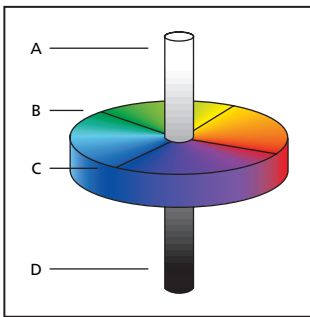
Use the CMYK mode when preparing an image to be printed using process colors. Converting an RGB image into CMYK creates a *color separation*. If you start with an RGB image, it's best to edit first and then convert to CMYK. In RGB mode, you can use the Proof Setup commands to simulate the effects of the change without actually changing image data. (See "Previewing CMYK colors in RGB (Photoshop)" on page 93.) You can also use CMYK mode to work directly with CMYK images scanned or imported from high-end systems.

## L\*a\*b model

The L\*a\*b color model is based on the model proposed by the Commission Internationale d'Eclairage (CIE) in 1931 as an international standard for color measurement. In 1976, this model was refined and named CIE L\*a\*b.

L\*a\*b color is designed to be *device independent*, creating consistent color whatever the device (such as monitor, printer, computer, or scanner) used to create or output the image.

L\*a\*b color consists of a *luminance* or lightness component (L) and two chromatic components: the *a* component (from green to red) and the *b* component (from blue to yellow).



A. Luminance=100 (white)  
B. Green to red component  
C. Blue to yellow component  
D. Luminance=0 (black) to red component

## Lab mode

In Photoshop's Lab mode (the asterisks are dropped from the name), the lightness component (L) can range from 0 to 100. The *a* component (green-red axis) and the *b* component (blue-yellow axis) 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 color is the internal color model Photoshop uses when converting from one color mode to another.


## Specialized color modes

Photoshop also provides specialized color modes.

**Bitmap mode** Uses one of two color values (black or white) to represent the pixels in an image. Images in Bitmap mode are called *bitmapped*, or 1-bit, images because they have a bit depth of 1. (See "About bit depth" on page 51.)

**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. You can convert both Bitmap-mode and color images to grayscale.

To convert a color image to a high-quality black-and-white 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** Creates duotone (two-color), tritone (three-color), and quadtone (four-color) grayscale images using two to four colored inks. (See “Using monotonies, duotones, tritones, and quadtones” on page 425.) <<Xref destination?>>

**Indexed color mode** Uses 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 simulates the color using available colors.

By limiting the palette of colors, indexed color can reduce file size while maintaining visual quality—for example, for a multimedia animation application or a Web page. Limited editing is available in this mode. For extensive editing you should convert temporarily to RGB mode. (See “Converting to indexed color (Photoshop)” on page 56.)

**Multichannel mode** Uses 256 levels of gray in each multiple channel. Multichannel images are useful for specialized printing—for example, converting a duotone for printing in Scitex CT format.

These guidelines apply to converting images to Multichannel mode:

- You can convert any image composed of more than one channel to a multichannel image. The original channels are converted to spot color channels.
- When converting 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, a CMYK, or a Lab image automatically converts the image to multichannel mode. See “Color channels (Photoshop)” on page 50 for more information on channels.

**Note:** *You cannot print a color composite from Multichannel mode. Also, most export file formats do not support multichannel mode images. However, you can export the file in Photoshop DCS 2.0 format.*

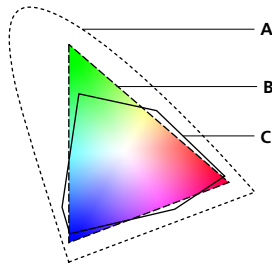
## Color gamuts (Photoshop)

<<To webstudio or help only.>>

A *gamut* is the range of colors that a color system can display or print. The spectrum of colors seen by the human eye is wider than the gamut available in any color model.

Among the color models used in Photoshop, L\*a\*b has the largest gamut, encompassing all colors in the RGB and CMYK gamuts. Typically, the RGB gamut contains the subset of these colors that can be viewed on a computer or television monitor (which emits red, green, and blue light). Therefore, some colors, such as pure cyan or pure yellow, can't be displayed accurately on a monitor.

The CMYK gamut is smaller, consisting only of colors that can be printed using process-color inks. When colors that cannot be printed are displayed on-screen, they are referred to as out-of-gamut colors—that is, outside the CMYK gamut. (See “Identifying out-of-gamut colors (Photoshop)” on page 94.)



A. Lab color gamut B. RGB color gamut  
C. CMYK color gamut

## Color channels (Photoshop)

<<To *webstudio* or *help* only.>>

Every Adobe 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 217 and “Adding spot colors” on page 211.)

An image can have up to 24 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.

## 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.



This understanding also will help you choose a file format for your images. For more information, see “Saving and Exporting Images” on page 375.

### About bit depth

*Bit depth*—also called pixel depth or color depth—measures how much color information is available to display or print pixels 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.

Photoshop supports up to 16 bits per pixel for each channel in an image. A 24-bit RGB image, for example, would have 8 bits per pixel for each of the red, green, and blue channels.

### Selecting a dither option for 8-bit color displays (Photoshop)

Each image mode in Adobe Photoshop uses a *color lookup table*, or *color palette*, to store the colors used in the image. When you're working with a display system that supports 8-bit color (or fewer colors), the monitor displays only 256 different colors at a time. For example, a 24-bit RGB image can display 16.7 million colors in any image at a time. However, if the monitor can display only 256 of the 16.7 million colors, 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 Choose Edit > Preferences > Display & Cursors.
- 2 Choose one or both of these display options:
  - System Palette to use the system's standard 256-color palette.

<<Reviewers: Please confirm that the System palette option is no longer in Photoshop.>>

- Diffusion Dither to minimize dither patterns produced by dithering.

## Adjusting color display for cross-platform variations (ImageReady)

<<Reviewers: Please confirm this feature is IR only.>>

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.

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. (This ImageReady feature is available only when viewing Photoshop-format images which were created and color-space tagged in Photoshop.)

### To adjust RGB color display for cross-platform variations:

Choose View > Preview and choose an option for adjusting the color display:

- Uncompensated Color (the default option) to view the image with no color adjustment.
- Standard Macintosh Color (Windows) to view the image with color adjusted to simulate Mac OS color display.

- Standard Windows Color (Mac OS) to view the image with color adjusted to simulate Mac OS color display.

*Note:* These options adjust color display only. No changes are made to pixels in the image.

### To adjust RGB color display in ImageReady to match color display in Photoshop:

Choose View > Preview > Photoshop Compensation.

*Note:* In order to use the Photoshop Compensation option in ImageReady, you must save the original image in Photoshop, with the Embed Profiles option turned on (the default setting).

## Converting between bit depths (Photoshop)

In most cases, RGB, grayscale, and CMYK images contain 8 bits of data per color channel. With three channels in an RGB image, this translates to 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 read and import 48-bit RGB, 64-bit CMYK, and 16-bit grayscale images (each with 16 bits of data per color channel).

*Note:* A 16-bit-per-channel image provides finer distinctions in color, but its file size is much larger than an 8-bit-per-channel image.

Photoshop supports these tools and commands in 16-bit-per-channel images: the marquee, lasso, crop, measure, zoom, hand, pen, eyedropper, color sampler, and rubber stamp tools; and the Duplicate, Feather, Modify, Levels, Auto Levels, Curves, Histogram, Hue/Saturation, Brightness/Contrast, Color Balance, Equalize, Invert, Channel Mixer, Image Size, Transform Selection, and Rotate Canvas commands. To take full advantage of Photoshop's features, you can convert a 16-bit-per-channel image to an 8-bit-channel image.

**To convert from 8 bits per channel to 16 bits per channel:**

- 1 Flatten the image you want to convert. (See "Flattening all layers" on page 249.)
- 2 Choose Image > Mode > 16 Bits/Channel.

**To convert from 16 bits per channel to 8 bits per channel:**

Choose Image > Mode > 8 Bits/Channel.

## Choosing a color mode (Photoshop)

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 are adjusted to fall within the CMYK gamut. Consequently, 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 CMYK from traditional drum scanners or if imported from Adobe Illustrator or 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.

The following mode conversions flatten the image:

- RGB to Indexed color or Multichannel mode.
- CMYK to Multichannel mode.
- Lab to Multichannel, Bitmap, or Grayscale mode.
- Grayscale to Bitmap, Indexed, or Multichannel mode.
- Duotone to Bitmap, Indexed, or Multichannel mode.

## Converting between Grayscale mode and 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. To convert an image to Bitmap mode, you must 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.

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 in Grayscale mode may be converted to a shade of gray. If the pixel is light enough, it will be white when converted back 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 Select a bitmap conversion method, and click OK. If you choose Halftone Screen, see the following section. For other conversion methods, see “Additional bitmap conversion options” on page 55.

### 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 a halftone screen for a Bitmap-mode image

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 Click Halftone Screen; then click OK.

**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.

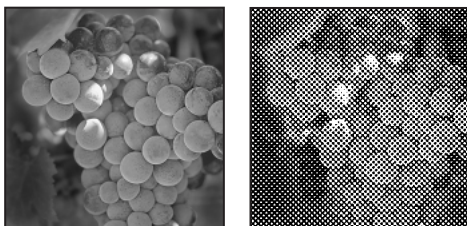
The screen frequency specifies the ruling of the halftone screen in lines per inch (lpi). The frequency depends on the paper stock and type of press used for printing. Newspapers commonly use an 85-line screen. Magazines use higher resolution screens, such as 133 lpi and 150 lpi. Check with your print 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  $45^\circ$  angle.

**5** For Shape, choose the dot shape you want.

**6** Click OK.



*Original grayscale image, and Halftone Screen conversion:  
53 lpi,  $45^\circ$  angle, round dot*

You can save and reuse halftone screen settings by using the Save and Load buttons in the Halftone Screen dialog box.

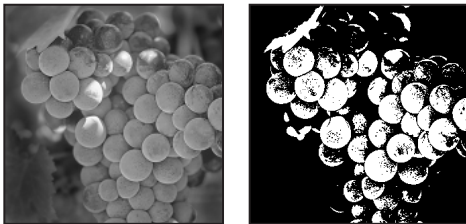
### **Additional bitmap conversion options**

Like the Halftone Screen option, the other bitmap conversion options determine the quality of the Bitmap-mode image.

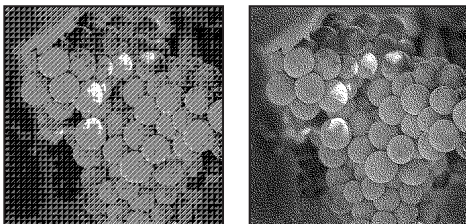
**50% Threshold** Converts pixels with gray values above the middle gray level (128) to white and below to black. The result is a very high-contrast, black-and-white representation of the image.

**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, 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.



Original grayscale image, and 50% Threshold conversion method




Pattern Dither conversion method, and Diffusion Dither conversion method

**Custom Pattern** 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 191).

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. Adobe 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 191).

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)

<<Get new info from 5.5 Supplement, Chapter 2, “Converting to indexed color.”>>

Converting to indexed color deletes all but 256 colors from the image—the standard number of colors supported by many multimedia animation applications and Web pages. Converting an RGB image to indexed color lets you edit the image's color table or export it to an application supporting only 8-bit color. The conversion also reduces the file size by deleting color information from the image.

**To convert an RGB image to an indexed-color image:**

1 Choose Image > Mode > Indexed Color.

*Note: The image must be flattened first, or you will lose layers.*

2 Select Preview to display a preview of the changes.

3 Specify conversion options as described in the following sections.

4 Click OK.

### Specifying a palette

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. (See "Using master palettes" on page 356.)

**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 (Windows)** Uses the Windows system's default 8-bit palette, which is based on a uniform sampling of RGB colors.

**System (Mac OS)** Uses the Mac OS default 8-bit palette, which is based on a uniform sampling of RGB colors.

**Web** Uses the palette most often used by Web browsers to display 8-bit images. This palette is a subset of the Windows and Macintosh systems' palettes.

**Uniform** Creates a palette by uniformly sampling colors from the spectrum. For example, if you choose an 8-bit color depth, Photoshop takes 6 evenly spaced color levels each of red, green, and blue and calculates the combinations of these colors to produce a uniform palette of 216 colors ( $6 \times 6 \times 6 = 216$ ). A lower bit depth creates a uniform palette composed of fewer colors. The total number of colors displayed in the image corresponds to the cube nearest the chosen bit depth (8, 27, 64, 125, or 216).

**Perceptual** Creates a custom palette 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.

**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 “Specifying color matching options” on page 59.)

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.

### Specifying the bit depth

For the Uniform, Perceptual, Selective, or Adaptive palette, you can specify the bit depth of an indexed-color image—the number of bits of color information per pixel. Bit depth, also known as color depth, determines the number of colors used to display (or print) an image. For example, if you choose 4 bits per pixel, the image is composed of 16 colors; 6 bits per pixel, 64 colors; 8 bits per pixel, 256 colors. (The number of colors used is displayed in the Colors text box.) In addition, you can specify the exact number of colors to be displayed (up to 256) by choosing Other for Color Depth and entering a value for Colors.

The options in the Indexed Color dialog box control only how the indexed color table is created. Adobe Photoshop still treats the image as an 8-bit, 256-color image.

### Forcing the inclusion of colors

You can choose an option from the Forced menu to force the inclusion of certain colors in the color table. The Black and White option adds a pure black and a pure white to the color table; the Primaries option adds red, green, blue, cyan, magenta, yellow, black, and white; the Web option adds the 216 web-safe colors; and the Custom option lets you define custom colors to add.

### Specifying transparency

Select the Transparency option to preserve transparent areas of the image during conversion. Deselecting Transparency fills transparent areas with the matte color, or with white if no matte color is chosen.

### Choosing a matte color

Choose a matte option to fill partially transparent areas with a color. If Transparency is selected, the matte is applied to partially transparent edge areas to help blend the edges with the background. If Transparency is deselected, the matte is applied to both partially and fully transparent areas. Choosing None for the matte creates hard-edged transparency if Transparency is selected; otherwise, all partially and fully transparent areas are filled with 100% white.



## Specifying dither options

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. To protect colors in the color table from being dithered, select Preserve Exact Colors. 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.

**Pattern** Uses a halftone-like square pattern to simulate any colors not in the color table. This option is available only when you're using the System (Mac OS) palette, the Web palette, or the Uniform (216 colors) palette.

**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. The Noise option helps to reduce seam patterns along sliced edges.

## Specifying color matching options

You can choose from three options to match colors in the original image when dithering:

**Best** Finds the best possible match for each pixel. Although this option takes longer to process, it can provide a better image. This option is only available if you choose None or Diffusion for the dithering option.

**Faster** Takes less time than Best, but may not find the best color match for each pixel. This option is only available if you choose None or Diffusion for the dithering option.

**Preserve Exact Colors** Prevents colors that are already in the chosen palette from being dithered. This is useful for preserving fine lines and text for Web images. This option is only available if you choose Diffusion for the dithering option.

## Manipulating the color table

You can change one or more colors in the color table of an indexed-color image, assign transparency to a single color, edit colors to produce special effects, model the colors after a predefined color table, and save a color table for reuse with other indexed-color images.

Another type of image with fewer than 256 colors is a *pseudocolor image*—a grayscale image displaying variations in gray levels with color rather than shades of gray, and often used in scientific and medical applications. The color table-editing features are particularly useful with pseudocolor images, but can also produce special effects with indexed-color images having a limited number of colors.

**Note:** *Simply to change colors in an image, choose Image > Adjust, and use the color adjustment commands in the submenu. For a summary description of these commands, see “Basic steps for correcting images” on page 85.*

#### To edit colors in the color table:

- 1 Open the indexed-color image.
- 2 Choose Image > Mode > Color Table.
- 3 Click or drag in the table to choose the color or range of colors you want to change.
- 4 Choose the color you want, as explained in “Using the Adobe Color Picker” on page 198, and click OK.

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.

5 Click OK in the Color Table dialog box to apply the new colors to the indexed-color image.

#### To assign transparency using the color table:

- 1 Choose Image > Mode > Color Table.
- 2 Select the eyedropper, and click the desired color in the table. The sampled color is replaced with transparency in the image.
- 3 Click OK to close the color table.

### Choosing a color-table option

Your indexed color table can be modeled after predefined color tables, which you select from the Table menu in the Color Table dialog box.

**Custom** Creates a palette you specify.

**Black Body** Displays a palette based on the different colors a blackbody 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 (Windows)** Displays the standard Windows 256-color system palette.

**System (Mac OS)** Displays the standard Mac OS 256-color system palette.

## **Saving and loading a color table**

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. 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 197.*



# Chapter 4: Producing Consistent Color

**W**hen your document must meet color standards set by clients and designers, viewing and editing color consistently becomes critical, all the way from scanning source images to creating final output. A color management system reconciles color differences among devices so that you can be reasonably certain of the colors your system ultimately produces.

## Why colors sometimes don't match

No device in a publishing system is capable of reproducing the full range of colors viewable to the human eye. Each device operates within a specific color space which can produce a certain range, or *gamut*, of colors.

The RGB (red, green, blue) and CMYK (cyan, magenta, yellow, and black) color models represent two main categories of color spaces. The gamuts of the RGB and CMYK spaces are very different; while the RGB gamut is generally larger (that is, capable of representing more colors) than CMYK, some CMYK colors still fall outside the RGB gamut (see “Color gamuts (Photoshop)” on page 49 for an illustration). In addition, different devices produce slightly different gamuts within the same color model. For example, a variety of RGB spaces can exist among scanners and monitors, and a variety of CMYK spaces can exist among printing presses.

Because of these varying color spaces, colors can shift in appearance as you transfer documents between different devices. Color variations can result from different image sources (scanners and software produce art using different color spaces), differences in brands of computer monitors, differences in the way software applications define color, differences in print media (newsprint paper reproduces a smaller gamut than magazine-quality paper), and other natural variations, such as manufacturing differences in monitors or monitor age.

## About color management

Because color-matching problems result from various devices and software using different color spaces, one solution is to have a system that interprets and translates color accurately between devices. A color management system (CMS) compares the color space in which a color was created to the color space in which the same color will be output, and makes the necessary adjustments to represent the color as consistently as possible among different devices.

The following components are integral to a color-managed workflow:

**Device-independent color space** To successfully compare different device gamuts and make adjustments, a color management system must use a reference color space—an objective way of defining color. Most CMSs use the internal CIE (Commission Internationale d’Eclairage) LAB color model, which exists independently of any device and is large enough to reproduce any color visible to the human eye. For this reason, CIE LAB is considered *device-independent*.

**Color management engine** Different companies have developed various ways to manage color. To provide you with a choice, a color management system lets you choose a *color management engine* that represents the approach you want to use. Sometimes called the *color management module (CMM)*, the color management engine is the part of the CMS that does the work of reading and translating colors between different color spaces.

**Color profiles** The CMS translates colors with the help of *color profiles*. A profile is a mathematical description of a device’s color space, that is, how the reference CIE values of each color in the color space map to the visual appearance produced by the device. For example, a scanner profile tells a CMS how your scanner “sees” colors so that an image from your scanner can be translated into the CIE color space accurately. From the CIE space, the colors can then be translated accurately again, via another profile, to the color space of an output device. Photoshop uses ICC profiles, a format defined by the International Color Consortium (ICC) as a cross-platform standard.

**Rendering intents** No single color translation method can manage color correctly for all types of graphics. For example, a color translation method that preserves correct relationships among colors in a wildlife photograph may alter the colors in a logo containing flat tints of color. Color management engines provide a choice of *rendering intents*, or translation methods, so that you can apply a method appropriate to a particular graphical element. For descriptions of the rendering intents available to Photoshop, see “Specifying a rendering intent” on page 74.

**Note:** *Don’t confuse color management with color correction. A CMS won’t correct an image that was saved with tonal or color balance problems. It provides an environment where you can evaluate images reliably in the context of your final output.*

## 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.

- 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 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 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 judgements under the lighting conditions specified by the legal requirements for contract proofs in your country.

## Setting up color management

Photoshop simplifies the task of setting up a color-managed workflow by gathering most color management controls in a single Color Settings dialog box. Rather than adjusting each control manually, you can choose from a list of predefined color management settings. Each predefined configuration includes a set of color management options designed to produce consistent color for a common publishing workflow, such as preparation for Web or domestic prepress output. These predefined configurations can also serve as starting points for customizing your own workflow-specific configurations.

Photoshop also uses color management policies, which determine how to handle color data that does not immediately match your current color management workflow. Policies are designed to clarify the color management decisions that you need to make when you open a document or import color data into an active document.

Keep in mind that you must specify color management settings *before* opening or creating files in order for the settings to take effect in those files.

### **To open the Color Settings dialog box:**

Choose Edit > Color Settings.

To display helpful descriptions of the terminology and options in the dialog box, position the mouse over a section heading or menu item. These descriptions appear in the lower area of the dialog box.

## Using predefined color management settings

Photoshop offers a collection of predefined color management settings, each with corresponding color profile and conversion options designed to preserve consistent color for a particular publishing workflow under typical conditions. In most cases, the predefined settings will provide sufficient color management for your needs.

Use the following guidelines to determine whether or not you need to use color management:

- You might not need color management if your production process is tightly controlled for one medium only. For example, you or your prepress service provider may prefer to tailor CMYK images and specify color values for a known, specific set of printing conditions.
- You can benefit from color management when you have more variables in your production process. Color management is recommended if you anticipate reusing color graphics for print and online media, using various kinds of devices within a single medium (such as different printing presses), if you manage multiple workstations, or if you plan to print to different domestic and international presses. If you decide to use color management, consult with your production partners—such as graphic artists and prepress service providers—to ensure that all aspects of your color management workflow integrate seamlessly with theirs.

### To choose a predefined color management setting:

- 1 Choose Edit > Color Settings.
- 2 For Settings, choose a configuration option:

**Color Management Off** Uses minimal color management settings to emulate the behavior of applications that do not support color management. Use this option for content that will be output on video or as onscreen presentations.

**Emulate Photoshop 4** Emulates the color workflow used by Adobe Photoshop 4.0 and earlier.

**U.S. Prepress Defaults** Manages color for content that will be output under common press conditions in the U.S.

**Europe Prepress Defaults** Manages color for content that will be output under common press conditions in Europe.

**Japan Prepress Defaults** Manages color for content that will be output under common press conditions in Japan.

**Web Graphics Defaults** Manages color for content that will be published on the World Wide Web.

**ColorSync Workflow (Mac OS only)** Manages color using the ColorSync 3.0 CMS with the profiles chosen in the ColorSync control panel. This color management configuration is not recognized by Windows systems, or by earlier versions of ColorSync.

When you choose a predefined configuration, the Color Settings dialog box updates to display the specific color management settings associated with the configuration.



## About working spaces

Among other options, predefined color management settings specify the default color profiles to be associated with the RGB and CMYK color models. Central to the color management workflow, these default profiles are known as the RGB and CMYK *working spaces*, respectively. The working spaces specified by predefined settings represent the color profiles that will produce the best color fidelity for several common output conditions. For example, the U.S. Prepress Defaults setting uses a CMYK working space that is designed to preserve color consistency under standard Specifications for Web Offset Publications (SWOP) press conditions.

A working space acts as the default color profile for newly created documents that use the associated color model. For example, if Adobe RGB (1998) is the current RGB working space, each new RGB document that you create will use colors within the Adobe RGB (1998) gamut. Working spaces also define the destination gamut of documents converted to the RGB or CMYK color model.

## 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 operates relatively seamlessly: the document uses the working space profile associated with its color model for creating and editing colors, and the profile is usually embedded in the saved document to provide color translation information for the destination output device.

However, some existing documents may not use the working space that you have specified, and some existing documents may not be color-managed. It is common to encounter the following exceptions to your color-managed workflow:

- You might open a document or import color data from a document that has not been color-managed and lacks a profile altogether. 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 contains a color 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 assigned 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 matches the working space, the colors are automatically brought into the color management workflow that you have specified, using the working space profile. If the profile is missing or does not match the working space, Photoshop displays a message that alerts you to the mismatch situation and, in many cases, lets you specify how to handle the colors in question.

The following table provides a summary of the policy decisions you may be prompted to consider when opening or importing mismatched color data:

Mismatch situation	Policy options that may be available
Opening non-color-managed document without color profile	<ul style="list-style-type: none"> <li>• Use working space for editing but not saving; do not color-manage document.</li> <li>• Use working space for editing, and save working space with document.</li> <li>• Use another color profile for editing, and save profile with document.</li> </ul>
Opening document with color profile that does not match working space	<ul style="list-style-type: none"> <li>• Use profile (instead of working space) for editing, and save profile with document.</li> <li>• Convert colors to working space, and save working space with document.</li> <li>• Discard profile, and do not color-manage document.</li> </ul>

Mismatch situation	Policy options that may be available
Importing color data into destination document	<ul style="list-style-type: none"> <li>• Import and convert numeric values of source colors to color space of destination document in order to preserve color appearances.</li> <li>• Import and preserve numeric values of source colors.</li> </ul>

The predefined color management workflows are set to display warning or option messages when a default color management policy is about to be implemented. Although you can disable the repeated display of some of the messages, 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. You should only turn off message displays if you are very 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.

**To turn off the display of a policy message:**

In the message dialog box, select the Don't Show Again option if it is available.

**To reset the display of policy messages that have been disabled:**

- 1 Choose Edit > Preferences > General.
- 2 Click Reset All Warning Dialogs, and click OK.

## Customizing color management settings

Although the predefined settings should provide sufficient color management for most publishing workflows, you may sometimes 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 service bureau.

It's important to save your custom configurations so that you can reuse and share them with other users who use the same color management workflows; for more information, see “Saving and loading custom color management settings” on page 75. The color management settings that you customize in the Color Settings dialog box have an associated preferences file called *AI Color Settings*, located inside the Photoshop folder (Windows) or in the Preferences folder in your System Folder (Mac OS)

### To customize color management settings:

- 1 Choose Edit > 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. (As you make adjustments, the Settings menu option changes to Custom by default.) Refer to the following sections for detailed customization instructions.  
<<*Editorial: I need a better way to refer to these sections that will work for online Help.*>>
- 4 When you have finished specifying custom settings, click OK.

## Specifying working spaces

In a color-managed workflow, each color model must have a working space associated with it. At times you may want to customize the RGB or CMYK working space to reflect a workflow that uses a particular output or display device. For more information, see “About working spaces” on page 67.

Photoshop ships with a standard set of color profiles that have been recommended and tested by Adobe Systems for most color management workflows. By default, only these profiles appear under the working space menus. To display additional color profiles that you have customized or installed on your system, select Advanced Mode at the top of the Color Settings dialog box. To appear under a working space menu, a color profile must be bi-directional, that is, contain specifications for translating both into and out of color spaces. For information on installing color profiles, see “Adding device profiles to the color management system” on page 80.

<<*TBD: Advanced mode also allows users to make custom working spaces. The documentation for these custom dialogs basically amounts to repeating much of the information in the old Photoshop 5.0 color management documentation. This information will be adapted to reflect the new 6.0 functionality in a future draft.*>>

### Specifying RGB working spaces

For the RGB color model, the following standard working space options are available.

**Adobe RGB (1998)** Provides a fairly large gamut (range) of colors and is well-suited for documents that will be converted to CMYK. Use this space if you need to do print production work with a broad range of colors.

**sRGB IEC61966-2.1** Reflects the characteristics of the average PC monitor. This standard space is endorsed by many hardware and software manufacturers, and is becoming the default color space for many scanners, low-end printers, and software applications. This space is recommended for Web work but not for prepress work (because of its limited color gamut).

**Apple RGB** Reflects the characteristics of the Apple Standard 13-inch monitor, and is used by a variety of desktop publishing applications, including Adobe Photoshop 4.0 and earlier. Use this space for files that you plan to display on Mac OS monitors, or for working with legacy (older) desktop publishing files.

**ColorMatch RGB** Matches the native color space of Radius Pressview monitors. This space provides a smaller gamut alternative to Adobe RGB (1998) for print production work.

**Monitor RGB** Sets the RGB working space to the current color profile of your monitor. Use this setting if other applications in your workflow do not support color management. If a color management configuration that specifies Monitor RGB is shared with another user working on a different system, the configuration uses that system's monitor profile as the working space.

**ColorSync RGB (Mac OS only)** Matches the RGB space specified in the control panel for Apple ColorSync 3.0 or later. If a color management configuration specifying this setting is shared with another user working on a different system, the configuration uses that system's ColorSync RGB space as the working space.

## Specifying CMYK working spaces

For the CMYK color model, the following standard working space options are available.

**Euroscale (Coated)** Uses specifications designed to produce quality separations using Euroscale inks under the following printing conditions: 350% total area of ink coverage, positive plate, bright white coated stock.

**Euroscale (Uncoated)** Uses specifications designed to produce quality separations using Euroscale inks under the following printing conditions: 260% total area of ink coverage, positive plate, uncoated white offset stock.

**Japan Standard** Uses specifications designed to produce quality separations using Japan Standard inks under the following printing conditions: 300% total area of ink coverage, positive plate, coated publication-grade stock.

**U.S. Sheetfed Coated** Uses specifications designed to produce quality separations using U.S. inks under the following printing conditions: 350% total area of ink coverage, negative plate, bright white coated stock.

**U.S. Sheetfed Uncoated** Uses specifications designed to produce quality separations using U.S. inks under the following printing conditions: 260% total area of ink coverage, negative plate, uncoated white offset stock.

**U.S. Web Coated (SWOP)** Uses specifications designed to produce quality separations using U.S. inks under the following printing conditions: 300% total area of ink coverage, negative plate, coated publication-grade stock. This profile was created using the TR001 characterization data.

**U.S. Web Uncoated** Uses specifications designed to produce quality separations using U.S. inks under the following printing conditions: 260% total area of ink coverage, negative plate, uncoated white offset stock.

**ColorSync CMYK (Mac OS only)** Matches the CMYK space specified in the control panel for Apple ColorSync 3.0 or later. If a color management configuration specifying this setting is shared with another user working on a different system, the configuration uses that system's ColorSync CMYK space as the working space.

## Specifying grayscale working spaces

The standard grayscale working spaces are based on the grayscale characteristics of preset dot gain percentages or monitor gamma settings. With Advanced Mode selected, you also have the option of creating a grayscale working space based on a custom dot gain or gamma.

Dot gain or loss occurs when a printer's halftone dots change as the ink spreads and is absorbed by paper. Photoshop calculates dot gain as the amount by which the expected dot increases or decreases. For example, a 50% halftone screen may produce an actual density of 60% on the printed page, exhibiting a dot gain of 10%. The Dot Gain 10% option represents the color space that reflects the grayscale characteristics of this particular dot gain.



*Proof (no dot gain), and printed image (with dot gain)*

A monitor's gamma setting determines the brightness of midtones displayed by the monitor. The Gray Gamma 1.8 option matches the default grayscale display of Mac OS computers and is also the default grayscale space for Photoshop 4.0 and earlier. The Gray Gamma 2.2 option matches the default grayscale display of Windows computers.

## Specifying spot-color working spaces

The standard Spot working spaces are based on the spot-color characteristics of preset dot gain percentages. For an explanation of dot gain, see "Specifying grayscale working spaces" on page 71. With Advanced Mode selected, you also have the option of creating a spot-color working space based on a custom dot gain percentage.

## Specifying color management policies

Each predefined color management configuration sets up a color management policy for the RGB, CMYK, and grayscale color models 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 “Using color management policies” on page 67.

### To customize color management policies:

1 In the Color Settings dialog box, under Policies, choose one of the following to set the default color management policy for each color model:

- Off if you do not want to color-manage 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 model.
- Convert to Working Space if you want to color-manage all documents using the current working spaces.

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 the embedded color profile in a newly opened document does not match 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.
- 3 For Missing Profiles, select Ask When Opening to display a message whenever a newly opened document does not have a color profile. You will be given the option to override the policy’s default behavior.

It is strongly recommended that you keep the Ask When Opening and Ask When Pasting options selected. Deselecting the options causes Photoshop to implement default policy behavior without notification.

Policy option	Default color management behavior
Off	<ul style="list-style-type: none"> <li>• No profiles are saved with new documents.</li> <li>• If opened document’s profile does not match current working space, profile is discarded and not saved with document.</li> <li>• If opened document’s profile matches current working space, profile is preserved and saved with document.</li> <li>• For color data imported into same color model, numeric values of colors are preserved.</li> <li>• For color data imported into different color model, colors are converted to destination document’s color space.</li> </ul>

Policy option	Default color management behavior
Preserve Embedded Profiles	<ul style="list-style-type: none"> <li>• Working space profile is saved with new documents.</li> <li>• If opened document's profile does not match current working space, profile is preserved and saved with document.</li> <li>• If opened document does not contain a profile, working space is used for editing but not saved with document.</li> <li>• For color data imported within same color model between either a non-color-managed source or destination, or from a CMYK document into a CMYK document, numeric color values are preserved.</li> <li>• For all other import cases, colors are converted to destination document's color space.</li> </ul>
Convert to Working Space	<ul style="list-style-type: none"> <li>• Working space profile is saved with new documents.</li> <li>• If opened document's profile does not match current working space, document is converted to working space; working space is saved with document.</li> <li>• If opened document does not contain a profile, working space is used for editing but not saved with document.</li> <li>• For color data imported within same color model between either a non-color-managed source or destination, numeric color values are preserved.</li> <li>• For all other import cases, colors are converted to destination document's color space.</li> </ul>

## Customizing advanced color management settings

When you select Advanced Mode at the top of the Color Settings dialog box, you have the option of further customizing settings used for color management.

### Specifying a color management engine

The color management engine specifies the system and color-matching method used to convert colors between color spaces. For more information, see “About color management” on page 63.

The following standard engine options are available. If you have installed additional color management engines, they may also appear as options.

**Adobe (ACE)** Uses the Adobe color management system and color engine. This is the default setting for most preset color configurations.

**Apple ColorSync** Uses the color management system provided by Apple Computer, Inc. for Mac OS computers.

**Microsoft ICM** Uses the color management system provided by Microsoft Corporation for Windows 98 and Windows 2000 computers.

## Specifying a rendering intent

Translating colors to a different color space usually involves an adjustment of the colors to accommodate the gamut of the destination color space. Different translation methods use different rules to determine how the source colors are adjusted; for example, colors that fall inside the destination gamut may remain unchanged, or they may be adjusted to preserve the original range of visual relationships as translated to a smaller destination gamut. These translation methods are known as *rendering intents* because each technique is optimized for a different intended use of color graphics.

*Note: The result of choosing a rendering intent depends on the graphical content of documents and on the profiles used to specify color spaces. Some profiles produce identical results for different rendering intents. Differences between rendering intents are apparent only when you print a document or convert it to a different working space.*

The following rendering intent options are available:

**Perceptual** This intent aims to preserve the visual relationship between colors in a way that is perceived as natural to the human eye, although the color values themselves may change.

**Saturation** Appropriate for office and presentation graphics, this intent aims to create vivid color at the expense of accurate color. It scales the source gamut to the destination gamut but preserves relative saturation instead of hue, so when scaling to a smaller gamut, hues may shift. This rendering intent is suitable for business graphics, where the exact relationship between colors is not as important as having bright saturated colors.

**Absolute Colorimetric** Leaves colors that fall inside the destination gamut unchanged. This intent aims to maintain color accuracy at the expense of preserving relationships between colors. When translating to a smaller gamut, two colors that are distinct in the source space may be mapped to the same color in the destination space.

**Relative Colorimetric** This intent is identical to absolute colorimetric except for the following difference: relative colorimetric compares the *white point* (extreme highlight) of the source color space to that of the destination color space and shifts all colors accordingly. Relative colorimetric can be more accurate if the image's profile contains correct white point information. This is the default rendering intent used by all predefined color management configurations.



## Using black-point compensation

The Use Black Point Compensation option controls 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 lower than that of the destination space.

The Use Black Point Compensation option is selected for all predefined color management configurations. 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. When this 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 increase the file size.

## Desaturating monitor colors

The Desaturate Monitor Colors By option controls 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 printed output.

## Blending RGB colors

The Blend RGB Colors Using Gamma option controls the blending behavior of RGB colors. When the option is selected, RGB colors are blended using 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, matching the behavior of most applications other than Photoshop.

## Saving and loading custom 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 use the Color Settings dialog box, such as Adobe Illustrator. 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 the Program Files/Common Files/Adobe/Color/Settings folder (Windows) or the System Folder/Application Support/Adobe/Color/Settings (Mac OS) folder.

- 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 configuration is chosen.

**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 choose a different option from the Settings menu, you must reload the custom settings file in order to access it again.

## Synchronizing color management between applications

The Color Settings dialog box represents the common color management controls shared by several Adobe applications. If you make adjustments to the Color Settings dialog box in any other Adobe application, you will be prompted to synchronize the common color settings upon starting Photoshop or upon reopening the Color Settings dialog box in Photoshop. Synchronizing the color settings helps to ensure that color is reproduced consistently between all Adobe applications that use the Color Settings dialog box.

## Soft-proofing colors

In a traditional publishing workflow, you print a hard proof of your document to preview how the document's colors will look when reproduced on a specific output device. In a color-managed workflow, you can use the precision of color profiles to soft-proof your document directly on the monitor. You can display an onscreen preview of how your document's colors will look when reproduced on a particular output device.

Keep in mind that the reliability of the soft proof is highly dependent upon the quality of your monitor, your monitor profile, and the ambient lighting conditions of your work station. For information on creating a monitor profile, see "Creating an ICC monitor profile" on page 81.

**To display a soft proof:**

1 Choose View > Proof Setup, and choose the output display that you want to simulate:

- Choose Custom to soft-proof colors as displayed on a specific output device. Then follow the instructions outlined in the next procedure to set up the custom proof.
- Choose Working CMYK to soft-proof colors using the current CMYK working space.
- Choose Working Cyan Plate, Working Magenta Plate, Working Yellow Plate, Working Black Plate, or Working CMY Plates to soft-proof specific CMYK ink colors using the current CMYK working space.
- Choose Macintosh RGB or Windows RGB to soft-proof colors using either a standard Mac OS or Windows monitor as the proof profile space that you want to simulate.
- Choose Monitor RGB to soft-proof colors using your current monitor color space as the proof profile space.
- Choose Simulate Paper White to preview the specific shade of white exhibited by the print medium. <<**Reviewers: Which color profile is this preview based on, Working CMYK?>>**

- Choose Simulate Ink Black to preview the amount of black pigment absorbed by the print medium. <<**Reviewers: Which color profile is this preview based on, Working CMYK?>>**

2 Choose View > Proof Colors to toggle the soft-proof display on and off. When soft proofing is on, a checkmark appears next to the Proof Colors command.

**To create a custom proof:**

1 Choose View > Proof Setup > Custom.

2 Select Preview to display a live preview of the proof settings in the document while the Proof Setup dialog box is open.

3 If you want to use a preset proof configuration as a starting point for your custom proof, choose an option from the Setup menu. If the desired proof preset does not appear in the menu, click Load to locate and load the desired preset.

4 For Profile, choose the color profile for the device for which you want to create the proof.

5 If you chose a proof profile using the document's current color model, do one of the following:

- Select Preserve Color Numbers to simulate how the document will appear without converting colors to the proof profile space.
- Deselect Preserve Color Numbers to simulate how the document will appear if colors are converted to the proof profile space in an effort to preserve the colors' visual appearances. Then specify a rendering intent for the conversion; for more information, see "Specifying a rendering intent" on page 74.

6 Select one, both, or none of the following:

- Simulate Paper White to preview the specific shade of white exhibited by the print medium. Selecting this option automatically selects the Simulate Ink Black option. <<**Reviewers: Which color profile is this preview based on, Working CMYK?>>**

- Simulate Ink Black to preview the amount of black pigment absorbed by the print medium.  
<<**Reviewers: Which color profile is this preview based on, Working CMYK?>>**

The availability of either option depends on the proof profile chosen. Not all profiles support both options.

- 7 To save your custom proof as a preset proof configuration, 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 the System Folder/Application Support/Adobe/Color/Proofing (Mac OS) folder.
- 8 Click OK to close the Proof Setup dialog box.

## Changing the color profile of a document

In some cases you may want to convert a document's colors to a different color profile, assign a different color profile to a document 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. The Assign Profile and Convert to Profile commands are recommended only for advanced users.

### 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 existing profile from the document. Select this option only if you are sure that you do not want to color-manage the document.

- Working <color model: working space> to assign the working space profile to a document that either uses no profile or a profile different from the working space.

- Profile to reassign a different profile to a color-managed document. Choose the desired profile from the menu. Photoshop assigns the new profile to the document without converting colors to the profile space.

- 3 To preview the effects of the new profile assignment in the document, select Preview.

- 4 Click OK.

### 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 reassigned with this new profile.
- 3 Under Conversion Options, specify a color management engine, a rendering intent, and black point and dither options. (See "Customizing advanced color management settings" on page 73.)
- 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.

6 Click OK.

## Embedding profiles in saved documents

By default, a document for which you have specified color management will have its profile embedded upon saving in a file format that supports embedded ICC profiles. These formats include the native Photoshop format (.ai), PDF, JPEG, TIFF, and the native Photoshop format (.psd). Profiles are not saved by default with non-color-managed documents.

You can change the default behavior to embed or not to embed profiles as you save a document. Changing the default behavior, however, is recommended only for advanced users who are very familiar with color management.

### To change the embedding behavior of a profile in a document:

- 1 Choose File > Save. Name the document, specify a file format, and click Save.
- 2 In the file format options dialog box that appears, select or deselect Embed Color Profile.
- 3 Click OK to save the document.

## Obtaining, installing, and updating color profiles

Precise, consistent color management requires accurate ICC-compliant profiles of all of your color devices. For example, without an accurate scanner profile, a perfectly scanned image may appear incorrect in another program, simply due to any difference in gamuts between the scanner and the program displaying the image. This misleading representation may cause you to make unnecessary, time-wasting, and potentially damaging “corrections” to an already satisfactory image. With an accurate profile, a program importing the image can correct for any gamut differences and display a scan’s actual colors.

Once you obtain accurate profiles, they will work with all applications that are compatible with your color-management system. You can obtain profiles in the following ways, with the most precise methods listed first:


- Generate profiles customized for your specific devices using professional profiling equipment.
- Obtain a profile created by the manufacturer. Unfortunately, such profiles do not account for individual variations that naturally occur among machines (even identical models from the same manufacturer) or from age.

- Substitute an available profile that may be appropriate given information you have about the device's gamut. For example, many Mac OS scanners have been optimized for an Apple RGB monitor gamut, so you might try using an Apple monitor profile for these devices. Be sure to proof images created with the profile before using the profile in production. This workaround is unlikely to produce results suitable for professionally color-managed work.

### **Adding device profiles to the color management system**

The Photoshop installer lets you choose from manufacturer-supplied device profiles for some commonly used equipment. This is useful if you don't have access to hardware-based calibration tools. It is not possible for the installer to supply profiles for all devices. If the installer did not install a profile for your device, create one or contact the device manufacturer to obtain one.

To minimize confusion when working with profiles, delete any profiles for devices not used by you or your workgroup.

 *In Mac OS, you can organize the ColorSync Profiles folder by creating additional folders within it, or adding aliases to other folders.*

#### **To add profiles to your system:**

Do one of the following:

- In Windows NT or 2000, copy profiles into the WinNT\System32\Color folder.
- In Windows 98, copy profiles into the Windows\System\Color folder.

- In Mac OS, copy profiles into the ColorSync Profiles folder in the System Folder (ColorSync 2.5 or later), or System Folder/Preferences/ColorSync™ Profiles (ColorSync versions earlier than 2.5).

***Note:** If you use ColorSync 2.5 but have used earlier versions, some profiles may still be stored in System Folder/Preferences/ColorSync™ Profiles on your hard disk. For compatibility with ColorSync 2.5 or later, store profiles in the ColorSync Profiles folder in the System Folder.*

### **Updating profiles**

The color reproduction characteristics of a color device change as it ages, so recalibrate devices periodically and generate updated profiles. Profiles should be good for approximately a month depending on the device. Some monitors automatically compensate for phosphor aging.

Also, recalibrate a device when you change any of the factors that affect calibration. For example, recalibrate your monitor when you change the room lighting or the monitor brightness setting.

## Creating an ICC monitor profile

Your monitor will display color more reliably if you use color management and accurate ICC profiles. The Adobe Gamma utility, which is automatically installed into your Control Panels folder, lets you calibrate and characterize your monitor to a standard and then save the settings as an ICC-compliant profile available to any program that uses your color management system. This calibration helps you eliminate any color cast in your monitor, make your monitor grays as neutral as possible, and standardize image display across different monitors.

Although Adobe Gamma is an effective calibration and profiling utility, hardware-based utilities are more precise. If you have a hardware-based utility that can generate an ICC-compliant profile, you should use that instead of Adobe Gamma.

Depending on your workflow scenario, an ICC monitor profile can be either a source profile, a destination profile, or both.

***Note:** Adobe Gamma can characterize, but not calibrate, monitors used with Windows NT. In addition, the ICC profile you create with Adobe Gamma can be used as the system-level profile in Windows NT. Its ability to calibrate settings in Windows 98 depends on the video card and video driver software. In such cases, some calibration options documented here may not be available.*

## Calibrating versus characterizing a monitor

Profiling software such as Adobe Gamma can both characterize and calibrate your monitor. When you *characterize* your monitor, you create a profile that describes how the monitor is currently reproducing color. When you *calibrate* your monitor, you bring it into compliance with a predefined standard; adjusting your monitor so that it displays color using the graphics arts standard white point color temperature of 5000 kelvin is an example of calibration.

Determine in advance the standard to which you are calibrating so that you can enter the set of values for that standard. Coordinate calibration with your workgroup and prepress service provider to make sure you're all calibrating to the same standard.

## About monitor calibration settings

Monitor calibration involves adjusting video settings, which may be unfamiliar to you. A monitor profile uses these settings to precisely describe how your monitor reproduces color.

**Brightness and contrast** The overall level and range, respectively, of display intensity. These parameters work just as they do on a television. Adobe Gamma helps you set an optimum brightness and contrast range for calibration.


**Gamma** The brightness of the midtone values. The values produced by a monitor from black to white are nonlinear—if you graph the values, they form a curve, not a straight line. Gamma defines the value of that curve at halfway between black and white. Gamma adjustment compensates for the nonlinear tonal reproduction of output devices such as monitor tubes.

**Phosphors** The substance that monitors use to emit light. Different phosphors have different color characteristics.

**White point** The RGB coordinates at which red, green, and blue phosphors at full intensity create white.

### Guidelines for creating an ICC monitor profile

The following guidelines can help you create an accurate monitor profile.

 *You may find it helpful to have your monitor's user guide handy while using Adobe Gamma.*

- You don't need to calibrate your monitor if you've already done so using an ICC-compliant calibration tool such as Adobe Gamma and haven't changed your video card or monitor settings.
- If you have the Mac OS Gamma control panel (included with Adobe Photoshop 4.0 and earlier) or the Monitor Setup utility (included with PageMaker® 6.0) for Windows, remove it; it is obsolete. Use the latest Adobe Gamma utility instead.
- Make sure your monitor has been turned on for at least a half hour. This gives it sufficient time to warm up for a more accurate color reading.

- Make sure your monitor is displaying thousands of colors or more.
- Remove colorful background 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, using RGB values of 128. For more information, see the manual for your operating system.
- If your monitor has digital controls for choosing the white point of your monitor from a range of preset values, set those controls before starting Adobe Gamma. Later, in Adobe Gamma, you'll set the white point to match your monitor's current setting. Be sure to set the digital controls before you start Adobe Gamma. If you set them after you begin the calibration process in Adobe Gamma, you'll need to begin the process again.
- Monitor performance changes and declines over time; recharacterize your monitor every month or so. If you find it difficult or impossible to calibrate your monitor to a standard, it may be too old and faded.

### Calibrating with Adobe Gamma

The ICC profile you get using Adobe Gamma uses the calibration settings to describe how your monitor reproduces color.

**To use Adobe Gamma: 1** Do one of the following to start the Adobe Gamma utility:

- In Windows, double-click Adobe Gamma, located in the Program Files\Common Files\Adobe\Calibration folder on your hard drive.



- In Mac OS, from the Apple menu, choose Control Panels > Adobe Gamma.

## 2 Do one of the following:

- To use a version of the utility that will guide you through each step, select Step by Step, and click OK. This version is recommended if you're inexperienced. If you choose this option, follow the instructions described in the utility. Start from the default profile for your monitor if available.
- To use a compact version of the utility with all the controls in one place, select Control Panel, and click OK. This version is recommended if you have experience creating color profiles.



*Any time while working in the Adobe Gamma control panel, you can click the Wizard (Windows) or Assistant (Mac OS) button to switch to the wizard for instructions that guide you through the same settings as in the control panel, one option at a time.*



# Chapter 5: Making Color and Tonal Adjustments

**W**hen you photograph, scan, or resample images, you can often introduce problems involving color quality and tonal range. Photoshop provides a comprehensive set of tools for making color and tonal corrections and sharpening the overall focus of an image. ImageReady provides many of the basic correction tools, including Levels, Brightness/Contrast, Hue/Saturation, Variations, and Unsharp Mask.

## Basic steps for correcting images

Photoshop gives you a range of commands and features for adjusting the tonal quality and color balance of images. For quick and simple image correction, use one of the semi-automatic adjustment commands. (See “Making quick overall adjustments to an image” on page 108.) For more precise and flexible adjustments, use the color-correction workflow outlined in the following sections.

### 1. Calibrate your monitor.

In preparation for adjusting images, use the Adobe Gamma utility to calibrate your monitor to a color-display standard suited to your working needs. Otherwise, the image on your monitor may look very different from the same image when printed or when viewed on another monitor. See <<xref to section in new color chapter>>.

### 2. Check the scan quality and tonal range.

Before making adjustments, look at the image’s histogram to evaluate whether the image has sufficient detail to produce high-quality output. The higher the number of pixels in an area, the greater the detail. Poor scans and photographs without much detail can be difficult if not impossible to correct. Too many color corrections can also result in a loss of pixel values and too little detail.

The histogram also displays the overall distribution of shadows, midtones, and highlights to help you determine which tonal corrections are needed. See “Checking scan quality and tonal range (Photoshop)” on page 87.

### 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 that allows for the sharpest detail possible throughout 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. When pixel values are concentrated at either end of the tonal range, however, you may need to adjust your midtones manually. It is not usually necessary to adjust midtones in images that already have a concentrated amount of midtone detail.

There are several different ways to set an image's tonal range:

- You can drag sliders along the histogram in the Levels dialog box. See “Using Levels to set highlights, shadows, and midtones” on page 95.
- 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. See “Using Curves to adjust tonal range (Photoshop)” on page 95. <<xref destination?>>
- You can assign target values to the highlight and shadow pixels using either the Levels or Curves dialog box. This can be a useful method for images intended for printing on a press. See “Using target values to set highlights and shadows (Photoshop)” on page 99.
- You can use the Gamma command to adjust the overall brightness of the image as displayed on a standard Windows or Mac OS monitor. See “Adjusting the gamma value of an image (ImageReady)” on page 102.


<<*It's possible to set midtones using target values as mentioned in the preceding para, but I don't know if you'd want to set midtones that way. How would you reasonably choose a representative midtone in an image? We don't describe how to do it in the subsection on target values, so we need to pin this down one way or the other.*>>

#### 4. Adjust the color balance.

After correcting the tonal range, you can adjust the image's color balance to remove unwanted color casts or to correct oversaturated or undersaturated colors. Examine your image with reference to the color wheel to determine which color adjustments you need to make. (See “About the color wheel” on page 103.) You can choose from the following color adjustment methods:

- The Color Balance command changes the overall mixture of colors in an image. See “Using the Color Balance command (Photoshop)” on page 103.
- The Hue/Saturation command adjusts the hue, saturation, and lightness values of individual color components. See “Using the Hue/Saturation command” on page 104.
- The Replace Color command replaces specified colors in an image with new color values. See “Using the Replace Color command (Photoshop)” on page 106.
- The Selective Color command is a high-end color-correction method that adjusts the amount of process colors in individual color components. See “Using the Selective Color command (Photoshop)” on page 107.
- The Levels and Curves dialog boxes let you adjust color balance by setting the pixel distribution for individual color channels. See “Using Levels to adjust color” on page 97 and “Using the Curves command to adjust color (Photoshop)” on page 98. <<xref destination?>>

- The method of blending colors from different channels can also produce color adjustments. See “Mixing color channels” on page 210.

 *For finer control over color, convert your artwork to a 16-bit image. (See “Converting between bit depths (Photoshop)” on page 52.) When you finish making color adjustments, convert it back to an 8-bit image.*

## **5. 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. See “Applying special color effects to images” on page 110.

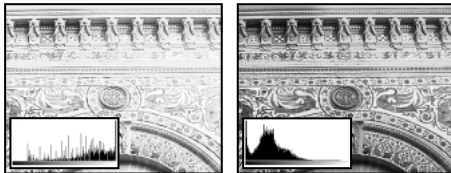
## **6. Sharpen the edges of the image.**

As a final step, use the Unsharp Mask filter to sharpen the clarity of edges in the image. This step helps restore focus to images that have undergone resampling as a result of color adjustments. See “Sharpening an image” on page 112.

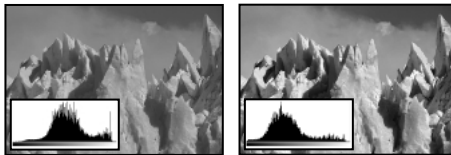
## **Checking scan quality and tonal range (Photoshop)**

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.

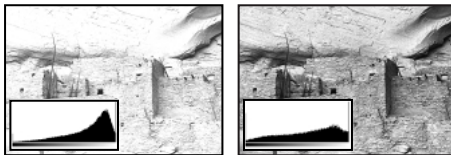
The histogram also gives a quick picture of the tonal range of the image, or the image *key type*. A low-key image has detail concentrated in the shadows; a high-key image has detail concentrated in the highlights; and an average-key image has detail concentrated in the midtones. An image with full tonal range has a high number of pixels in all areas. Identifying the tonal range helps determine appropriate tonal corrections. <<*Is this the correct definition of an average-key image?*>>



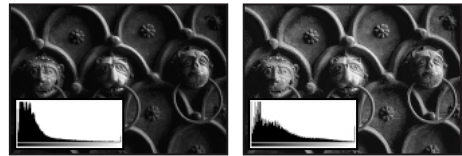
Original with insufficient detail, and sufficient detail



Original, and corrected average-key image



Original, and corrected high-key image



Original, and corrected low-key image

💡 To determine whether a scan has captured enough detail for high-quality output, also check the RGB values of your highlight and shadow areas in the Info palette—generally, 240 and 10, respectively. The scan must be free of large gaps within these ranges.

#### To display the histogram for an image:

- 1 To display histogram data for a portion of the image, first select that portion. By default, the histogram displays the tonal range of the entire image.
- 2 Choose Image > Histogram.

To include data from spot channels and alpha channels, hold down Alt (Windows) or Option (Mac OS) when you choose Image > Histogram.

The horizontal axis of the histogram represents the intensity values, or levels, from darkest (0) at the far left to brightest (255) at the far right; the vertical axis represents the total number of pixels with a given value.

**Note:** The histogram for an adjustment layer depends on the visibility of the layers beneath it.

**3** For RGB, CMYK, and indexed-color images, choose an option from the Channel menu. You can plot either the luminance of the composite channel (Luminosity) or the intensity values of an individual channel.

**4** To view information about a specific point on the histogram, place the pointer there. To view information about a range of values, drag in the histogram to highlight the range.

The numerical values below the histogram display statistical information about the intensity values of the pixels:

**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 setting for the image cache. If the Use Cache for Histograms option is selected in the Memory & Image Cache Preferences dialog box, the histogram is based on a representative sampling of pixels in the image (based on the magnification), rather than on all of the pixels.

**5** Click OK to close the histogram.

## Using the color adjustment tools

All Adobe 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 you have. For an overview summary of the color adjustment tools, see “Basic steps for correcting images” on page 85.

### Making color adjustments

When you open a color adjustment dialog box, you determine whether your corrections will be applied to a regular layer or (Photoshop) to an adjustment layer.

<<*Are we still calling them “adjustment layers”?*>>

If you make corrections to a regular layer, you permanently alter the pixels on that layer.

If you make corrections to an adjustment layer in Photoshop, your changes reside only in the adjustment layer and do not alter any pixels. The effect is as if you are viewing the visible layers through the adjustment layer above them. This lets you experiment with color and tonal adjustments without permanently altering pixels in the image. Adjustment layers are also the only way to affect multiple layers at once. (See “Using content layers (Photoshop)” on page 244 for more information.)

You can apply and edit adjustment layers only in Photoshop. When you transfer an image with adjustment layers to ImageReady, you can view the layers but not edit them.

#### To open a color adjustment dialog box:

- 1 If you want to make adjustments to just a portion of your image, select that part of the image. If you make no selection, the adjustment will be applied to the entire image.
- 2 Do one of the following:
  - Choose Image > Adjust, and choose the command you want from the submenu.
  - Choose Layer > New Content Layer, and choose the desired type of adjustment layer from the submenu (Photoshop). For example, choose Levels Layer for a new adjustment layer with Levels corrections. Type a name for the layer, and click OK. The changes will be applied to the new adjustment layer.

- Double-click an existing adjustment layer in the Layers palette (Photoshop). The changes will be applied to that adjustment layer.



*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 image to the default settings.*

### Previewing color adjustments

If the Preview option is selected in a color adjustment dialog box, you can see your changes in the image before accepting them. Known as *video table lookup*, or *color table animation*, this process displays an immediate, but not always accurate, preview of changes. You can turn off color table animation to display an accurate preview of adjustments to the selected area only.

*<<In 5.5 we had a Video LUT option in the display prefs; it's no longer there, and I haven't heard back from engineering on this. We'll probably need to revise the following few paras and the second and third procedures.>>*

The following guidelines apply when using color table animation:

- The Video LUT Animation option is off by default on Windows and is not available for most operations on Windows and Mac OS unless the monitor is set to 256 colors.
- For color table animation to work in 24-bit mode with Windows, you must install a color table animation extension, supplied by your video card manufacturer, in the Plug-Ins directory.



- The color table animation feature can cause problems in Mac OS if you are using a 24-bit or 32-bit video card for which certain color QuickDraw commands have not been properly implemented. If you have a problem, contact your video card manufacturer for ROM updates. You should also reset the video mode and turn off the Video LUT Animation option in the Display Preferences dialog box.

**To turn on previewing and deactivate color table animation:**

Select Preview in any color adjustment dialog box.

*<<Huh? The old section intro (of which the new intro is a part) seems to imply that preview uses color table animation.>>*

**To turn off color table animation:**

- 1 Choose Edit > Preferences > Display & Cursors.
- 2 Deselect Video LUT Animation, and click OK.

**To reset the video mode in a Mac OS machine with a 24-bit or 32-bit video card:**

- 1 Choose Control Panel from the Apple menu, and double-click Monitors.
- 2 Click one of the other color display options (such as 256 Colors), and perform a preview to see the results.
- 3 Click your original color display option.
- 4 Close the Control Panel.
- 5 In Photoshop, choose Edit > Preferences > Display & Cursors, deselect Video LUT Animation, and click OK.

You can still preview changes by clicking the Preview option, but clicking Preview will not turn the color table animation off and on.

**Seeing the color values of pixels**

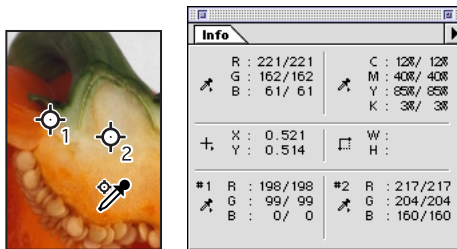
You can use the Info palette and the Color palette to see the color value of pixels as you make color corrections.

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. *<<Please confirm that this is Photoshop only.>>*

You can view the color of a single area 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.

*<<B. Smyth says we're adding the color sampler to IR. It's not there yet. Double-check this.>>*

<<ART: Circle the 2 sets of sampler values in the Info palette below.>>



Color samplers and Info palette

**To use the Info palette and the eyedropper or color sampler tool to see color values:**

<<Photoshop only?>>

- 1 Choose Window > Show Info to open the Info palette.
- 2 Select the eyedropper tool or color sampler tool, and choose what to sample from the pop-up menu in the eyedropper or color sampler tool options:
  - 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 a color adjustment dialog box. (See “Making color adjustments” on page 89.)
- 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 a color 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 when using keyboard modifiers.
- To view the color values under the color samplers, look at the bottom half of the Info palette.

**To move or delete a color sampler:**


- To move a color sampler, select the color sampler tool (👉), and drag the sampler to the new location.
- To delete a color sampler, select the color sampler tool. Drag the sampler out of the document window, or hold down Alt (Windows) or Option (Mac OS) and click the sampler.

**To change the display of color sampler information in the Info palette:**

- To display or hide color sampler information in the Info palette, choose Show Color Samplers or Hide Color Samplers from the palette menu.
- 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 > Show Color to open the Color palette.


- 2 Open a color adjustment dialog box. This activates the eyedropper tool () outside the dialog box.
- 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 (Photoshop), Replace Color (Photoshop), Selective Color (Photoshop), and Variations dialog boxes let you save your settings and apply them to other images.

#### **To save and reapply settings:**

- 1 Click Save in the adjustment dialog box you are using, and name and save the settings.
- 2 Close the adjustment dialog box, and open the image to which you want to apply the adjustments.
- 3 Reopen the adjustment dialog box, and click Load. Locate and open the saved adjustment file.
- 4 Click OK.

 *If you often apply the same adjustment, consider recording and running the adjustment as an action.*

## **Comparing corrections in CMYK and RGB (Photoshop)**

Even though you can perform all color and tonal corrections in either CMYK or RGB mode, 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.

But if you must convert your image from one mode to another anyway, it makes sense to perform most of your tonal and color corrections in RGB mode and use CMYK mode for fine-tuning. One advantage of working in RGB mode is that you can save memory and improve performance. Another advantage is that you have more device independence, because RGB color spaces are not dependent on monitors or inks. Corrections made to the image are preserved regardless of the monitor, computer, or output device used.

### **Previewing CMYK colors in RGB (Photoshop)**


When adjusting out-of-gamut colors or making color corrections in RGB mode, you can preview CMYK colors in an RGB image.

**To preview CMYK colors:**

1 Choose View > Proof Setup > Working CMYK. To preview specific separation plates, choose View > Proof Setup > Working Cyan, Working Magenta, Working Yellow, Working Black, or Working CMY.

2 Choose View > Proof Colors. (A checkmark appears next to this command when it is enabled.)

CMYK equivalents for colors in the image are displayed using the current working CMYK space in the Color Settings dialog box, but no permanent changes are made.

 *Monitor CMYK colors as you edit in RGB mode by choosing View > New View to open a second window. Turn on Working CMYK in one window and leave it off in the other.*

## Identifying out-of-gamut colors (Photoshop)

The *gamut* is the range of colors that a color system can display or print. A color that can be displayed in RGB or HSB models may be out-of-gamut, and therefore unprintable, for your CMYK setting. (See “Color gamuts (Photoshop)” on page 49.)

Photoshop automatically brings all colors into gamut when you convert an 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.

You can also quickly identify all out-of-gamut colors in an RGB image by using the Gamut Warning command. This command highlights pixels that are out of gamut in the image.

**To turn on or off the highlighting of out-of-gamut colors:**

Choose View > Gamut Warning.

**To change the gamut warning color:**

- 1 Choose Edit > 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.

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

**Note:** Because the gamut warning is generated using the current working CMYK space, be sure to fill in the Color Settings dialog box properly before following these out-of-gamut procedures. (See <<x-ref to proper section in color management chapter>>.)

## 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.

## Using Levels to set highlights, shadows, and midtones

You can set the highlights and shadows in an image by moving Input sliders to the first group of pixels on both ends of the Levels histogram. This maps these pixels—the darkest and lightest pixels in each channel—to black and white, increasing the tonal range of the image. The corresponding pixels in the other channels are adjusted proportionately to avoid altering the color balance.

You can use the middle Input slider to change the intensity values of the middle range of gray tones without dramatically altering the highlights and shadows.

Less exact than assigning target values or using the Curves dialog box, the Levels sliders often yield good results, especially if you want to maintain a color cast in the highlights and shadows. In many images, eliminating the color cast is useful. But in other images, using the Levels sliders to set the highlights and shadows may produce better results precisely because it does not affect the color balance.

### To adjust tonal range using Levels:

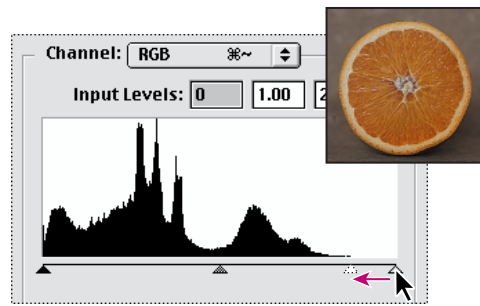
- 1 Open the Levels dialog box. (See “Making color adjustments” on page 89.)
- 2 To adjust tones for a specific color channel, choose an option from the Channel menu.

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.

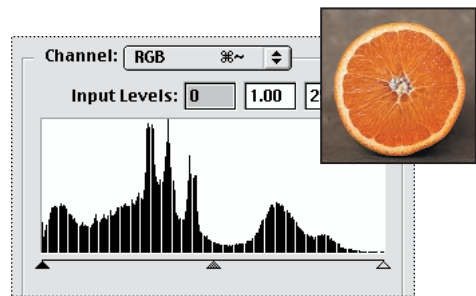
3 To adjust the shadows and highlights, do one of the following:

- Drag the black and white Input Levels sliders to the edge of the first group of pixels on either end of the histogram. You can also enter values directly into the first and third Input Levels text boxes.
- 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 example, suppose you want to increase the contrast in an image with pixels that currently cover a range of only 0–233. If you drag the Input Levels white triangle to 233, pixels with intensity values of 233 and higher (in each channel of the image) are mapped to 255; pixels with lower intensity values are mapped to corresponding lighter values. This remapping lightens the image, increasing the contrast in highlight areas.



Original



Resulting histogram

Suppose instead you want to decrease the contrast in the image. If you drag the Output Levels white triangle to 220, pixels with intensity values of 255 are remapped to 220, and pixels with lower intensity values are mapped to corresponding darker values. This darkens the image, decreasing the contrast in highlight areas.

**Note:** You can click *Auto* to move the highlight and shadow sliders automatically to the brightest and darkest points. This is the same as using the *Auto Levels* command and may be adequate for an average-key image. See “Using the *Auto Levels* command” on page 108.

4 If your image needs midtone corrections, use the gray Input Levels slider. Drag the slider to the right to darken the midtones; drag it to the left to lighten the midtones. You can also enter values directly in the middle Input Levels text box.

5 Click *OK*.

6 To view the adjusted histogram, reopen the Levels dialog box.

The gaps in the adjusted histogram do not indicate a perceptible problem in the image unless they are large or accompanied by a low pixel count.

## Using Levels to adjust color

<<We may want to have a section on Levels here. We never explained how to use Levels for color correction in the old UGs (though it was hinted at), so we need to investigate. It seems that you can select a color channel and drag the middle Input slider to adjust color. It may work like the Hue slider in H/S, with a move around the wheel from the pixel’s original color.>>

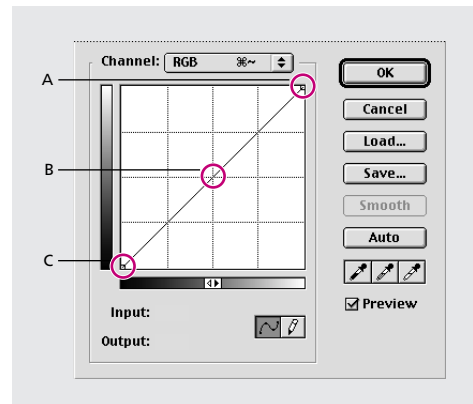
<<Is this where the eyedropper tools in the Levels dialog come into play? Or the Channels menu?>>

## 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 making adjustments using only three variables (highlights, shadows, midtones), with Curves you can adjust any point along a 0–255 scale while keeping up to 15 other values constant. You can also use Curves to make precise adjustments to individual color channels in an image.

**To adjust tonal range and color balance using Curves:**

1 Open the Curves dialog box. (See “Making color adjustments” on page 89.)



A. Highlights B. Midtones C. Shadows

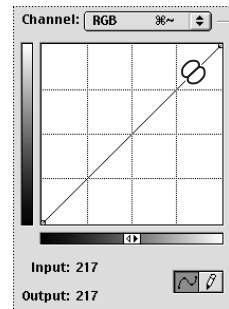
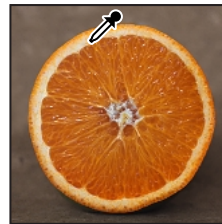
The horizontal axis of the graph represents the original intensity values of the pixels (Input levels); the vertical axis represents the new color values (Output levels). In the default diagonal line, all pixels have identical Input and Output values.

**Note:** For RGB images, Curves displays intensity values from 0 to 255, with shadows (0) on the left. For CMYK images, Curves displays percentages from 0 to 100, with highlights (0) on the left. To reverse the display of shadows and highlights at any time, click the double arrow below the curve.

2 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.


3 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.



Clicking in the image displays the intensity values and location on the curve.

4 Click any points on the curve that you want to remain fixed. For example, if you want to adjust the midtones while minimizing the effect on the highlights and shadows, click the quarter and three-quarter points on the curve.

You can add up to 14 control points to the curve, locking those values. 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.

 Drag through the image to determine the lightest and darkest areas in the image. This is particularly useful in Windows when the Threshold function in Levels is unavailable.

<<What is the status of Threshold in the Levels dialog?>>

5 Do any of the following to adjust the curve:



- Drag the curve until the image looks the way you want it.
- Click a point on the curve, and enter Input and Output values for the point.
- 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.

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 for the selected color in the composite channel (but not in the component channels).
- 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 to select multiple points. Selected points appear filled with black.
- Ctrl-click (Windows) or Command-click (Mac OS) in the grid, or press Ctrl-D (Windows) or Command-D (Mac OS) to deselect all points on the curve. <<***It seems like you can just click in grid without a modifier key; is this true?***>>
- Press arrow keys to move selected points on the curve.
- Press Ctrl+Tab (Windows) or Command+Tab (Mac OS) to move forward through control points on the curve. <<***This does not seem to be working. Is the function still available?***>>

- Press Shift+Ctrl+Tab (Windows) or Shift+Command+Tab (Mac OS) to move backward through control points on the curve.

The following examples show common tonal problems along with the Curves adjustment needed to correct the problem.

<<***ART: Please adapt the color figure from p. 231 in the 5.0 UG. But change caption headings to average key, high key, low key.***>>

The following examples show common color balance problems along with the Curves adjustment needed to correct the problem.

<<***ART: Please adapt the color figure here from p. 232 in the 5.0 UG.***>>

## Using target values to set highlights and shadows (Photoshop)

<<***Levels in IR currently doesn't have this capability. Verify that we won't be adding it.***>>

Professional color technicians typically set the highlights and shadows in an image by assigning their lightest and darkest CMYK ink values to the lightest and darkest areas of detail in the image.

When identifying the lightest and darkest areas of an image, it's important to identify representative highlights and shadows. Otherwise the tonal range may be expanded unnecessarily to include extreme pixel values that don't give the image detail. A highlight area must be a printable highlight, not *specular white*. Specular white has no detail, and so no ink is printed on the paper. For example, a spot of glare is specular white, not a printable highlight.

**To use target values to set highlights and shadows:**

**1** Select the eyedropper tool, and 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 "Making color adjustments" on page 89.)

Opening Levels or Curves activates the eyedropper tool (👉) outside the dialog box. You still have access to the scroll controls and to the hand and zoom tools when using keyboard modifiers.

**3** Do one of the following to identify areas of representative highlights and shadows in the image:

- Move the pointer around the image, and look at the Info palette to find the lightest and darkest areas. (See "Seeing the color values of pixels" on page 91.)
- Turn on Threshold mode in the Levels dialog box to identify the lightest and darkest areas.  
<<Will Threshold mode be in the product?>>

- Drag the pointer in the image, and look at the Curves dialog box to find the lightest and darkest points in the range of values.

**4** Double-click the white eyedropper tool in the Levels or Curves dialog box to display the color picker. Enter the color values you want to assign to the lightest area in the image, and click OK. Follow these guidelines:

- In most situations 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.
- The RGB equivalent is 244, 244, 244.
- The grayscale equivalent is a 4% dot.
- You can reproduce these target values quickly by entering 96 in the Brightness (B) text box.
- 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.

<<ART: Insert top 3 illos of the color figure from p. 230 in the 5.0 UG.>>

**5** In the image, 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.

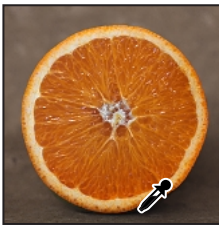
The pixel values throughout the image are adjusted proportionately to the new highlight values. Any pixels lighter than the area you clicked become specular white. The Info palette shows the values both before and after the color adjustment.

6 Double-click the black eyedropper tool in the Levels or Curves dialog box to open the color picker. Enter the values you want to assign to the darkest area in the image, and click OK. Follow these guidelines:

- 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.
- The RGB equivalent is 10, 10, 10.
- The grayscale equivalent is a 96% dot.
- You can reproduce these same values quickly by entering 4 in the Brightness (B) text box.
- 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.

<<ART: Insert bottom 3 illos of the color figure from p. 230 in the 5.0 UG.>>

7 In the image, click the shadow you identified in step 3.



8 Click OK.

**To use Threshold mode to identify the lightest and darkest areas in an image:**

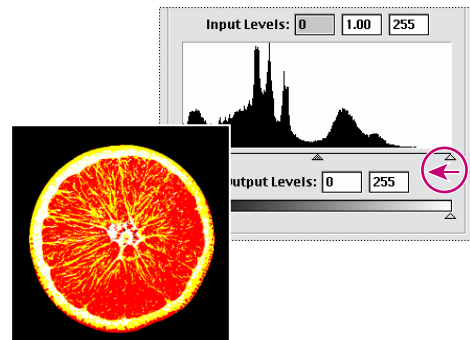
1 Open the Levels dialog box. Make sure the Preview option is deselected.

*Note: On most systems running Windows, Threshold mode works only if the monitor is set to 256 colors. The Video LUT Animation option in the Display & Cursors Preferences dialog box must be on for Threshold mode to work. (See "Previewing color adjustments" on page 90.)*

<<Check the status of Video LUT Animation. It's currently not in display prefs, and I haven't been able to get any info on it.>>

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.



3 Slowly drag the slider to the center of the histogram to identify the light or dark areas in the image. Use these pixels for targeting the black point and white point in your image.

## Adjusting the gamma value of an image (ImageReady)

<<Will this feature be in Photoshop?>>

Gamma measures a monitor's brightness range that is used for the darker tones in an image. A higher gamma value yields an overall darker image. Windows systems use a higher gamma value than Mac OS systems, with the result that the same image is noticeably darker on a Windows system than on a Mac OS system.

<<ART: Insert the color figure from "Adjusting gamma" in IR2 help.>>

Designers, particularly those who use Mac OS systems to create images that will be viewed primarily on Windows systems, must consider the issue of cross-platform gamma.

You can adjust the gamma value of an image automatically so that it will display correctly on the alternative platform, or you can set custom gamma values for the image.

*Note: The Gamma dialog box modifies the pixel values in an image. By contrast, the Preview options adjust the appearance of the image on your monitor but do not change the image's pixel values.*

<<Where in UG are the IR Preview commands covered?>>

### To adjust the gamma value automatically:

- 1 Choose Image > Adjust > 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.
- 4 Click OK.

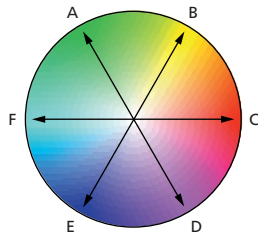
*Note: Images created in Photoshop 4.0 or earlier use Mac OS gamma value by default and should be adjusted for display in Windows (unless gamma was adjusted when the image was created). Images created in Photoshop 5.0 or later use Windows gamma value by default and will be at the correct gamma for display in Windows with no adjustment.*

### To adjust the gamma value manually:

- 1 Choose Image > Adjust > 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.)
- 4 Click OK.

## About the color wheel

Because 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 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.



A. Green B. Yellow C. Red  
D. Magenta E. Blue F. Cyan

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. 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 its proportion (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.

## Using the Color Balance command (Photoshop)

The Color Balance command changes the overall mixture of colors in an image for generalized color correction.

### 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 Open the Color Balance dialog box. (See "Making color adjustments" on page 89.)
- 3 Select Shadows, Midtones, or Highlights to select the tonal range on which you want to focus the changes.
- 4 With RGB images, 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.

<<What, technically, is the difference between lightness, brightness, luminosity?>>

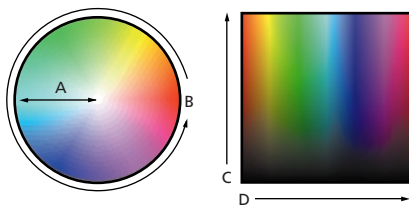
5 Drag a slider toward a color you want to increase in the image; drag a slider away from a color you want to decrease in the image.

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.

6 Click OK.

## Using the Hue/Saturation command

The Hue/Saturation command lets you adjust the hue, saturation, and lightness of individual color components in an image. Adjusting the hue, or color, represents a move around the color wheel. Adjusting the saturation, or purity of the color, represents a move across its radius.



A. Saturation B. Hue C. Brightness D. All hues

You can also use the Colorize option to add color to a grayscale image converted to RGB, or to an RGB image—for example, to make it look like a duotone by reducing its color values to one hue.

### To use the Hue/Saturation command:

1 Open the Hue/Saturation dialog box. (See “Making color adjustments” on page 89.)

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 Choose which colors to adjust:

<<The Edit menu is missing in IR. Please confirm that this is the final behavior.>>

- Choose Master from the Edit menu in the dialog box to adjust all colors at once.

- Choose one of the other preset color ranges listed for the color you want to adjust. An adjustment slider appears between the color bars, which you can use to edit any range of hues. (For information on how to modify the slider’s range, see the instructions later in this section.)

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.



*Original image, and with cyan hue adjusted*

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 to +100.



*Original image, and with decreased saturation (Saturation: -40)*

5 For Lightness, enter a value or drag the slider to the right to increase the lightness or to the left to decrease it. Values can range from -100 to +100.

6 Click OK.

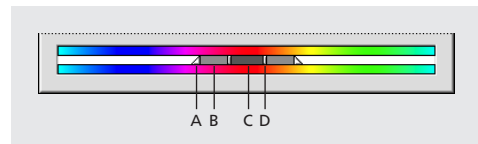
### To modify the range of an adjustment slider (Photoshop):

<<Please confirm this behavior is in Photoshop only>>

1 Choose an individual color from the Edit menu in the dialog box:

2 Do any of the following to the adjustment slider:

- Drag one of the white triangles to adjust the amount of color fall-off without affecting the range.
- Drag one of the light gray bars to adjust the range without affecting the amount of fall-off.
- Drag the dark gray center part to move the entire adjustment slider, selecting a different color area.
- Drag one of the vertical white bars next to the dark gray center part to adjust the range of the color component. Increasing the range decreases the fall-off, and vice versa.
- Ctrl-drag (Windows) or Command-drag (Mac OS) the color bar so that a different color is in the center of the bar.



*A. Adjusts fall-off without affecting range B. Adjusts range without affecting fall-off C. Moves entire slider D. Adjusts range of color component*

If you modify the adjustment slider so that it falls into a different color range, the name 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 dithering in the image.*

**3** To edit the range by choosing colors from the image, select the eyedropper tool (👉) in the dialog box and click in the image. Use the eyedropper + tool to add to the range; use the eyedropper – tool to subtract from the range.

While the 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.

**To colorize a grayscale image or create a monotone effect:**

**1** If you are colorizing a grayscale image, choose Image > Mode > RGB (Photoshop) to convert the image to RGB.

**2** Open the Hue/Saturation dialog box. (See “Making color adjustments” on page 89.)

**3** Select Colorize. 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.

**5** Click OK.

## Using the Replace Color command (Photoshop)

The Replace Color command lets you create a mask around specific colors and then replace those colors in the image. You can set the hue, saturation, and lightness of the area identified by the mask. The mask is temporary.

**To use the Replace Color command:**

**1** Choose Image > Adjust > 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 “About masks” on page 214.
- 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 Click in the image or in the preview box to select the areas exposed by the mask. Shift-click or use the eyedropper + button to add areas; Alt-click (Windows), Option-click (Mac OS), or use the eyedropper – button to remove areas.



*Color changed to mask*

- 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 Drag the Hue, Saturation, and Lightness sliders (or enter values in the text boxes) to change the color of the selected areas.
- 6 Click OK.

## 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.

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 any 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.

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.

### To use the Selective Color 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 Open the Selective Color dialog box. (See "Making color adjustments" on page 89.)
- 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 indicated correction points. For example, a pixel that contains 50% magenta is not at any exact correction point, and so will get a mix of corrections.

<<What is meant here by an “exact correction point”?>>

- 5 Drag the sliders to increase or decrease the components in the selected color.



Use the Info palette to see the before and after color values.

- 6 Click OK.

## Making quick overall adjustments to an image

The Brightness/Contrast, Auto Levels, Auto Contrast, and Variations commands change colors or tonal values in an image but are not as precise or flexible as the high-end color adjustment tools. They provide a simple way to make overall adjustments quickly.

## 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, this command makes the same adjustment to every pixel in the image. The Brightness/Contrast command does not work with individual channels and is not recommended for high-end output.

### To use the Brightness/Contrast command:

- 1 Open the Brightness/Contrast dialog box. (See “Making color adjustments” on page 89.)

- 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.

- 3 Click OK.

## Using the Auto Levels command

The Auto Levels command moves the Levels sliders automatically to set highlights and shadows. It defines the lightest and darkest pixels in each color channel as white and black and then redistributes intermediate pixel values proportionately. Because Auto Levels adjusts each color channel individually, it may introduce color casts.

By default, this feature 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. This ensures that white and black values are based on representative rather than extreme pixel values.

Auto Levels gives good results when an image with an average distribution of pixel values needs a simple contrast adjustment. However, adjusting the Levels or Curves (Photoshop) controls manually is more precise.

**To use the Auto Levels command:**

Do one of the following:

- Choose Image > Adjust > Auto Levels.
- Open the Levels or Curves (Photoshop) dialog box, click Auto, and click OK.

**To change the amount of white and black values clipped:**

- 1 Hold down Alt (Windows) or Option (Mac OS), and click Options in the Levels or Curves (Photoshop) dialog box.
- 2 In the Auto Range 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 image automatically. It maps the lightest and darkest pixels in the image to white and black, which makes highlights appear lighter and shadows appear darker.

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. This ensures that white and black values are based on representative rather than extreme pixel values.

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:**

Choose Image > Adjust > Auto Contrast.

<<ART: Insert the figure from this section in the IR2 help.>>

**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 (Photoshop).

**To use the Variations command:**

- 1 Open the Variations dialog box. (See “Making color adjustments” on page 89.)

**Note:** If the Variations command does not appear in the Adjust submenu, the Variations plug-in module may not have been installed. (See “Using plug-in modules” on page 15.)

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 Show Clipping if you want to display a neon preview of areas in the image that will be clipped by the adjustment—that is, converted to pure white or pure black. Clipping does not occur when you adjust midtones.

*Note: Clipping is 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 Show Clipping is selected, the image may show clipping after an adjustment. This means you have exceeded maximum saturation for the color.

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 “About the color wheel” on page 103.) For example, to subtract cyan, click the More Red thumbnail.

- To adjust brightness, click a thumbnail on the right side of the dialog box.

Each time you click a thumbnail, other thumbnails change. The center thumbnail always reflects the current choices.

6 Click OK.

## 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.

*Note: You can also make color adjustments by blending colors from different channels. See “Mixing color channels” on page 210.*

### Using the Desaturate command

The Desaturate command removes all color values from a color image, converting it to a grayscale image in the same color mode. 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 > Adjust > Desaturate.

<<*ART: Create a figure with the two windows for this? We have a comparison figure for all other commands in this section.*>

### Using the Invert command

The Invert command inverts the colors in an image. You might use this command to make a positive black-and-white image negative or to make a positive from a scanned black-and-white negative.

*Note: Because color film contains an orange mask in its base, the Invert command cannot make negatives and positives from scanned color film.*

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:

Choose Image > Adjust > Invert, or choose Layer > New Content Layer > Invert (Photoshop).

### 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 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 command lets you see before-and-after brightness comparisons.

#### To use the Equalize command:

- 1 Choose Image > Adjust > Equalize.
- 2 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.

## 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.

### To use the Threshold command:

- 1 Open the Threshold dialog box. (See “Making color adjustments” on page 89.)

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.

## 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 Open the Posterize dialog box. (See “Making color adjustments” on page 89.)

- 2 Enter the number of tonal levels you want, and click OK.

## Sharpening an image

*Unsharp masking*, or *USM*, is a traditional film compositing technique used to sharpen edges in an image. The Unsharp Mask filter corrects blurring introduced during photographing, scanning, resampling, or printing. It is useful for images intended for both print and online.


Unsharp Mask locates pixels that differ from surrounding pixels by the threshold you specify and increases the pixels' contrast by the amount you specify. In addition, you specify the radius of the region to which each pixel is compared.

The effects of the Unsharp Mask filter are far 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 272.

#### **To use Unsharp Mask to sharpen an image:**

**1** Choose Filter > Sharpen > Unsharp Mask. Make sure the Preview option is selected.

 *Press on the image in the preview window to see how the image looks without the sharpening. Drag in the preview window to see different parts of the image, and click the + or – to zoom in or out.*


**2** Sharpen the image:

- 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 Radius slider or enter a value to determine the number of pixels surrounding the edge pixels that affect the sharpening. 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.

- 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. To avoid introducing noise (in images with flesh-tones, for example), experiment with Threshold values between 2 and 20. The default Threshold value (0) sharpens all pixels in the image.

 *If applying Unsharp Mask makes already bright colors appear overly saturated, convert the image to Lab mode and apply the filter to the L channel only. This sharpens the image without affecting the color components.*

**3** Click OK.





# Chapter 6: Selecting

**T**o modify part of an image in Adobe Photoshop or ImageReady, you first select the area you want to edit. A selected area is indicated by a dotted selection border, also called a selection marquee. The area outside the selection border is protected while you move, copy, paint, or apply special effects to the isolated area.

You can choose from a variety of specialized tools for creating selection borders. You can also create selections using the pen or shape tools, which produce precise outlines called *paths*. You can make more sophisticated selections using masks. (See “Using Channels and Masks (Photoshop)” on page 205.) For information on editing selections, see “Editing and Retouching” on page 143.

## About selections

Since there are two different types of data in your image, rasterized and vector, you need to use separate sets of tools to make each type of selection. You can select pixels or make non-pixel selections. When you select pixels, you are selecting resolution dependent information in the image.

*<<ref to earlier chapter general discussion bout rasterized vs vector information, may add more here>>*

Additionally, you can also select resolution independent paths and vector objects (or layer masks) in an image using the vector selection tools. (See “Selecting paths and vector objects (Photoshop)” on page 125.)

## Making pixel selections

You can select pixels in an image by dragging with the marquee tools or lasso tools, or by targeting color areas with the magic wand tool or (in Photoshop) the Color Range command. Making a new selection replaces the existing one.

### 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, rounded rectangle marquee (ImageReady), elliptical marquee, or 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, the selection border is dragged from its corner.

**To use the marquee tools:**

1 Select one of the following tools:

- Rectangle marquee (☐) to make a rectangular selection.
- Rounded rectangle marquee (☐) to select a rounded rectangle such as a Web-page button (ImageReady).
- 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 a selection option. (See “Adjusting selections manually” on page 122.)

3 In the options bar, specify a feathering setting. Turn anti-aliasing on or off for the rounded rectangle or elliptical marquee. (See “Softening the edges of a selection” on page 124.)

4 For the rectangle, rounded rectangle, or elliptical marquee, choose a style in the options bar:

- Normal to determine marquee proportions by dragging.
- Constrained Aspect Ratio to set a height-to-width ratio. Enter the values (including decimal values) 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 “About image size and resolution” on page 21.)

5 Do one of the following to make a selection:

- With the rectangle, rounded rectangle, or elliptical marquee, drag over the area you want to select. Hold down Shift as you drag to constrain the marquee to a square or circle. To drag a marquee from its center, hold down Alt (Windows) or Option (Mac OS) after you begin dragging.
- 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. If you have finished drawing the border, drag from inside the selection.*


## Using the lasso, polygon lasso, and magnetic lasso tools

The lasso and polygon lasso tools 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 tools” on page 118.)
- 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 Delete until you’ve erased the desired segment.
- 5 To close the selection border, release the mouse without holding down Alt (Windows) or Option (Mac OS).

**To use the polygon lasso tool:**


- 1 Select the polygon lasso tool () and select options. (See “Setting options for the lasso tools” on page 118.)
- 2 Click in the image to set the starting point.
- 3 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.
- 4 To draw a freehand segment, hold down Alt (Windows) or Option (Mac OS), and drag. When finished, release Alt (Windows) or Option (Mac OS) and the mouse button.
- 5 To erase recently drawn straight segments, press Delete. To erase freehand segments, hold down Delete.

6 Continue to click and Alt-drag (Windows) or Option-drag (Mac OS) to finish selecting.

7 Close the selection border:

- Position the polygon 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 polygon 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 tools” on page 118.)
- 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. 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.
- 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 polygon lasso tool, hold down Alt (Windows) or Option (Mac OS), and click.

**6** To erase recently drawn segments and fastening points, press Delete.

**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 a straight segment, hold down Alt (Windows) or Option (Mac OS), and double-click.

## Setting options for the 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 a selection option. (See “Adjusting selections manually” on page 122.) *<<ED: xrefs in this section are sending people to a third jump away for the answer. Any suggestions?>>*
- 3** Specify feather and anti-aliasing options. (See “Softening the edges of a selection” on page 124.)
- 4** For the magnetic lasso tool (Photoshop), set any of these options:

- To specify a detection width, enter a pixel value between 1 and 40 for Width. The magnetic lasso only detects edges 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 tolerance and higher edge contrast, and trace the border roughly. On an image with softer edges, try a lower tolerance and lower edge contrast, and trace the border more precisely.

- To change the magnetic lasso cursor to indicate the lasso Width value in the options bar, press the Caps Lock key on the keyboard.
- 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 tolerance to narrow.


 While creating a selection, you can press [to decrease the magnetic lasso edge tolerance by 1 pixel; press] to increase the tolerance 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 a selection option. You can create a new selection, add to, subtract from, or restrict the selection. The magic wand cursor changes indicating which option is selected.
- 3 For Tolerance, enter a value in pixels, ranging from 0 to 255. Enter a low value to select colors very similar to the pixel you click or 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 124.)
- 5 To select all areas using the same colors, select Contiguous. Otherwise only the adjacent pixels 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. All adjacent pixels within the tolerance range are selected.

## Using the Color Range command (Photoshop)

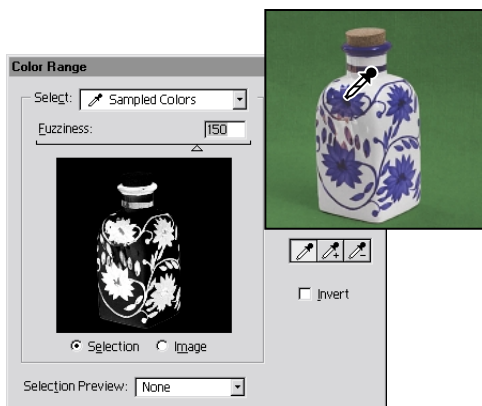
The Color Range command selects a specified color or color subset within an existing selection or an entire image. If you want to replace a selection, be sure to deselect everything before applying this command.

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 eyedropper 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.

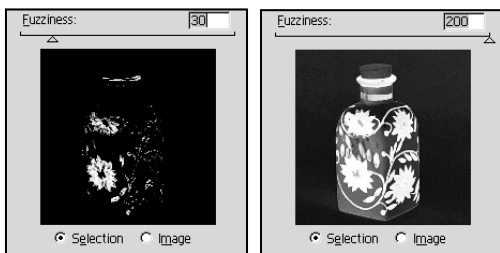
&lt;&lt;ART: keep; check UI&gt;&gt;



Sampling color

5 Adjust the range of colors by using the Fuzziness slider or 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 (similar to the Tolerance option for the magic wand and paint bucket options).


&lt;&lt;ART: keep; check UI&gt;&gt;



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 “Creating temporary masks in Quick Mask mode” on page 215.)

8 To revert to the original selection, hold down Alt (Windows) or Option (Mac OS), and click Reset.

9 Click OK to make the selection.

#### To select a 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. See “Color gamuts (Photoshop)” on page 49.)

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 “Creating temporary masks in Quick Mask mode” on page 215.)

5 To revert to the original selection, hold down Alt (Windows) or Option (Mac OS), and click Reset.

6 Click OK to make the selection.

***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)**

In ImageReady, you can convert a slice into a selection.

#### **To create a selection from a slice:**

- 1 Create a slice. (See “Creating and viewing slices” on page 300.)
- 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 in two dimensions” on page 161.)

### **Moving, hiding, or inverting a selection**

You can move a selection border around the image, hide a selection border, and invert a selection so that the unselected part of the image is selected instead.

#### **To move a selection border:**

- 1 Using any selection tool, position the pointer inside the selection border.

2 Drag the border to enclose a different area of the image. You can drag a selection border 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.

**To control the movement of a selection:**

- To constrain the direction to a multiple 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 a selection border:**

Choose View > Show Selection. This affects the current selection only. The selection border reappears when you make another selection.

**To select the unselected parts of an image:**

Choose Select > Inverse.



*You might use this option to select an object placed against a solid-colored background. For example, you could first select the background using the magic wand tool and then invert 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 124.)

**To add to a selection or select an additional area:**

- 1 Make a selection.
- 2 Using any selection tool, do one of the following:
  - Hold down Shift (a plus sign appears next to the pointer), and drag to add another selection.
  - Select the Add to Selection option (**icon**) in the options bar, and drag.

**To subtract from a selection:**

- 1 Make a selection.
- 2 Using any selection tool, do one of the following:
  - Hold down Alt (Windows) or Option (Mac OS) (a minus sign appears next to the pointer), and drag to add another selection.
  - Select the Subtract from Selection option (**icon**) in the options bar, and drag.

**To select only an area intersected by other selections:**

- 1 Make a selection.
- 2 Using any selection tool, do one of the following:
  - Hold down Alt+Shift (Windows) or Option+Shift (Mac OS) (a cross appears next to the pointer), and drag over the portion of the original selection that you want to select.



- Select the Restrict Selection option (icon) in the options bar, and drag.

## 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 16, and click OK.

The border is increased or decreased by the specified number of pixels. Any portion of the selection border running along the image'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 64 pixels for the border width of the new selection, and click OK.

The new selection frames the original selected area.

The Border command always creates an anti-aliased selection. (See “Softening the edges of a selection” on page 124.) To paint a hard-edged border around a selection, use the Stroke command. (See “Filling and stroking selections and layers” on page 191.)

### To expand a selection to include areas with similar color:

Do one of the following:

- (Photoshop) Choose Select > Grow to include 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 that are 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 16, 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 “About image size and resolution” on page 21.)

## 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, polygon lasso, magnetic lasso, rounded rectangle marquee, elliptical marquee, and magic wand tools. (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, lasso, polygon lasso, or 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, or copy the selection.

### To use anti-aliasing:

- 1 Select the lasso, polygon lasso, magnetic lasso, rounded rectangle marquee, elliptical marquee, or magic wand tool.
- 2 Select Anti-aliased in the options bar.

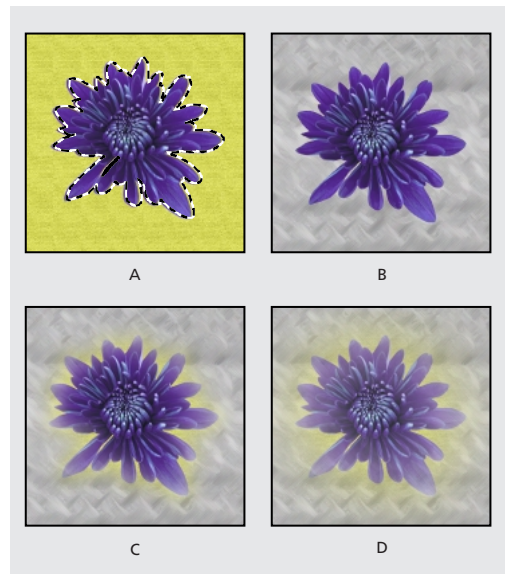
### To define a feathered edge for a selection tool:

- 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 1 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 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.



A. Original selection B. Feather: 0 C. Feather: 10  
D. Feather: 30

## Selecting paths and vector objects (Photoshop)

You can select paths and vector objects by clicking with the path component selection tool or the direct selection tool. <<may need to add something about layer clipping path, the proposed new name for vector mask>>

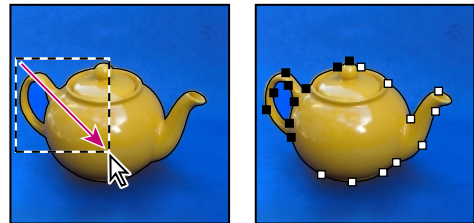
Selecting a path or segment displays all of the anchor points on the selected portion, including any direction lines and direction points if the selected segment is curved. Direction points appear as filled circles, selected anchor points as filled squares, and unselected anchor points as hollow squares.

### To select a path or vector object:

- 1 Select the path name in the Paths palette, or select the layer containing the vector object in the Layers palette.
- 2 Do one of the following:
  - To select the entire path or subpath, select the path component selection tool (**icon**), and click anywhere inside the path. If the path consists of several subpaths, only the subpath 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 segment of the path, select the direct selection tool (**⌘**), and click one of the segment's anchor points or drag a marquee over part of the segment. <<**Currently you have click where an anchor point is, even though you can't see it. I hope this will change. (You used to be able to click anywhere on the segment.) Check again after 112.**>>



Marquee-drag to select segments.

**💡** When the direct selection tool is selected, you can select the entire path or subpath by holding down **Alt** (Windows) or **Option** (Mac OS) and clicking inside the path.

- 3 To add selections, select the path component selection tool or the direct selection tool, then hold down **Shift** while selecting additional paths or segments.

**💡** 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 add, subtract, restrict, or invert the filled areas in selections:**

1 Using the path component selection tool, choose one of the following options in the options bar, then drag a marquee to select existing path areas. <<verify later than bld 112: effects fill of selections, rather than which anchor pts or objects are selected. ED: leave with caps or change to lowercase?>>

- Add to Path Area adds the area in the new selection.
- Subtract from Path Area removes the overlapping area in a new selection from the existing path selection.
- Restrict Path Area, restricts the area to the overlapped range of the new selection and the existing path selection.
- Invert Path Area, inverts the overlap area of the new path selection within the new selection.

**Drawing paths for precise selections (Photoshop)**

A *path* is any line or shape you draw using the pen, magnetic pen, freeform pen or the shape tools (the rectangle, ellipse, polygon, line, or custom shape tool). Paths provide an effective way to draw precise selection borders. Unlike the bitmap shapes drawn by the pencil or other painting tools, paths are vector objects that contain no pixels. As a result, with the exception of clipping paths, paths remain separate from the bitmap image and do not print. (See “About bitmap images and vector objects” on page 19.) You can also use the pen tools to create a vector mask. (See “Adding layer masks” on page 239.)



*The pen tool lets you create straight lines and smooth flowing curves with greater precision than is possible with the freeform pen or magnetic pen tool. For most users, the pen tool provides the best control and greatest accuracy for drawing.*

Once you have created a path, you can save it in the Paths palette, convert it to a selection border, or fill or stroke the path outline with color. In addition, you can convert a selection to a path.

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 clipping paths” on page 395.)

## Using the Paths palette

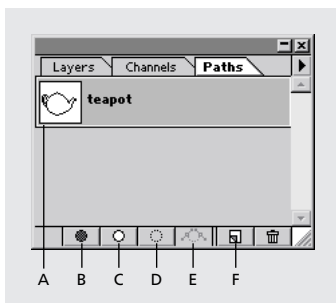
The Paths palette lists the name of each saved path and displays a thumbnail of its contents.

Decreasing the size of thumbnails or turning them off lets you view more paths at one time in the palette and can improve performance. To view a path, you must first select the path name in the Paths palette.

### To display the Paths palette:

Choose Windows > Show Paths.

<<ART keep; Reshoot UI>>



A. Selected path B. Fill Path C. Stroke Path  
D. Make Selection E. Make Work Path F. New Path

### 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 choose Turn Off Path from the Paths palette menu.

### 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 solid line appears in the desired location, release the mouse button.

### To show or hide a path:

Select the path name in the Paths palette, and choose View > Show Path or View > Hide Path to toggle the command.

## Creating, saving, and deleting paths

Paths can be created in two ways:

- You can create a new path in the Paths palette and then begin drawing. The path contents are saved automatically.
- You can select a pen or shape tool, choose the path option in the options bar and begin drawing. If no path name is selected, the new path appears as a temporary *work path* in the Paths palette. You must save the work path to avoid losing its contents. If you deselect the work path without saving and then start drawing again, a new work path will replace the first one.

Paths saved with an image appear when you open it again. In Windows, the Photoshop, JPEG, DCS, EPS, PDF, and TIFF formats support paths. In Mac OS, all available file formats (except GIF89a Export) support paths.

#### 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, and click OK.

#### To rename a saved path:

- 1 Double-click the path's name in the Paths palette.
- 2 Enter a new name in the Rename Path dialog box, and click OK.

#### To delete a path:

- 1 Select the path name in the Paths palette.

2 Do one of the following:

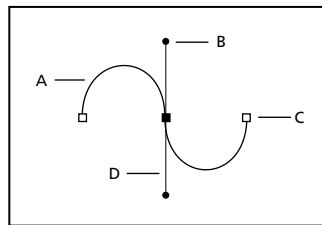
- Drag the path to the trash button at the bottom of the Paths palette.
- Choose Delete Path from the Paths palette menu.
- Click the trash button at the bottom of the Paths palette, and click Yes.



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.

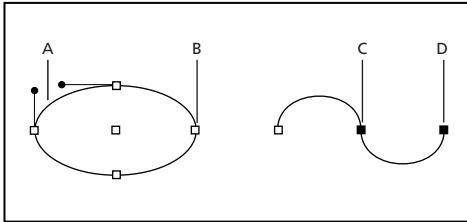
### About anchor points, direction lines, and direction points

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.



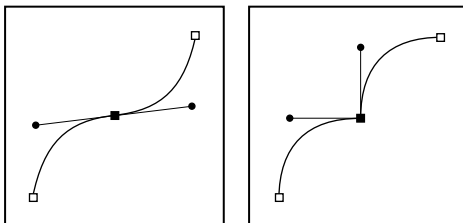
A. Curved segment B. Direction point  
C. Anchor point D. Direction line

A path can be *closed*, with no beginning or end (for example, a circle), or *open*, with distinct *endpoints* (for example, a wavy line).



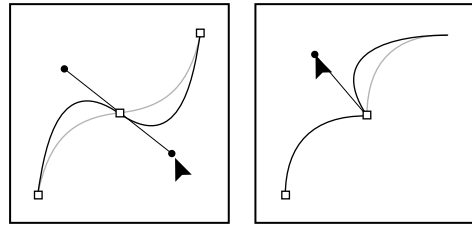
*Closed and open paths*  
**A.** Selected line segment **B.** Unselected anchor point  
**C.** Selected anchor point **D.** Selected endpoint

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.

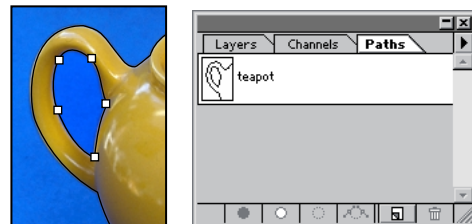


*Adjusting smooth point and corner point*

### About subpaths

A path does not have to be all one connected series of segments. It can contain more than one distinct and separate *subpath*.

<<ART keep; reshoot UI, reword caption>>




*Original path, and with subpath added*

## Drawing with the freeform pen tool

The freeform pen tool lets you create paths or vector masks as if you were drawing with a pencil on paper. Anchor points are added to the path automatically as you draw. You do not determine where the points are positioned, though you can adjust them once the path is complete.

(See “Adjusting paths (Photoshop)” on page 135.)

### To draw with the freeform pen tool:


- 1 Select the freeform pen tool (.
- 2 In the options bar, select shape layer (icon) to create a vector mask or work path (icon) to create a path. (See “Creating shape layers or paths” on page 134.) <<xref destination?>>
- 3 For Curve Tolerance, enter a value between 0.5 and 10.0. This option controls how sensitive the final path is to the movement of your mouse or stylus. A higher Curve Tolerance value results in a simpler path with fewer anchor points.
- 4 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.
- 5 To continue the existing freehand path, position the freeform pen pointer on an endpoint of the path, and drag.
- 6 To complete the path, release the mouse. To create a closed path, drag over the initial point of the path (a circle appears next to the pointer when it is aligned), and release the mouse.

See “About anchor points, direction lines, and direction points” on page 128 for more on closed and open paths.

## Drawing with the magnetic pen tool

The magnetic pen tool 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 magnetic pen tool:

- 1 Select the magnetic pen tool (.
- 2 Specify tool options. (See “Specifying options for the magnetic pen tool” on page 131.)
- 3 Click in the image to set the first fastening point.
- 4 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 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 tool adds fastening points to the border to anchor previous sections.

- 5 If the border doesn’t snap to the desired edge, click once to add a fastening point manually, to keep the border from moving. Continue to trace the edge and add fastening points as needed.
- 6 To turn off magnetic properties temporarily, do one of the following:
  - Hold down Alt (Windows) or Option (Mac OS), and drag with the mouse button depressed to draw a freehand path.
  - Hold down Alt (Windows) or Option (Mac OS), and click to draw straight segments.



**7** Complete the path:

- Press Enter or Return 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.

**8** As you continue to draw, in the options bar, specify a path area option. You can create a new path, add to, subtract from, or restrict the path area.

See “About anchor points, direction lines, and direction points” on page 128 for more on closed and open paths.

**Creating a shape or a path on a layer**

Before you start drawing, you need to specify whether you are creating a rasterized shape on the current layer, a new layer with a vector mask, or a new path. You use the pen tool, magnetic pen tool, freeform pen tool or the shape tools (rectangle, ellipse, polygon, line, or custom shape tool) to create either a new layer with a vector shape or a path. The pen tools, along with the shape tools, can then be used to edit the vector shape or path. You can also use the shape tools to create a rasterized shape on the current layer.

<<*ED: perhaps move this elsewhere? Add fill region to head?*>>

**To specify a fill region, vector layer or path:**

**1** If needed, select the pen tool (🖋), magnetic pen tool (🖋), freeform pen tool (🖋), rectangle tool (icon), ellipse tool (icon), polygon tool (icon), line tool (icon) or custom shape tool (icon).

**2** To create a vector shape, select shape layer (icon) in the options bar. The new layer is created above the currently selected layer once you click to start creating the vector shape.

**3** To create a path, select work path (icon) in the options bar. The path is created in the current layer.

**4** To create a rasterized shape using the shape tools, select fill region (icon) in the options bar. A rasterized shape is created in the current layer.

**5** When you are finished creating the shape or path, click Dismiss or press Enter or Return to dismiss the editing tools.

**Specifying options for the magnetic pen tool**

You can specify how the magnetic pen tool responds to movements of the mouse or stylus, how frequently anchor points are set, and whether you are creating a shape layer or editing a path.


**To specify magnetic pen tool options:**

**1** If needed, select the magnetic pen tool.

**2** Select the shape layer (icon) to create a layer, or select the work path (icon) to create a path. (See “Creating shape layers or paths” on page 134.) <<*xref destination?*>>

**3** For Curve Tolerance, enter a value between 0.5 and 10.0. This option controls how sensitive the final path is to the movement of your mouse or stylus. A higher tolerance results in a simpler path with fewer anchor points.

**4** To specify a detection width, enter a pixel value between 1 and 40 for Edge Tolerance. The magnetic pen only detects edges within the specified distance from the pointer.

 *While creating a path, press [to decrease the magnetic pen width by 1 pixel; press] to increase the pen width by 1 pixel.*

**5** To specify the rate at which the pen sets anchor points, enter a value between 0 and 100 for Frequency. A higher value anchors the path in place more quickly.

**6** 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 tolerance to narrow.


**7** To automatically add or delete anchor points while you are creating a path, select or deselect the Auto Add/Delete option.

**8** If you are creating a shape layer, specify a mode for the layer. (See “Specifying layer blending modes” on page 236.)

## Drawing straight paths with the pen tool

The pen tool lets you draw paths with greater precision that you can with the freehand or magnetic pen tool. The simplest path you can draw with the pen tool is a straight line, made by clicking to create anchor points. You can draw a path or draw straight lines used to create a vector mask.

### To draw straight paths with the pen tool:

**1** Select the pen tool (.

**2** Select shape layer (icon) to create a layer, or select work path (icon) to create a path. (See “Creating shape layers or paths” on page 134.) <<xref destination?>>

**3** If you want to preview path segments as you draw, select Rubber Band in the options bar. After you define at least one anchor point for a path, Photoshop will display the next proposed segment as you move the pointer in the image. The segment won’t become permanent until you click.

**4** Position the pen pointer where you want the straight line to begin, and click to define the first anchor point. The anchor point remains selected (solid) until you define the next point.

**5** Click again where you want the first segment of the straight line path to end. Hold down Shift as you click to constrain the angle of the segment to a multiple of 45°.

**6** Continue clicking to set anchor points for additional straight 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.

**7 Complete the path:**

- To end an open path, click the pen tool in the toolbox. Or hold down the Ctrl key (Windows) or Command key (Mac OS), and then click anywhere 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.

See “About anchor points, direction lines, and direction points” on page 128 for more on closed and open paths.

**Drawing curved paths**

You create curves by dragging the pen tool in the direction you want the curve to go.

***Note:** Before you draw curves with the pen tool, it is important to understand how paths are constructed. (See “About anchor points, direction lines, and direction points” on page 128.)*

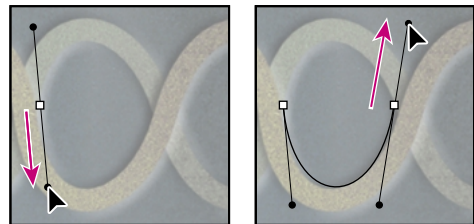
**To draw a curved path:**

- 1 Select the pen tool (P).
- 2 Specify whether you are creating a layer or a path. (See “Creating a shape or a path on a layer” on page 131.)
- 3 If you want to preview path segments as you draw, select Rubber Band in the options bar. After you define at least one anchor point for a path, Photoshop will display the next proposed segment as you move the pointer in the image. The segment won’t become permanent until you click.

**4** Position the pointer where you want the curve to begin. Hold down the mouse button. The first anchor point appears, and the pointer changes to an arrowhead.

**5** 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°.

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.

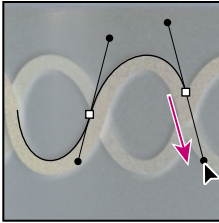


*Drag in direction of curve to set first anchor point. Drag in the opposite direction to complete the curve segment.*

**6** Position the pointer where you want the curve segment to end, press the mouse button, and drag in the opposite direction to complete the segment.

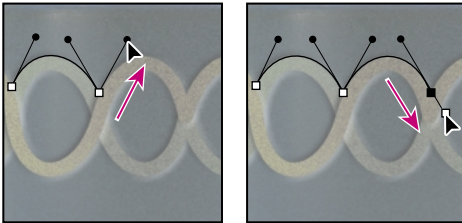
**7** Do one of the following:

- 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 curve to create the next segment.

- To change the direction of the curve sharply, release the mouse button, press Alt (Windows) or Option (Mac OS), and then drag 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.



Press Alt/Option, and drag direction point toward the curve. Release the key, and drag in opposite direction.

### 8 Complete the path:

- To end an open path, click the pen tool in the toolbox. Or hold down the Ctrl key (Windows) or Command key (Mac OS), and then click anywhere away from the path.

- To close the path, position the pointer over the first anchor point. A small loop appears next to the pointer when it is positioned correctly. Click or drag to close the path.

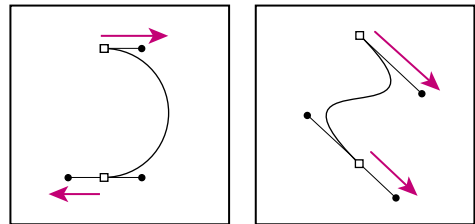
See “About anchor points, direction lines, and direction points” on page 128 for more on closed and open paths.

### Tips for drawing curves

<<This section could be subordinate to the section on drawing curves.>>

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 opposite direction to create a smooth curve. Drag in 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. Use as few anchor points as possible, placing them as far apart as possible.

## Adjusting paths (Photoshop)

After you have drawn a path, you can move, reshape, or erase individual segments in it, 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 path or segment. See “Applying a transformation” on page 162.

<<Might want to refer to earlier section on selecting paths and vectors.>>


### Moving, reshaping, and deleting segments

You can move, reshape, or delete one or more segments on a path.

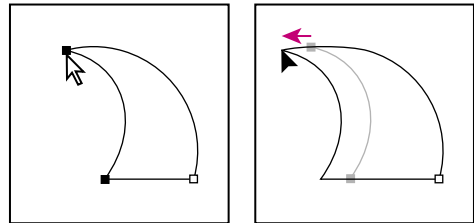
#### To move a straight segment:

- 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.

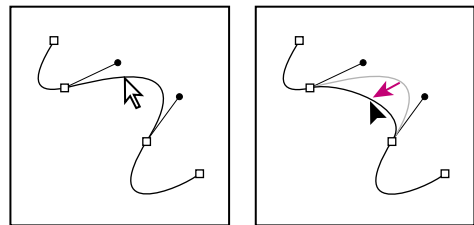
- 2 Drag the selected anchor points or segments to new positions. Hold down Shift as you drag to constrain the movement to multiples of 45°.



Select points anchoring curve. Then drag to move curve.

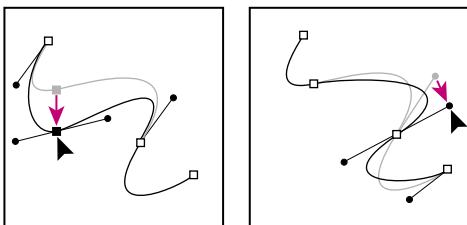
#### To reshape a curved segment:

- 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 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 subpath.

<<The way this tool works now, you can't select a single segment--only the whole path. So this deletes the path, which can't be right. Check back.>>

### Moving, reshaping, copying, and deleting paths

You can reposition a path anywhere within an image. You can copy paths within an image or between two Photoshop images. Using the path component selection tool, you can merge overlapping paths into a single path.

You can also use the Copy and Paste commands to duplicate paths, between a Photoshop image and an image in another application, such as Adobe Illustrator, Adobe Streamline™, or Adobe Dimensions®.

#### To move a path:

- 1 Select the path name in the Paths palette, and use the direct selection tool (⌘) to select the path in the image.
- 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.

**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:

- 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 138.

#### To merge overlapping paths:

- 1 Using the path component selection tool (<<icon>>), marquee-drag to select the overlapping paths you want to merge.
- 2 Click Simplify in the options bar to create a single shape from the overlapping shapes.

**To copy a path:**

Do any of the following:

- To copy a path as you move it, select the path name in the Paths palette, and use the direct selection tool to select the path in the image. Hold down Alt (Windows) or Option (Mac OS) as you drag the path.
- To copy a path without renaming, drag the path 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, and click OK.

**To copy paths between two Adobe Photoshop files:**

- 1 Open both images.
- 2 Use the direct selection tool to select the path in the source image you want to copy.
- 3 Copy the path:
  - Drag the path from the source image to the destination image. The path is copied to the active path in the Paths palette.
  - Drag the path from the source image's Paths palette into the destination image. The path is copied to the active path in the Paths palette.
  - In the source image, choose Edit > Copy to copy the path, and in the destination image choose Edit > Paste.

**Aligning and distributing paths and vector objects**

You can both align and distribute paths and vector objects. For example, you can align the left edges of several vector objects or paths and distribute their horizontal centers.

**To align or distribute paths or vector objects:**

1 Using the path component selection tool (icon), marquee-drag to select the paths or vector objects you want to align, then select one of the alignment options from the options bar.

- Top to align the top edges on the selected objects.
- Vertical Center to align the vertical centers of the selected objects.
- Bottom to align the bottom edges on the selected objects.
- Left to align the left edges on the selected objects.
- Horizontal Center to align the horizontal centers of the selected objects.
- Right to align the right edges on the selected objects.

2 Select the paths or objects you want to distribute, then select one of the distribute options from the options bar.


- Top to distribute the top edges on the selected objects.
- Vertical Center to distribute the vertical centers of the selected objects.
- Bottom to distribute the bottom edges on the selected objects.

- Left to distribute the left edges on the selected objects.
- Horizontal Center to distribute the horizontal centers of the selected objects.
- Right to align the right edges on the selected objects.


## Adding, deleting, and converting anchor points

The add anchor point and delete anchor point tools let you add and delete anchor points from a path. The convert direction point tool lets you convert a smooth curve to a sharp curve or to a straight segment, and vice versa.

### To add an anchor point:


- 1 Select the add anchor point tool ()<sup>+</sup>, 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:
  - Click to add an anchor point without changing the shape of the segment.
  - 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 ()<sup>-</sup>, 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.

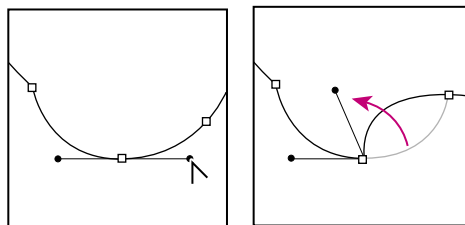
### To convert between a smooth point and a corner point:

- 1 Select the convert anchor point tool ()<sup>↔</sup>, and position the pointer over the anchor point you want changed.

 *To activate the convert anchor 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:

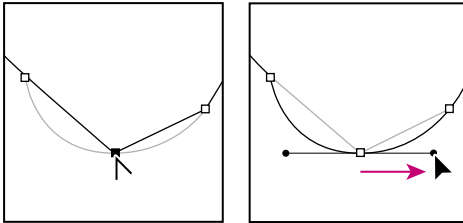
- To convert a smooth point to a corner point without direction lines, click the smooth anchor point.
- To convert a smooth point to a corner point with direction lines, make sure the direction lines are visible. Then drag a direction point to break the pair of direction lines.



*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.

## Adding color to paths


You can add color values to a path by filling or stroking it.

### Filling paths with color

The Fill Path command lets you fill a path with a specified color, a state of the image, or a pattern.

**Important:** When you fill a path, the color values appear on the active layer. Make sure the layer you want is active before beginning.

#### 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.

- Choose Fill Path from the Paths palette menu. If the selected path is a subpath, this command changes to Fill Subpath.

**3** For Use, choose the contents for the fill. (See “Filling and stroking selections and layers” on page 191.)

**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 188.)

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** Select Preserve Transparency to limit the fill to layer areas that contain pixels. (See “Preserving a layer’s transparency” on page 232.)

**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.

See “Softening the edges of a selection” on page 124 for more on these options.


**8** Click OK.

## Stroking to paint a path border


The Fill Path command lets you paint the border of a path.

**Important:** *When you stroke a path, the color values appear on the active layer. Make sure the layer you want is active before beginning.*

### 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 thickness of the stroke.

### 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. You must specify the tool's settings before opening the Stroke Path dialog box. (See "Retouching images" on page 169, and "Using the painting tools" on page 173, for information on specific tool settings.)
- 3 Stroke the path:
  - Alt-click (Windows) or Option-click (Mac OS) the Stroke Path button () at the bottom of the Paths palette.
  - Choose Stroke Path from the Paths palette menu. If the selected path is a subpath, 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.


## Converting between paths and selection borders

Because of their smooth outlines, paths can be converted 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 that overlaps a selected area 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 Convert the path:
  - Click the Make 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 To combine the path with a selection, first make the selection using a selection tool.
- 2 Select the path in the Paths palette.
- 3 Start converting the path:
  - Alt-click (Windows) or Option-click (Mac OS) the Make Selection button () at the bottom of the Paths palette.
  - Choose Make Selection from the Paths palette menu.

**4** 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. See “Softening the edges of a selection” on page 124 for more on these options.

**5** 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 original 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.

**6** 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 current Make Work Path tolerance:**

- 1 Select the path in the Paths palette.
- 2 Click the Make Work Path () button at the bottom of the Paths palette.

**To convert a selection to a path and specify tolerance:**

- 1 Make the selection.
- 2 Start converting the selection:
  - Alt-click (Windows) or Option-click (Mac OS) the Make Work Path () button at the bottom of the Paths palette.
  - Choose Make Work Path from the Paths palette menu.
- 3 Enter a Tolerance value.

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 you have problems printing the image, use a higher tolerance value. (See “Printing clipping paths” on page 396.)

- 4 Click OK. The converted selection appears as a work path at the bottom of the Paths palette.



# Chapter 7: Editing and Retouching

**Y**ou can edit and retouch images in many ways. For example, you can move and copy selections within and between images; scale, rotate, or flip selections or images; and sample part of an image and paint with it. You can use the History feature to go back to a previous state.

Keep in mind that pixels beyond the borders of the visible canvas cannot be edited or retouched. However, you can use the move tool or selection arrows to move these pixels back onto the visible canvas, you can modify or reposition them using any of the Transform commands, or you can increase the canvas size to incorporate them.

## 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 during any point in the current work session, see “Reverting to any state of an image” on page 144.

### To undo the last performed operation:

Choose Edit > Undo.

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

### To free memory used by the Undo command, the History palette, or the Clipboard:

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, and cannot be undone. For example, choosing Edit > Purge > Histories deletes all history states from the History palette. Use the Purge command when information held in memory is so large, Photoshop cannot perform the next operation.*

### To reverse all changes made to the image since it was last saved:

Choose File > Revert.

### 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 148.)
- Use the eraser tool () with the Erase to History option selected. (See “Using the eraser tool” on page 176.)

- 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 191.)

*Note:* To restore the image with a snapshot of the initial state of the document, make sure that the Automatically Create First Snapshot option is on.

## Reverting to any state of an image

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 these states, and the image will revert to how it looked when that change was first applied. You can then work from that state.

### About 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.

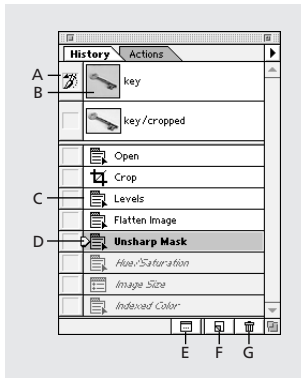
- By default, the History palette lists the previous 20 states. Older states are automatically deleted to free more memory for Photoshop. To keep a particular state throughout your work session, make a snapshot of the state.

For more information on making snapshots, see “Making a snapshot of an image (Photoshop)” on page 147.

- 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. (See the procedure on specifying history options “Setting history options (Photoshop)” on page 146.)
- 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. (See “Correcting mistakes” on page 143.)

- 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.

#### <<Art: Reshoot UI>>



- A. Sets the source for the history brush  
 B. Thumbnail of a snapshot  
 C. History state D. History state slider  
 E. Create new document from current state button  
 F. Create new snapshot button G. trash button

## 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.

### To display the History palette:

Choose Window > Show History.

### 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 to move to the next or previous state.

- (Photoshop) Press Shift+Ctrl+Z (Windows) or Shift+Command+Z (Mac OS) to move to the next state.

- (Photoshop) Press Alt+Ctrl+Z (Windows) or Option+Command+Z (Mac OS) to move to the 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.
- 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. This action cannot be undone.
- Choose Edit > Purge > Histories to purge the list of states from the History palette for all open documents. This action cannot be undone.

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


Choose Clear Undo/Redo History from the History palette menu. 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'll save and save each in a separate file. When you reopen your original file, also open the other saved files. 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 other 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 Specify the options:

- For Maximum History Items, enter the maximum number of states that can be listed on the History palette.

*Note:* This number is also limited by the size of the image, the type of changes you make to it, and the amount of memory available to Photoshop.

- Select Automatically Create First Snapshot to automatically create a snapshot of the initial state of the image when the document is opened.
- Select 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 non-linear way you can select a state, make a change to the image, and delete just that state. The change will be inserted into the list of states, without deleting the states after it. This gives greater flexibility, but is less clearly organized.

- 3 Click OK.



## 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.


**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.*

Snapshots let you do the following:

- Switch repeatedly between several states. By taking a temporary snapshot of a state, you can keep that state for the entire work session, even if the original state is deleted from the list of states in the History palette.
- Give a unique name to states to make them easier to identify.
- Experiment more freely. For example, you may want to compare two different techniques for achieving a similar effect. You can take a snapshot before and after trying the first technique. You can then select the first snapshot, try the second technique on it, and then compare snapshots of each technique.

- Take a snapshot before creating or applying an action. Then you can recover your work more easily if you decide later you don't like the action. Each step in an action is added to the list of states on the History palette. An action with many steps could scroll the current states off the palette, so that you could not return to any of them. Using the Undo command lets you undo only one step and state. By making a snapshot first, you can select and redisplay the pre-action image.

### To create a snapshot:

- 1 Select a state.
- 2 Click the New Snapshot button () on the History palette, or choose New Snapshot from the History palette menu.
- 3 Enter the name of the Snapshot in the Name text box.
- 4 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.
- 5 Click OK.

### 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 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. 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 works similarly to the clone stamp tool, but on any state or snapshot of the image, not just the current one. (See “Painting with a sample of an image” on page 167.)

**To paint with a state or snapshot of an image:**

- 1 Select the history brush tool (🖌).
- 2 Specify the opacity and blending mode. (See “Setting options for painting and editing” on page 188.)

- 3 Choose a brush size. (See “Customizing the brushes set” on page 185.)


- 4 If desired, select Impressionist to paint with an “impressionistic” copy of the source state or snapshot. This option drags and smears the pixels as you paint.

- 5 In the History palette, click the left column of the state or snapshot to use as the source for the history brush tool.

- 6 Drag to paint with the history brush tool.


**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 copy.
- 2 Choose Image > Duplicate.
- 3 Enter a name for the duplicated image.
- 4 To duplicate the image without layers, select 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 image (ImageReady):**

- 1 Open the image you want to copy.
- 2 Do one of the following:
  - To duplicate an original image, select the Original tab at the top of the image window. Hold down Alt (Windows) or Option (Mac OS) and drag the Original tab from the image window; or choose Image > Duplicate, name the duplicate, specify whether to flatten the layers, and click OK.
  - To duplicate an optimized image, select the Optimized tab at the top of the image window. Then hold down Alt (Windows) or Option (Mac OS) and drag the Optimized tab from the image window; or choose Image > Duplicate Optimized, 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, the measure tool, guides, and the grid**

Rulers, the measure tool, guides, and the grid help you position images or elements precisely across the width or length of an image. <<monitor uber hide/show feature, may need to adjust this section>>

*Note: You can also align and distribute parts of an image using the Layers palette. (See “Moving the contents of layers” on page 230.)*

**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 > Show Rulers or Hide Rulers.

**To change the rulers' zero origin:**

- 1 To snap the ruler origin to guidelines or gridlines (Photoshop), choose View > Show Rulers or View > Snap to Grid.
- 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. A set of cross hairs appears while you drag, marking the new origin on the rulers.

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

**To change the rulers' settings (Photoshop):**

- 1 Do one of the following:
  - Double-click a ruler.
  - Choose Edit > Preferences > Units & Rulers.

2 For Units, choose a unit of measurement.

*Note: Changing the units on the Info palette changes the units on the rulers to match them.*

3 For Width and Gutter, enter values for the column size. You also can change the units.

Some layout programs use the column width setting to specify the display of an image across columns. The Image Size and Canvas Size commands also use this setting. (See “Changing the print dimensions and resolution of an image (Photoshop)” on page 30 and “Changing the size of the work canvas” on page 42.)

4 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.

5 Click OK.

### 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 non-printing line is drawn and the Info palette shows the following information:

- The starting location (X and Y).
- The horizontal (W) and vertical (H) distances traveled from the  $x$  and  $y$  axes.
- The total distance traveled (D).
- The angle measured relative to the axis (A).


- Optionally, set a second measuring line to create a protractor. This lets you measure angles separated from the  $x$  and  $y$  axes, and view two distances traveled (D1 and D2).

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 149. For information on applying the values made by the measure tool to the Numeric Transform dialog box, see “Transforming numerically” on page 164.


#### 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. 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.

## 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.

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

<<*monitor uber hide/show feature add xref to primary discussion*>>

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.

### To show or hide guides:

Choose View > Show Guides.

### To show or hide the grid (Photoshop):

Choose View > Show Grid.

<<*uber hide xref here to chapter 1?*>>

### To place a guide:

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

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

2 Create a guide:

- Drag from the horizontal ruler 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.

The pointer changes to a double-headed arrow (icon) 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.

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

3 Move the guide:

- 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 turn snapping to guides on or off:**

Choose View > Snap to Guides.

**To turn snapping to the grid on or off (Photoshop):**

Choose View > Snap to Grid.

**To set guide and grid preferences (Photoshop):**

- 1 Choose Edit > Preferences > Guides & Grid.
- 2 For Color, choose a color for the guides, the grid, or both. If you choose Custom, click the color box, choose a color as described in “Using the Color palette” on page 196, and click OK.
- 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 up into even sections. For example, choosing 25 for the Percent option creates an evenly divided 4 by 4 grid.

- 5 Click OK.

## 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.

**To specify move tool options:**

- 1 Select the move tool (↔).
- 2 Select any of the following:
  - Pixel Doubling (Photoshop) to speed the preview of the move tool’s effect 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 tool.
  - Auto Select Layer to select the topmost layer that has pixels under the move tool, rather than the selected layer.

**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 (✎), direct-selection tool (⌘), hand tool (☞), magnifying glass tool (🔍), or 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.
- Select the layer you want to move. Then drag the layer to a new position.

**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.

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 31.)

These are the copy and paste commands you can use:

- 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.
- (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 “Using layer masks” on page 239.)

**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 (⇧+M), 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 (Windows) or Option (Mac OS), and press an arrow key.
- To copy the selection and offset the duplicate by 10 pixels, press Alt+Shift (Windows) Option+Shift (Mac OS), and press an arrow key.

As long as you hold down Alt (Windows) or Option (Mac OS), each press of an arrow key creates a copy of the selection and offsets it by the specified distance from the last duplicate.

**To paste one selection into another (Photoshop):**

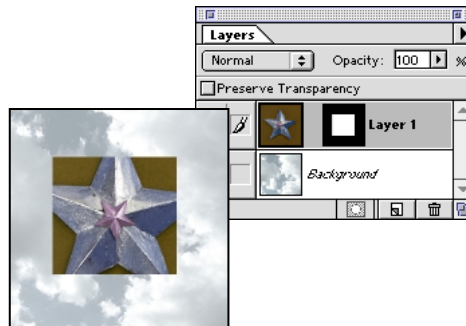
1 Cut or copy the part of the image you want to paste.

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.

<<ART: keep, reshoot UI>>



Source selection pasted into destination selection

For more information on editing layer masks, see “Applying and discarding layer masks” on page 243.

4 Select the move tool (⇧+M), 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 artwork 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.)

In Mac OS, the application must support Mac OS Drag Manager, and you must be running System 7.0 or higher. For versions earlier than System 7.5, you must also be running the Drag Manager Extension.

Dragging vector artwork from Adobe Illustrator or from other applications that use the Illustrator Clipboard converts the artwork to a bitmap image (also called *raster* format). To copy the artwork as a path in Photoshop, hold down Ctrl as you drag.

## 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 bitmap image (also called raster format), or *rasterized*. Photoshop prompts you when vector artwork will be rasterized. <<*need reviewers to confirm this is always true.*>>

**Note:** *Rasterizing resizes your image based on an image size of 96 dpi for Windows and 72 dpi for Mac OS.*

<<**Double-check this note. It's from the 5.5 UG.**>>

### To change the Export Clipboard preference (Photoshop):

- 1 Choose Edit > 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.
- 3 Click OK.

### To paste PostScript artwork from another application:

- 1 In the supporting application, select your artwork, and choose Edit > Copy. Applications that produce PostScript artwork include Adobe Illustrator (version 5.0 and later), Adobe Dimensions, and Adobe Streamline. (See "About file formats" on page 382.)
- 2 In Photoshop or ImageReady, make active the image into which you'll paste the selection.
- 3 Choose Edit > Paste.
- 4 In the dialog box that appears (Photoshop), select from the following options:

- Paste as Pixels to have the artwork rasterized as it is pasted. Rasterizing converts mathematically defined vector artwork to pixels.
- Paste as Paths to paste the copy as a path in the Paths palette.

5 If you chose Paste as Pixels in the previous step, do one of the following:

- Keep Anti-aliasing selected to make a smooth transition between the edges of the selection and the surrounding pixels. (See “Softening the edges of a selection” on page 124.)
- Deselect Anti-aliasing if you want the selection to have a crisp edge.

**Note:** If anti-aliasing causes ghosting, you can also use the Matting commands. (See “Removing fringe pixels from a selection (Photoshop)” on page 156.)

6 Click OK (Photoshop).

## 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 Lock Transparency replaces the original location with the background color. Deleting a selection on a layer without Lock Transparency 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 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.*

### 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 Remove White Matte.

## Warping images

You can use the Liquify command to make pixels appear to flow within a preview image. Special tools make it easy to warp, twirl, expand, contract, shift, reflect, and copy areas under the pointer. An optional warp mesh shows distortions from the original image.

The preview image shows all layers or a selected layer. **<<Can't select layer sets now; will this work in later builds?>>** You can “freeze” areas of the preview image to protect them from further changes, and “thaw” frozen areas, making them editable. You can also use several reconstruction modes to fully or partially reverse the distortions—or to extend the distortions or redo them in new areas. When you're finished, you can apply the changes to the actual image.


**Note:** You can't use the Liquify command in Indexed Color, Bitmap, or Multichannel image mode.

### Distorting images

Several tools in the Liquify dialog box distort the area under the pointer when you hold down the mouse button or drag. The effects intensify as you continue to hold down the mouse button or repeatedly drag over an area.

#### To distort an image:

1 If you want to change only one area of an image or selected layer, select that area. You can also create an alpha channel to use as a mask that defines frozen areas.

 You can use a selection to zoom in on an area to be displayed in the preview image. You can't zoom within the preview.

2 Choose Image > Liquify. A dialog box displays the preview image, tools for editing the image, and tool and view options.

**Note:** If a type layer is selected, you must render the layer before proceeding, making the type uneditable. To warp type without rendering the type layer, use the Warp options for the type tool.

3 Adjust the brush size and pressure of the tools as needed and set up the display. (See “Setting tool and view options” on page 160.)

4 Define any areas in the preview image that will remain fully or partially unchanged. (See “Freezing and thawing areas” on page 158.) You can freeze or thaw areas at any time.

5 Use any of the following tools to distort the preview image:

- The warp tool (**<<art>>**) pushes pixels under the pointer forward as you drag.
- The twirl clockwise tool (**<<art>>**) rotates pixels under the pointer clockwise as you hold down the mouse button or drag. Pixels at the outer edge of the brush rotate at a faster rate than pixels toward the center.

- The twirl counterclockwise tool (<<art>>) rotates pixels under the pointer counterclockwise as you hold down the mouse button or drag. Pixels at the outer edge of the brush rotate at a faster rate than pixels toward the center.
- The pucker tool (<<art>>) moves pixels toward the center of the brush area as you hold down the mouse button or drag.
- The bloat tool (<<art>>) moves pixels away from the center of the brush area as you hold down the mouse button or drag.
- The shift pixels tool (<<art>>) moves pixels in a direction perpendicular to the direction in which you move the pointer. You drag to move pixels to the left, and Alt-drag (Windows) or Option-drag (Mac OS) to move pixels to the right.
- The reflection <<change to “reflect”?>> tool (<<art>>) copies pixels from the area perpendicular to the direction in which you drag, creating a reflection.

*TIP: To create a slightly distorted mirror image similar to a reflection in water, freeze the area to be copied. Then repeatedly Alt-drag (Windows) or Option-drag (Mac OS) the reflect tool from the edge between the frozen and unfrozen areas into the unfrozen area, using overlapping strokes perpendicular to the edge.*

**6** After distorting the preview image, you can use the reconstruct tool (<<art>>) or other controls to fully or partially restore the image to its previous state. (See “Reconstructing an image” on page 159.) You can use the tool in some reconstruction modes to further change the image.

**7** Click OK to apply the changes in the preview image to the actual image.

## Freezing and thawing areas

You can use tools or alpha channels to freeze areas of the preview image to protect them from further changes, or to thaw the frozen areas. When you select an area of the image before using the Liquify command, the unselected areas are initially frozen in the preview image.

Certain reconstruction modes change unfrozen areas in relation to frozen areas. (See “Reconstructing an image” on page 159.) You can hide or show the mask for frozen areas, change the mask color, and use a Brush Pressure option to create partial freezes and thaws. (See “Setting tool and view options” on page 160.)

### To define which areas can be edited:

Do any of the following:

- To use the freeze tool (<<art>>) to protect an area in the preview image from further editing, select the tool and drag over the area. The degree of freezing depends on the current brush pressure. If the frozen areas mask is displayed, the tint of the mask indicates the degree of freezing. If the brush pressure is less than 100%, you can fully freeze an area by dragging more than once.

You can use other tools to distort and reconstruct partially frozen areas, but their effects are proportionate to the degree of freezing. For example, if you drag the warp tool over an area that is 50% frozen and continue dragging over an unfrozen area, the frozen area shows half the distortion that occurs in the unfrozen area.

- To use an alpha channel to define a frozen area, choose it from the Channel menu.
- To make a frozen area editable, select the thaw tool (<<*art*>>) and drag over the area. Brush pressure has the same effect on the thaw tool as it has on the freeze tool.
- To make all frozen areas editable, click Thaw All.
- To make all frozen areas editable and freeze the remaining areas, click Invert.

## Reconstructing an image

After you change the preview image, you can use a variety of controls and reconstruction modes to reverse changes or redo the changes in new ways. Reconstruction modes include reverting to the original state; extending distortions in frozen areas into unfrozen areas; and displacing, rotating, scaling, or skewing areas to match changes at selected points.

### To restore a preview image to a previous state:

After distorting the preview image, do one of the following:

- To undo or redo the previous change, use the undo or redo command for your system.
- To change an unfrozen area of the preview image back to its state when you opened the Liquify dialog box, choose the Revert reconstruction mode from the Mode menu. Then select the reconstruct tool (<<*art*>>) and hold down the mouse button or drag over the area. The restoration occurs more quickly at the brush center.

- To restore all unfrozen areas to their state when you opened the dialog box, click Revert. <<*from spec; currently restores frozen areas, too*>>
- To restore the preview image (including frozen areas) and all settings to their state when you opened the dialog box, Alt-click Cancel.

### To extend distortions in frozen areas into unfrozen areas:

- 1 Freeze all or part of areas you have changed. (The image borders are also treated as if they are frozen.)
- 2 Choose one of these reconstruction modes from the Mode menu:
  - Rigid maintains right angles in the pixel grid (as shown by the warp 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 appearance in the original. (To restore them completely, 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.

<<**Show effects of these reconstruction modes with warp mesh visible in 4-up art. (If we need to**

**show original, do 5-up art or don't show either Smooth or Loose.)>>**

3 Reconstruct the unfrozen areas:

- To reconstruct one or more unfrozen areas, select the reconstruct tool and hold down the mouse button or drag over the area. Pixels move more quickly at the brush center.
- To reconstruct all unfrozen areas, click Reconstruct. The image changes until reconstruction in the current mode is complete. To partially reconstruct the unfrozen areas, use the interrupt command for your system during reconstruction.

**To reconstruct areas to match distortions at selected points:**

1 After distorting the preview image, choose one of these reconstruction modes from the Mode menu:

- Displace moves pixels in unfrozen areas to match the displacement at the reference point <<*what to call this? center point?*>> for the reconstruction. You can use Displace to move all or part of the preview image to a different location.
- Amplitwist moves pixels in unfrozen areas to match the displacement, rotation, and scaling applied at the reference point. You can use this reconstruction mode to duplicate areas in the image.
- Affine moves pixels in unfrozen areas to match all distortions applied at the reference point, including displacement, rotation, scaling, and skew.

**<<Show original and effects of these three reconstruction modes with warp mesh visible in 4-up art. >>**

2 Click in any location where distortions have occurred to set the reference point.

3 Select the reconstruct tool and hold down the mouse button or drag over the area. Pixels move more quickly at the brush center. You can click and use the reconstruct tool repeatedly to create a variety of effects.

*Note: The Reconstruct button is not available in Displace, Amplitwist, and Affine reconstruction modes.*


## Setting tool and view options

You can adjust the brush size and brush pressure of the tools. You can also specify the display of frozen areas, the preview image, and the warp mesh.

**To specify the brush size and pressure:**

Do any of the following:

- To change the brush size for the tools, enter a Brush Size value or drag the slider. The brush size can range from 1 to 100 pixels.
- To change the brush pressure for the tools, enter a Brush Pressure value or drag the slider. Brush pressure can range from 1% to 100%.

 *A low brush pressure makes changes occur more slowly, so it's easier to stop them at exactly the right time.*

- To use pressure readings from a stylus tablet, select Stylus. This option is available only when you are working with a stylus tablet. When Stylus is selected, the brush pressure for the tools is the stylus pressure multiplied by the Brush Pressure value.

**To set view options:**

Select an option to define the display of the preview image:

- Show Frozen Areas, Show Image, and Show Mesh display the frozen areas mask, the preview image, and the warp mesh.
- Mesh Size lets you choose a small, medium, or large mesh grid.
- Mesh Color and Freeze Color let you choose colors for the mesh and the frozen areas mask.

## Transforming objects in two dimensions

You can scale, rotate, skew, distort, and apply perspective to selected parts of an image, entire layers, paths, and selection borders. You can also rotate and flip part or all of a layer, an entire image, path, or selection border.

### About 2D transformations

Use the following guidelines when applying transformations:

- You can transform a linked layer. The transformation affects all the layers in the linking group.
- (Photoshop) You cannot apply transformations to the background as a layer; nor can you apply transformations on 16 bit-per-channel images. You can, however, transform selections on the background.

- (Photoshop) You can apply transformations to an alpha channel by first selecting it in the Channels palette. (See “Storing masks in alpha channels” on page 217.)
- You can apply transformations to a layer mask by first selecting its thumbnail in the Layers palette. (See “Using layer masks” on page 239.)
- Pixels are added or deleted during transformations. To calculate the color values of these pixels, Photoshop and ImageReady use the interpolation method selected in the General Preferences dialog box. This option directly affects the speed and quality of the transformation. Bicubic interpolation, the default, is slowest but yields the best results. (See “Choosing an interpolation method” on page 29.)

### Specifying what to transform

You can apply a transformation to a selection or an entire layer. In Photoshop, you can also apply a transformation to a path or selection border.

**To specify what to transform:**

Do one of the following:

- To transform part of a layer, select the layer, and then select part of the image on that layer. (See “Using the Layers palette” on page 224 and “Selecting” on page 115)
- To transform an entire layer, make the layer active, and make sure nothing is selected. (See “Using the Layers palette” on page 224.)

- (Photoshop) To transform a path, choose a path tool or select part or all of the path. If you select one or more points on a path, only those path segments connected to the points are transformed. (See “Selecting paths and vector objects (Photoshop)” on page 125.)
- (Photoshop) To transform a selection border, make or load a selection. (See “Selecting” on page 115)

**To move the center point for the transformation:**

Drag the center point. The center point can be outside the part of the image, the path, or the selection you want to transform.

**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.

**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 -359.99 and 359.99 in the angle text box, and then select CW or CCW to rotate clockwise or counterclockwise. Click OK.

- Flip Horizontal to flip the image horizontally, along the vertical axis.
- Flip Vertical to flip the image vertically, along the horizontal axis.

**Applying a transformation**

The commands under the Transform submenu let you apply specific transformations to a selection, layer, path, or selection border. Photoshop previews the effect and surrounds the selected area with a bounding border that lets you manipulate the selection, layer, or path.

You can apply 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.

**To scale, rotate, skew, distort, or apply perspective:**

1 Do one of the following:

- To transform part or all of a layer, select it. Then choose Edit > Transform > Scale, Rotate, Skew, Distort, or Perspective.
- (Photoshop) To transform part or all of a path, select it. Then choose Edit > Transform Points or Transform Path > Scale, Rotate, Skew, Distort, or Perspective.

*Note: Distort and Perspective are available only when transforming entire paths.*



- (Photoshop) To transform a selection border, make or load a selection. Choose Select > Transform Selection. Then choose Edit > Transform > Scale, Rotate, Skew, Distort, or Perspective.



*To scale or skew around the center point, press Alt (Windows) or Option (Mac OS) when choosing the Scale or Skew command.*

- 2 Drag the handles to achieve the desired effect.
- 3 To apply additional transformations, repeat steps 1 and 2.
- 4 Press Enter or Return to apply the cumulative transformation. Press Esc to cancel the transformation.

#### **To flip or rotate precisely:**

- 1 Do one of the following:
  - To flip or rotate part or all of a layer, select it.
  - (Photoshop) To flip or rotate part or all of a path, select it.
  - (Photoshop) To transform a selection border, make or load a selection. Then choose Select > Transform Selection.
- 2 Choose Edit > Transform, Transform Points, or Transform Path (Photoshop), 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.

#### **To repeat a transformation:**

Do one of the following:

- To repeat a transformation on a selection or layer, choose Edit > Transform > Again.
- (Photoshop) To repeat a transformation on a path, choose Edit > Transform Points > Again, or Transform Path > Again.

#### **To duplicate an item when transforming it (Photoshop):**

Press Ctrl+Alt+T (Windows) or Command+Option+T (Mac OS), or hold down Alt (Windows) or Option (Mac OS) when selecting the Transform command.

### **Freely transforming and previewing effects**

The Free Transform command lets you use the Scale, Rotate, Skew, Distort, and Perspective commands without having to select them from the menu. To apply these transformations, you use different shortcut keys as you drag the handles of the transform bounding box.

#### **To freely transform:**

- 1 Specify what to transform:
  - To transform part or all of a layer, select it. Then choose Edit > Free Transform.

- (Photoshop) To transform part or all of a path, select it. Then choose Edit > Free Transform Points or Free Transform Path.
- (Photoshop) To transform a selection border, create or load a selection. Then choose Select > Transform Selection.

2 Do one or more of the following:

- To scale, drag a handle. Press Shift as you drag a corner handle to scale proportionately. When positioned over a handle, the pointer turns into a double arrow.

<<*ART: to place free transform icons (Editorial: Pls indicate where.)*

- To rotate, move the pointer outside of the bounding border (it turns into a curved, two-sided arrow), and then drag. Press Shift to constrain the rotation to 15° increments.
- To rotate around a point other than the center of the selection, drag the center point to a new position in the selection before rotating.
- To distort relative to the center point of the bounding border, press Alt (Windows) or Option (Mac OS), and drag a handle.
- To distort relative to a point other than the center of the selection, drag the center point to a new position in the selection before distorting.
- 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 turns into a white arrowhead with a small double arrow.

- 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 turns into a gray arrowhead.

To undo the last handle adjustment, choose Edit > Undo.

3 Press Enter (Windows) or Return (Mac OS) to apply the transformation. To cancel the transformation, press Esc.

## Transforming numerically

The Numeric command lets you scale, rotate, skew, or move part of an image, a layer, a path, or a selection border precisely, by entering specific numeric values for the transformation.

### To transform a layer or path numerically:

1 Specify what to transform:

- To transform part or all of an image on a layer, select it. Then choose Edit > Transform > Numeric.
- (Photoshop) To transform part or all of a path, select it. Then choose Edit > Transform Points > Numeric or Transform Path > Numeric.
- (Photoshop) To transform a selection border, make or load one. Choose Select > Transform Selection. Then choose Edit > Transform > Numeric.

2 Deselect any transformation option in the dialog box to turn it off.

3 Do one or more of the following:

- To move, select Position. Choose the unit of measurement from the menus; then enter a horizontal distance in the X text box and a vertical distance in the Y text box. To move relative to the existing image, layer, or path, select Relative. Otherwise, the movement is relative to the top left corner of the image.
  - To resize, select Scale. Choose the unit of measurement from the menus; then enter values for the Width and Height. Select Constrain Proportions to scale proportionally.
  - To skew, select Skew. Then enter values for the Horizontal and Vertical angles of slant.
  - To rotate, select Rotate. Then enter a value for Angle, or drag the radius inside the circle to the desired angle of rotation.
- 4 Click OK.

## Transforming objects in three dimensions

The 3D Transform filter lets you manipulate a flat, two-dimensional image as if it were a solid, three-dimensional object. Take, for example, a perspective photograph of a cereal box. You specify the corners of the box using a wire frame, and you can then manipulate the box as if it were a three-dimensional object. You can reposition the box, turn or rotate it, shrink or enlarge it, and change its field of view.

## Transforming and manipulating objects

You can transform a two-dimensional object into a cube, sphere, or cylinder and manipulate it using wire frames based on that shape. Cylinders can include anything from simple objects, such as a can of soup, to shapes whose sides are lathed, such as a bottle or a lamp.

You can create and manipulate any grouping of cubes, spheres, and cylinders in the same image. For example, you can create and rotate a box, two balls, and a bottle together in the same image.

### To transform and manipulate an object in three dimensions:

- 1 Choose Filter > Render > 3D Transform.
- 2 Select one of these tools in the dialog box:
  - Cube (⊠) to map the image (such as a file cabinet) to a cubic surface.
  - Sphere (⊕) to map the image (such as a globe or ball) to a spherical surface.
  - Cylinder (⊞) to map the image (such as a can or bottle) to a cylindrical surface.
- 3 Drag to create a cubic, cylindrical, or spherical wire frame over the image.
- 4 Move or reshape the wire frame as described in this section. The anchor points should line up with the corners of the box, or the top and bottom of the sphere or cylinder you want to manipulate.
- 5 Manipulate the object in three dimensions as described in this section.
- 6 Click OK.

**To move or reshape the wire frame:**

- 1 Select the selection tool (⌘) or direct-selection tool (⌘) in the dialog box.
- 2 Do either of the following:
  - Drag an edge of the wire frame to move the entire frame.
  - With the direct-selection tool, drag an anchor point on the wire frame to move that anchor point.

*Note: The wire frame turns red if you try to make a wire frame that would be impossible to re-create in three dimensions.*

- 3 If you are creating a complex cylinder, do any of the following:
  - To add an anchor point to a cylinder, select the add-anchor-point tool (⌘\*) in the dialog box, and click the right side of the wire frame. For example, you can add an anchor point to more closely fit the cylindrical wire frame to a picture of a bottle.
  - To change an added anchor point from a smooth anchor point to a corner anchor point and vice versa, select the convert-anchor-point tool (↶), and click the point. A smooth anchor point creates a gentle curve when you adjust it; a corner anchor point creates a sharp corner.
  - To delete an added anchor point, select the delete-anchor-point tool (⌘-), and click the point.
- 4 For Field of View, enter a value between 1 and 130 or drag the slider to the left to increase the apparent field of view, right to decrease it. This can make the wire frame fit the image better. If you know the field of view angle used to photograph the image, you can enter it here.

**To delete a wire frame:**


Select the selection tool (⌘) in the dialog box.

- 1 Select the wire frame, and press Delete.

**To manipulate the object in three dimensions:**

Do any of the following:

- To move the object, click the pan camera tool (icon) in the dialog box, and drag the object.
- To rotate the object in any direction, click the trackball tool (icon), and drag the object.
- For Dolly Camera (icon), enter a value between 0 and 100, or drag the slider to the left to magnify the transformed object, right to shrink it. This has the same effect as if you were dollying, or moving, the camera further from or closer to the image.
- For Field of View, enter a value between 1 and 130, or drag the slider to the left to increase the apparent field of view, right to decrease it.

 *The 3D Transform dialog box previews only the active layer. As you manipulate an object in three dimensions, you can align it with the contents of underlying layers. Duplicate the layer to align to, and place it directly under the layer to be transformed in the layer stacking order. Merge the layer to be transformed with the duplicated layer. With the Display Background option enabled in the 3D Transform options, manipulate the object on the layer. When the layer is aligned, disable the Display Background option, and click OK.*

## Modifying the preview image

Use the zoom and hand tools in the 3D Transform dialog box to change your preview of an image. These actions do not modify the transformation itself, only your view of it.

### To magnify or shrink the preview image:

- 1 Select the zoom tool (🔍) in the dialog box.
- 2 Click the image to Zoom in, or Alt-click (Windows) or Option-click (Mac OS) to zoom out.

### To move the view of the preview image:

Select the hand tool (👉) in the dialog box, and drag the hand to drag the preview image. This works only if you are zoomed in on the image.

## Setting 3D rendering options

You can set the resolution and anti-aliasing of rendered images and specify whether to show the background from the original image in the 3D preview.

### To set 3D rendering options:

- 1 Click Options in the 3D Transform dialog box.
- 2 Do any of the following:
  - For Resolution, choose the quality of the rendered image. The setting has little effect on the image quality of cubes, but will produce smoother curved surfaces in cylinders and spheres.
  - For Anti-aliasing, choose the level of anti-aliasing to apply to the rendered image.

- Select Display Background to include the portions of the original image outside of the wire frame in the preview and with the rendered image. Turn this option off to separate the transformed object from the original background.

- 3 Click OK.

## Painting with a sample of an image


The clone stamp and pattern stamp tools let you sample part of an image and then paint with the sample.

For information on restoring painted areas to their previous state, see “Painting with a state or snapshot of an image (Photoshop)” on page 148.

## 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. Each stroke of the tool paints on more of the sample. Cross hairs mark the original sampling point.

### To use the clone stamp tool:

- 1 Select the clone stamp tool (👉).
- 2 Choose a size for the brush from the brushes menu in the options bar.

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.

3 Specify a blending mode and opacity (see “Setting options for painting and editing” on page 188).

4 Select Aligned to apply the entire sampled area once, regardless of how many times you stop and resume painting. This option is useful when you want to use different sized brushes to paint an image. You can also use the Aligned option to duplicate two halves of a single image and place them at different locations.

If Aligned is deselected, the sampled area is applied from the initial sampling point each time you stop and resume painting. Because the clone stamp tool samples the entire image, this option is useful for applying multiple copies of the same part of an image to different images.

5 Select Use All Layers to sample data from all visible layers. If this is deselected, the tool samples only from the active layer.

6 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure. (See “Specifying the effect of stylus pressure” on page 191.)

7 Position the pointer on the part of any open image you want to sample, and Alt-click (Windows) or Option-click (Mac OS). This sample point is the location from which the image is duplicated as you paint.

*Note: If you are sampling from one image and applying to another, both images must be in the same color mode.*

8 Drag to paint with the tool.

## Using the pattern stamp tool

The pattern stamp tool lets you select part of an image and paint with the selection as a pattern.

### To use the pattern stamp tool:

1 Select the pattern stamp tool (.

2 Choose a size for the brush from the brushes menu in the options bar.

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.


3 Specify a blending mode and opacity (see “Setting options for painting and editing” on page 188).

4 Select Aligned to repeat the pattern as contiguous, uniform tiles, when you stop and resume painting in different parts of the image. The pattern is aligned from one paint area to the next.

If Aligned is deselected, the pattern is centered on the pointer each time you stop and resume painting.

5 Select Use All Layers to sample data from all visible layers. If this is deselected, the tool samples from only the active layer.

6 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure (see “Specifying the effect of stylus pressure” on page 191).

7 Use the rectangle marquee tool () on any open image to select an area to use as a pattern. Then choose Edit > Define Pattern. Reselect the pattern stamp tool.

**Note:** *If you are using a pattern from one image and applying it to another, both images must be in the same color mode.*

8 Drag to paint with the tool.

## Retouching images


You can retouch images using the smudge, focus, toning, and sponge tools.

**Note:** *These tools cannot be used with Bitmap or Indexed color mode images.*

### Using the smudge tool

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 size for the brush from the brushes menu in the options bar.

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.


3 Specify a blending mode and pressure (see “Setting options for painting and editing” on page 188).

4 Select Use All Layers to smudge using color data from all visible layers. If this is deselected, the smudge tool uses colors from only the active layer.

5 Select Finger Painting 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.

6 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure. (See “Specifying the effect of stylus pressure” on page 191.)



7 Drag in the image to smudge color.

 *Press Alt (Windows) or Option (Mac OS) as you drag with the smudge tool to use the Finger Painting option.*

### Using the focus tools

The focus tools consist of the blur tool and the sharpen tool. The blur tool softens hard edges or areas in an image to reduce detail. The sharpen tool focuses soft edges to increase clarity or focus. For information on other ways to adjust sharpness, see “Sharpening an image” on page 112 or “Improving performance with filters” on page 262.

#### To use the blur or sharpen tool:

- 1 Select the blur tool () or sharpen tool ()
- 2 Choose a size for the brush from the brushes menu in the options bar.

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.

- 3 Specify a blending mode and pressure. (See “Setting options for painting and editing” on page 188.)
- 4 Select Use All Layers to blur or sharpen using data from all visible layers. If this is deselected, the tool uses data from only the active layer.
- 5 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure. (See “Specifying the effect of stylus pressure” on page 191.)
- 6 Drag over the part of the image you want to blur or sharpen.

### Using the toning tools

The toning tools consist of the dodge tool and the burn tool. Used to lighten or darken areas of the image, the dodge and 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 or burn tool:

- 1 Select the dodge tool (☞) or burn tool (☹).
- 2 Choose a size for the brush from the brushes menu in the options bar.  
If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
- 3 Select what to change in the image:
  - 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 tool. (See “Specifying opacity, pressure, or exposure” on page 190.)
  - 5 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure. (See “Specifying the effect of stylus pressure” on page 191.)
  - 6 Drag over the part of the image you want to modify.

### Using the sponge tool

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 size for the brush from the brushes menu in the options bar.  
If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
- 3 Select how to change the color:
  - Saturate to intensify the color’s saturation.
  - Desaturate to dilute the color’s saturation.
- 4 Specify the pressure for the tool. (See “Specifying opacity, pressure, or exposure” on page 190.)
- 5 If you are using a pressure-sensitive drawing tablet, specify the effects of stylus pressure. (See “Specifying the effect of stylus pressure” on page 191.)



6 Drag over the part of the image you want to modify.


## 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. You can create the annotations or import them from other <<Photoshop?>> documents.

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. (See <<insert cross-ref to section of chapter 18 when text is added>>.)

### 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 entering text. When you record an audio annotation, you must have a microphone plugged into the audio-in port of your computer. You can add both kinds of annotations by importing them.

 You can use a color option to identify annotations that are created by different people or used for different purposes.

#### To create a note:

1 Select the notes tool (<<art>>).

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. You can use the standard editing commands for your system. If you type more text than fits in the note window, the scroll bar becomes active.

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

#### To to create an audio annotation:

1 Select the audio annotation tool (<<art>>).

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 Record, and speak into the microphone. You can click Pause to temporarily stop the recording, and then click Record to resume.

5 Click Stop when you're finished, and then click Save.

#### To import annotations:

1 Choose File > Import > Annotations.

2 Select the file that contains the annotations, and then click Open. <<Couldn't test; what happens next?>>

## 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 and modification date and time. For notes, the message also shows the beginning of the note text; for audio annotations, the message also shows the audio duration. <<*from spec; will tool tips be implemented?*>>

You use the icons to open notes or play audio annotations. You can show, hide, or move the icons, and edit the annotations.

### 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. <<*Will there be pause and stop options?*>>

### To hide or show annotation icons:

Choose View > Show > Notes. <<*Will this change to Show > Annotations?*>>

### 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. <<*This is how it works now; spec says hand, not arrow.*>> Moving a note icon does not move its note window.

- To move a note window, drag it by the title bar.
- To cut, copy, or paste an annotation, select the annotation icon and use the cut, copy, or paste command for your system. <<*from spec; will this be implemented?*>>

- To edit the contents of a note, open the note, change any options, and add, delete, or change the text.

<<*Can you edit the contents of an audio annotation file?*>>

- To delete a selected annotation, press Backspace or Delete. <<*In spec; can't do now. If this function isn't added, describe deleting from context menu.*>>
- To delete all annotations of the same type, right-click (Windows) or Control-click (Mac OS) an annotation icon to display the context menu, and choose Delete All Notes or Delete All Audio Annotations.

# Chapter 8: Painting and Drawing

**T**he painting tools and fill commands let you change the color of pixels to modify and create colored areas in an image.




<<*To come: intro that explains painting with pixels vs drawing with vectors*>>

## Using the painting tools

You can use the paintbrush, pencil, or airbrush to paint the current foreground color on an image. The three tools create different effects:

- The paintbrush tool creates soft strokes of color.
- The pencil tool creates hard-edged freehand lines.
- The airbrush tool applies gradual tones (including sprays of color) to an image, simulating traditional airbrush techniques. The edges of the stroke are more diffused than those created with the paintbrush tool. The pressure setting for the airbrush tool controls how quickly the spray of paint is applied. If you hold down the mouse button without dragging, you can build up color.

### To use a painting tool:

- 1 Specify a foreground color. (See “Choosing foreground and background colors” on page 195.)
- 2 Select the paintbrush tool () , pencil tool () , or airbrush tool () .
- 3 Choose a size for the brush from the brush menu in the options bar.

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.

- 4 Specify a blending mode to control how painting affects existing pixels in the image. (See “Selecting a blending mode” on page 188.)
- 5 Specify opacity for the paintbrush or pencil tool, or pressure for the airbrush tool. (See “Specifying opacity, pressure, or exposure” on page 190.)
- 6 Set additional options:
  - For the paintbrush tool, select Wet Edges to paint with a watercolor effect. The paint builds up along the edges of the brush stroke.
  - For the pencil tool, select Auto Erase to paint the background color over areas containing the foreground color.
- 7 Specify the rate at which a brush stroke fades dynamically. (See “Specifying a paint fade-out rate (Photoshop)” on page 190.)
- 8 Drag in the image to paint.



*To draw a straight line with one of the painting tools, click a starting point in the image. Then hold down Shift, and click an ending point.*

## Using the drawing tools

You can draw lines, rectangles, rounded rectangles, and ellipses on an image. In Photoshop you can also draw polygons and custom shapes. (Photoshop does not have a rounded rectangle tool, but you can specify rounded corners with the rectangle tool.)

Note the following difference in behavior:

- In Photoshop, you can reshape vector objects freely after drawing them.
- In ImageReady, you can only draw and move vector objects. You can modify them only from Photoshop.
- In Photoshop, you can specify that a line or shape is created as a rasterized object.

<<*Track: any other differences? follow up.*

*ED: There were more differences earlier. If this is all, I'll rework it.>>*

## Drawing lines and shapes

You can create many objects in Photoshop by starting with basic lines and shapes. The tools in Photoshop let you easily create rectangles, ellipses, polygons, stars, and custom shapes.

### To draw with the line tool:

- 1 Specify a foreground color. (See “Choosing foreground and background colors” on page 195.)
- 2 Select the line tool ( $\backslash$ ).
- 3 To create a new line, select the fill region, shape layer, or work path option in the options bar. (See “Creating a shape or a path on a layer” on page 131.)

4 To edit a line, select the add, subtract, restrict, or invert option in the options bar (Photoshop). (See “Setting options for drawing lines and shapes” on page 175.)

5 Specify a blending mode and opacity for the line. (See “Setting options for painting and editing” on page 188.)

6 Enter a line width in Size.

7 To include arrowheads, select Start, End, or both to specify where you want arrowheads. To edit the appearance of arrowheads, click Shape, and do the following:

- For the width of the arrowhead, enter a value from 10% to 1000% of the line width.
- For the length of the arrowhead, enter a value from 10% to 5000% of the line width.
- For the concavity of the arrowhead, enter a value 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.

In Photoshop, you can edit an arrowhead directly using the vector selection and drawing tools.

8 Drag in the image to draw the line. To constrain the line angle to a multiple of 45°, hold down Shift as you drag.

### To draw with a shape tool:

- 1 Specify a foreground color. (See “Choosing foreground and background colors” on page 195.)
- 2 Select the rectangle tool (**ART**), ellipse tool (**ART**), polygon tool (**ART**), custom shape tool (**ART**), or rounded rectangle tool (**ART**).

If you are using the custom shape tool, you must first define and select a custom shape.

**3** To create a new shape, select the shape layer, work path, or fill region option in the options bar. (See “Creating a shape or a path on a layer” on page 131.)

**4** To edit a shape, select the add, subtract, restrict, or invert option in the options bar (Photoshop). (See “Setting options for drawing lines and shapes” on page 175.)

**5** To create a shape of a particular size, select Fixed Size (ImageReady), and enter values in Width and Height. <<*Photoshop spec says Use Fixed Size. But it is not in bld 114. Currently Photoshop Width and Height options are set in the next step.*>>

**6** Click a shape in the options bar, then click the arrow (icon) to display its options dialog box (Photoshop). Set additional options for specific shapes:

- Width or Height to specify the width or height of the shape. <<*monitor with regards to step 5*>>
- Corner Radius to specify the roundness of corners in a rounded rectangle. A larger value creates rounder corners. A smaller value creates sharper corners.
- Sides to specify the number of sides in a polygon.
- Star to render a polygon as a star. Enter a percentage in the text box to specify the fullness of the points on the star. A larger value creates sharper, thinner points. A smaller value creates fuller points.

**7** Specify a blending mode and opacity for the shape. (See “Setting options for painting and editing” on page 188.)

**8** To create a shape using a predefined style, select a style from the list. (See “Grouping layer effects into styles” on page 253.)

**9** Drag in the image to draw the shape. Hold down Shift as you drag to constrain a rectangle or rounded rectangle to a square or to constrain an ellipse to a circle. Hold down Alt (Windows) or Option (Mac OS), and drag to draw from the center of the object. Hold down the spacebar to move the object without changing its size or shape.

#### **To create and select a custom shape (Photoshop):**

- 1** Create a shape using the other shape tools, or select the path containing the shape you want to use.
- 2** Choose Edit > Define Custom Shape and enter a name for the new custom shape.
- 3** To select that custom shape, choose it from the Shape list in the options bar.
- 4** To restrict a shape to the original size, select Fixed Size in the options bar.

### **Setting options for drawing lines and shapes**

Once you start drawing lines or shapes, you can specify the behaviors of overlapping shapes.

#### **To specify how overlapping shapes interact:**

- 1** If needed, select the line tool (icon) the rectangle tool (icon) ellipse tool (icon), polygon tool (icon) or custom shape tool (icon).
- 2** Set any of these options in the options bar:

- Add to path area to add a shape on top of any existing shapes.
- Subtract from path area to subtract the intersection of shapes.
- Restrict path area to restrict the fill to the overlapping area.
- Invert path area to invert the fill of the overlapping objects and the background.

3 Draw with the selected tool.

### Manipulating lines and shapes (Photoshop)

You use the path component selection tool and the direct selection tool to move and reshape lines and vector shapes. <<monitor, add layer clipping groups too?>>

#### To move or resize lines and shapes:

- 1 Select all or part of the line or shape you want to modify. (See “Selecting paths and vector objects (Photoshop)” on page 125.)
- 2 To move the shape, do one of the following:
  - Select the path component selection tool (<<icon>>), and drag the shape.
  - Select the direct selection tool (<<icon>>), then Alt-click (Windows) or Option-click (Mac OS), and drag the shape.
- 3 To reshape the shape, select one of the handles with the direct selection tool, and drag to reshape the object.

## 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.

### 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 locked transparency, 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 (**icon**).
- 2 Choose a size for the brush from the brush menu in the options bar.
 

If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
- 3 Choose the tool type you want to use as an eraser—paintbrush, airbrush, pencil, or block.
- 4 Specify an opacity to define the strength of the erasure. An opacity of 100% erases pixels to complete transparency. A lower opacity erases pixels to partial transparency.

5 If you're using the paintbrush eraser, select Wet Edges to paint with a watercolor effect. When this is selected, the erased effect builds up along the edges of the brush stroke.

6 To erase to a saved state or snapshot of the image, select Erase to History. (See "Painting with a state or snapshot of an image (Photoshop)" on page 148.)

 *To use the eraser tool in Erase to History mode, hold down Alt (Windows) or Option (Mac OS) as you drag in the image.*

7 Specify how a brush strokes fades dynamically. (See "Specifying a paint fade-out rate (Photoshop)" on page 190.)

8 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.



*Erasing similar pixels*

### To use the magic eraser tool:


- 1 Select the magic eraser tool (.
- 2 Enter a tolerance value. This defines 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.
- 3 Specify an opacity to define the strength of the erasure. An opacity of 100% erases pixels to complete transparency. A lower opacity erases pixels to partial transparency.
- 4 Select Anti-aliased to smooth the edges of the area you erase.

- 5 Select Contiguous to erase only pixels contiguous to the one you click, or leave unselected to erase all similar pixels in the image.
- 6 Select Use All Layers to sample the erased color using combined data from all visible layers.
- 7 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. By specifying different sampling and tolerance options, you can control the range of the transparency and the sharpness of the boundaries.

#### 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 Choose a size for the brush from the brush menu in the options bar.  
If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
- 4 Choose an erasing mode:
  - Discontinuous to erase the sampled color wherever it occurs in the layer.
  - Contiguous to erase areas that contain the sampled color and are connected to one another.
  - Find Edges to erase connected areas containing the sampled color, while better preserving the sharpness of object edges.

5 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.

#### 6 Choose a sampling option:

- Continuous to sample colors continuously as you drag. Use this option to erase adjacent areas that are different in color.
- Once to erase only areas containing the color that you first click. Use this option to erase a solid-colored area.
- Background Swatch to erase only areas containing the current background color.

7 Select Protect Foreground Color to prevent the erasure of areas that match the foreground color in the toolbox.

8 Specify the rate at which a brush stroke fades dynamically. (See “Specifying a paint fade-out rate (Photoshop)” on page 190.)

9 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 195.)




- 2 Select the pencil tool ( $\text{P}$ ).
- 3 Select Auto Erase.
- 4 Drag over the image.

If you begin dragging over the foreground color, the area is erased to the background color. If you begin dragging from an area that doesn't contain the foreground color, the area is painted with the foreground color.

## 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, fidelity, size, and tolerance options, you can simulate the texture of painting with different colors and artistic styles.

Like the history brush, the art history brush uses a specified history state or snapshot as the source data. The history brush, however, paints by recreating the specified source data, while the art history brush uses that data along with the options you set to create different colors and artistic styles. For more information on the history brush, see “Painting with a state or snapshot of an image (Photoshop)” on page 148.


 *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. For example, set the source history state to the original image, fill the image with white, and use the art history brush tool to paint. You can also experiment with custom, non-circular brushes in the brush display.*



A. Original B. White fill C. Large brush D. Small 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 Choose a size for the brush from the brush menu in the options bar.  
  
If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
- 4 Specify a blending mode and opacity for the paint. (See “Setting options for painting and editing” on page 188.)
- 5 Choose an option from the Style menu to control the shape of the paint stroke.
- 6 For Fidelity, enter a value or drag the slider to control how much the paint color deviates from the color in the source state or snapshot. The lower the fidelity, the more the color will vary from the source.
- 7 For Area, enter a value to specify the area covered by the paint strokes. The greater the size, the larger the covered area and more numerous the strokes.
- 8 For Tolerance, enter a value or drag the slider to limit the regions where paint strokes may 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.
- 9 If you are using a pressure-sensitive tablet, set any of the following Brush Dynamic options in the options bar to Stylus:
  - Size to have increased pressure result in a larger area covered by the paint. (Size refers to the area of coverage, not the brush size.)

- Opacity to have increased pressure result in more opaque paint.
- 10 Drag in the image to paint.


## 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*.

<<*ED: A LOT of xrefs in some of these procedures. We need to look at this issue.*>>

### To use the paint bucket tool:

- 1 Specify a foreground color. (See “Choosing foreground and background colors” on page 195.)
- 2 Select the paint bucket tool ()
- 3 Specify whether to fill the selection with the foreground color or with a pattern. (See “Filling and stroking selections and layers” on page 191.)
- 4 Specify a blending mode and opacity for the paint. (See “Setting options for painting and editing” on page 188.)
- 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 124.)

**7** To fill pixels based on the merged color data from all visible layers, select Use All Layers. (See “Sampling from all layers” on page 233.)

**8** To fill only pixels contiguous to the one you click, select Contiguous; leave unselected to fill all similar pixels in the image.

**9** Click the part of the image you want to fill. All adjacent 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 “Preserving a layer’s transparency” on page 232.)


## Using the gradient tools (Photoshop)


The gradient tools create a gradual blend between multiple colors. You can choose from existing gradient fills or create your own.


### 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.


These are the gradient tools:

**Linear gradient** () Shades from the starting point to the ending point in a straight line.

**Radial gradient** () Shades from the starting point to the ending point in a circular pattern.

**Angular gradient** () Shades in a counter-clockwise sweep around the starting point.

**Reflected gradient** () Shades using symmetric linear gradients on either side of the starting point.

**Diamond gradient** () Shades from the starting point outward in a diamond pattern. The ending point defines one corner of the diamond.

*Note:* The gradient tools cannot be used with images in Bitmap or indexed-color mode.

### 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 one of the gradient tools.

**3** To change the gradient fill, click in the gradient sample in the options bar, and choose a fill from the gradient display.

**4** Specify a blending mode and opacity for the paint. (See “Setting options for painting and editing” on page 188.)

**5** To use a transparency mask for the gradient fill, select Transparency. (See “Editing the gradient transparency” on page 183.)

**6** To reverse the order of colors in the gradient fill, select Reverse.

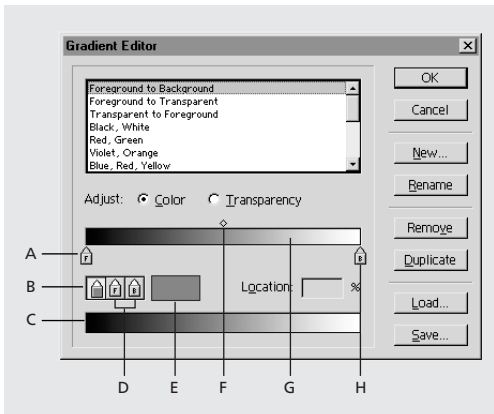
**7** To create a smoother blend with less banding, select Dither.

**8** 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 and editing gradient fills

The Gradient Editor dialog box lets you define a new gradient or modify an existing one. You can also add intermediate colors to a gradient, creating a blend between more than two colors.

<<ART: Reshoot UI and add callouts for gradient stops>>



A. Starting color stop B. Colorselectionbox C. Preview bar  
D. Foreground and background selection boxes  
E. Color swatch F. Midpoint G. Gradient bar  
H. Ending color stop

### To create or edit a gradient:

- 1 Select a gradient tool.
- 2 Click in the gradient sample in the options bar, and choose Edit.
- 3 Do one of the following:
  - To create a new gradient, choose New Gradient from the pop-up menu. Enter a name for the gradient, and click OK.

- To base your gradient on an existing gradient, select a gradient from the list, and then choose New Gradient.

- To edit an existing gradient, select it from the list.

4 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.

5 To choose a color, do one of the following:

- Double-click the color stop, or click the color swatch below the gradient bar. Choose a color, and click OK.

- Choose foreground from the color pop-up menu to use the current foreground color.

- Choose background from the color pop-up menu to use the current background color.

- Position the pointer over the gradient bar (the pointer turns into the eyedropper), and click to sample a color.

6 To define the ending color, click the right color stop under the gradient bar. Then choose a color as described in step 5.

7 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. 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.

**8** 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.

**9** To set the smoothness for the entire gradient, enter a value or drag the slider.

**10** Click OK to add the new gradient fill to the list or to update the edited gradient fill.

#### **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.

#### **Editing 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 edit the gradient transparency:**

- 1** Select a gradient tool.
- 2** Click in the gradient sample in the options bar, and choose Edit.
- 3** Select a gradient to edit its opacity settings.
- 4** To adjust the starting opacity, click the left opacity stop above the gradient bar.

**5** Set the Opacity by doing one of the following:

- Enter a value between 0 (fully transparent) and 100% (fully opaque), or drag the Opacity slider.
- Select an opacity from the gradient preview.

**6** To adjust the opacity of the endpoint, click the right transparency stop above the gradient bar. Then set the opacity as described in step 5.

**7** 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.

**8** 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.

**9** 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.

**10** Click OK.

## Creating and editing noise gradient fills

In addition to creating smooth gradients, the Gradient Editor dialog box lets you define a new noise gradient or modify an existing one. A noise gradient is a gradient that contains random components along with the deterministic ones that create the gradient.

<<ART: show Noise options in Gradient Editor dialog box? (#pa\_04)>>

### To create or edit a noise gradient:

- 1 Select a gradient tool.
- 2 Click in the gradient sample in the options bar, and choose Edit.
- 3 Do one of the following:
  - To create a new noise gradient, choose New Gradient from the pop-up menu. Enter a name for the gradient, and click OK. Then change Gradient Type to Noise.
  - To base your noise gradient on an existing one, select a gradient from the list and then choose New Gradient. Make sure Gradient Type is set to Noise.
  - To edit an existing noise gradient, select it from the list.
- 4 To define the color model, select a color model from the list.
- 5 To adjust the colors, drag the sliders.
- 6 Set the options to saturate colors or to add transparency.
- 7 To randomize the color settings, click the Randomize button until you find a setting you like.

8 To set the roughness for the entire gradient, enter a value, or drag the slider.

9 Click OK to add the new noise gradient fill to the list or to update the edited noise gradient fill.

## Loading, saving, and deleting gradients

By saving and loading sets of gradients, you can customize the gradient list that appears in the gradient options bar and the Gradient Editor dialog box. A gradient is not added to the preset group until the gradient preset group is explicitly saved, but instead it is saved with the Preferences file. Gradients can be loaded, saved, or reset using the Gradient Editor dialog box or the Preset Manager. See “Defining preset colors, patterns, and shapes” on page 194.

<<ART: NEW show gradient display, gradient menu, and where to click in the options bar for Reset Tool. (#pa\_05)>>

### To customize the gradient list:

Do one of the following:

- To delete a gradient, select the gradient in the Gradient Editor dialog box, and click Delete.
- To append gradients that have been stored in a file to the current list, click Load in the Gradient Editor dialog box.
- To save gradients in a separate file for later use, select the desired gradients in the Gradient Editor dialog box (Shift-click to select multiple gradients). Then click Save. <<Reviewers: please verify: I can't choose multiple gradients with shift-click in the Gradient Editor dialog box (bld 112), only the Preset Mgr>>

- To return to the default gradient list, choose Reset Tool from the menu in the options bar. Or, you can choose Reset Gradients from the pop-up menu in the Gradient Editor dialog box. You can either replace the current list or append the default gradients to the current list. <<verify, Reset Tool didn't work in bld 112.>>

## Customizing the brushes set

The brush sizes and shapes available for painting and editing appear in the brush menu in the options bar for painting and editing tools. You can customize the brushes and settings for each of the painting tools (airbrush, paintbrush, eraser, pencil) and editing tools (history brush, clone stamp, smudge, focus, toning).

You can create new brushes or sets of brushes and save or reload them using the Preset Manager. (See “Defining preset colors, patterns, and shapes” on page 194.)

## Creating and editing brushes

You can create new brushes and delete brushes you no longer need, and you can use part of an image to create a custom brush.

<<ART: NEW show brush display, with pop-up menu selected. Callout brush display in options bar and brush menu. Show here or after step 1. (#pa\_06)>>

### To create a brush:

- 1 Click the brush display in the options bar, and choose New Brush from the brush menu.

The preview box in the lower right corner of the New Brush dialog box shows the current brush tip. The box in the lower left corner shows the current brush angle and roundness. As you enter new options, the brushes in these boxes update.

- 2 Set the brush options as described in “Setting brush options” on page 186.
- 3 Click OK. New brushes are added at the bottom of the display.

### To delete a brush:

Do one of the following:

- Press Ctrl (Windows) or Command (Mac OS), and click the brush you want to delete.
- Click the brush in the brush display, and choose Delete Brush from the brush menu.
- Choose Edit > Preset Manager, select Brushes from the Preset Type list, select the brush in the brush display, and click Delete. <<ED: delete from here or replace with xref to Preset Manager?>>

### To create a custom brush shape:

- 1 Select part of an image to use as a custom brush. The brush shape can be up to 1000 pixels by 1000 pixels in size. To be most effective, the shape should appear on a solid white background. If you want to define brushes with soft edges, select brush shapes composed of pixels with gray values. (Colored brush shapes appear as gray values.)
- 2 Choose Define Brush from the brush menu.
- 3 Double-click the newly created brush in the brush display to open the Brush Options dialog box.

- 4 Specify Spacing as described in the next section.
- 5 To make the brush placement more accurate, make sure that Anti-aliased is selected.
- 6 Click OK.

See “Softening the edges of a selection” on page 124 for information on anti-aliasing.

**Note:** The Anti-aliased option is not available for large brushes.



*Pear painted with custom brush shown in inset*

### Setting brush options

You can define a number of options for the default brushes and any brushes you create. For custom brushes, only the spacing and anti-aliased options can be changed.

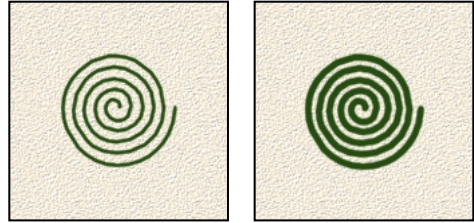
#### To set brush options:

- 1 Do one of the following:
  - To edit the current brush, click the brush sample in the options bar, or choose Brush Options from the brush menu.
  - To edit a different brush, double-click the brush you want in the brush menu.

- 2 Set the options for Diameter, Hardness, Spacing, Angle, and Roundness. Then click OK.

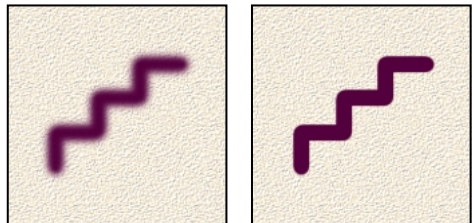
**Diameter** Controls the size of the brush. Enter a value in pixels or drag the slider.

<<cut but put all 5 pairs in gallery?>>



*Brush strokes with different diameter values*

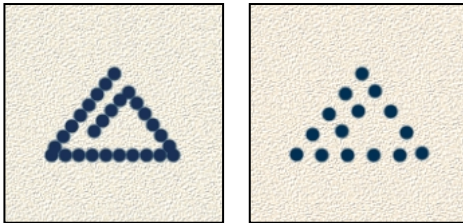
**Hardness** Controls the size of the brush’s hard center. Type a number, or use the slider to enter a value that is a percentage of the brush diameter.



*Brush strokes with different hardness values*

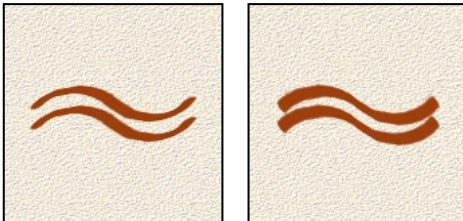


**Spacing** Controls the distance between the brush marks in a stroke. To change the spacing, type a number, or use the slider to enter a value that is a percentage of the brush diameter. To paint strokes without defined spacing, deselect this option.



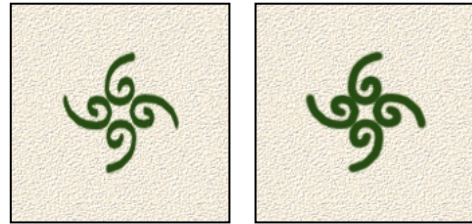
*Increasing the spacing makes the brush skip.*

**Angle** Specifies the angle by which an elliptical brush's long axis is offset from horizontal. Type a value in degrees, or drag the horizontal axis in the left 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 left 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 affects shape of brush tip.*

## **Saving, loading, and replacing brushes**

The brush display can hold as many brushes as you want. Creating sets of brushes can help you group related or special brushes and manage palette size. The Adobe Photoshop program folder includes files containing various brush sets.

### **To save and use custom brush sets:**

Choose one of the following commands from the brush menu:

- **Reset Brushes** to return to the default brushes. You can replace the current brush set or append the default brushes to the current set.
- **Load Brushes** to add brushes stored in a file to the current palette.
- **Replace Brushes** to replace the current brush set with brushes stored in a file.

- Save Brushes to save a brush set in a file (and in Windows, append an .abr extension to the filename).

You can also load or save brushes using the Preset Manager. (See “Defining preset colors, patterns, and shapes” on page 194.)

Exiting Photoshop saves the current brush display in the Preferences file.

## Setting options for painting and editing

You set options for a painting or editing tool in the options bar for that tool.

### 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.

#### To select a blending mode for a tool:

Choose from the Mode menu in the options bar.

<<ART: make a gallery from the color gallery from p. 233 in the 5.0 UG? Or the similar color series in the 5.0 help? Note here as a reminder to do so.>>

**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. This mode works best with the paintbrush or airbrush tool and a large brush.

**Behind** Edits or paints only on the transparent part of a layer. This mode works only in layers with Preserve Transparency off 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 (↵), the paint bucket tool (🪄), the Fill command, and the Stroke command. You must be in a layer with Preserve Transparency off to use this mode.

**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.

**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.

**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.

**Color Dodge** Looks at the color information in each channel and brightens the base color to reflect the blend color. Blending with black produces no change.

**Color Burn** Looks at the color information in each channel and darkens the base color to reflect the blend color. Blending with white produces no change.

**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.

**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.

**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, pressure, or exposure

You can specify opacity, pressure, or exposure for these tools:

- Opacity used by the gradient fill, pencil, paintbrush, clone stamp, pattern stamp, history brush, and art history brush tools
- Pressure of action applied by the airbrush, smudge, blur, sharpen, and sponge tools
- Amount of exposure used by the dodge and burn tools

#### To specify opacity, pressure, or exposure:

Enter a value or drag the slider for Opacity, Pressure, or Exposure in the options bar.

Opacity, pressure, 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.

### Specifying a paint fade-out rate (Photoshop)

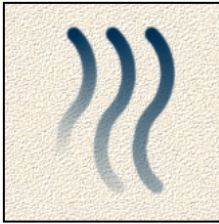
To simulate actual brush strokes, you can set the rate at which the pencil, paintbrush, airbrush, and eraser fade out from their beginning strokes. You can specify which options dynamically change over the course of a brush stroke: opacity, size, and color can all be individually set.

#### To specify a paint fade-out rate:

- 1 Click the brush dynamics button (icon) in the options bar, and set the following fade options:
  - Size to decrease the brush stroke size over the length of a brush stroke.
  - Opacity to reduce the opacity over the length of a stroke.
  - Color to cause the color to fade in intensity over the length of a stroke.
- 2 Enter a value for Steps. The value represents the number of steps in the fade. A smaller value causes the stroke to fade quickly.

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. You may want to set a value of 25 or larger. If strokes fade too quickly, increase the values.

<< **ART: keep but reshoot**>>



*Fade-out showing setting of 40, 60, and 80 steps*

### Specifying the effect of stylus pressure

Photoshop is compatible with most pressure-sensitive digitizing tablets such as the Wacom® tablets. With Control Panel software for your tablet installed, you can specify the type of effect that results when you vary stylus pressure.

These stylus pressure options affect the magnetic lasso, magnetic pen, pencil, paintbrush, airbrush, eraser, clone stamp, pattern stamp, history brush, art history brush, smudge, blur, sharpen, dodge, burn, and sponge tools.

#### To specify the effect of stylus pressure:

Click the brush dynamics button (icon) in the options bar, and choose stylus for each of the options you want to set:

- Size to have increased pressure create a broader brush stroke.
- Opacity/Pressure to have increased pressure make the paint more opaque or more intense.

- Color if you want light pressure to paint with the background color, making a transition to the foreground color as the pressure increases.

***Note:** If the highest pressure of your stylus does not reach 100%, contact your tablet vendor. This problem is caused by the driver software, not Photoshop.*

## Filling and stroking selections and layers

Photoshop provides 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.

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. You can use a pattern from the PostScript Patterns folder.

#### To fill a selection or a layer:

- 1 Specify a foreground or background color. (See “Choosing foreground and background colors” on page 195.)
- 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.



To display the Fill dialog box, press Shift+Backspace (Windows) or Shift+Delete (Mac OS).

4 For Use, choose an option:

- Foreground Color, Background Color, Black, 50% Gray, or White to fill the selection with the specified color.
- Pattern to fill the selection with a pattern.
- History to restore the selected area to a state or snapshot of the image. (See “Painting with a state or snapshot of an image (Photoshop)” on page 148.)

***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 “Setting options for painting and editing” on page 188.)

6 If you’re working in a layer and want to fill only areas containing pixels, choose Transparency from the Lock menu in the Layers palette.

7 Click OK to fill the selection.

**To fill a selection or layer using shortcuts:**

- 1 Specify a foreground or background color.
- 2 Select the area or layer you want to fill.
- 3 Apply the fill:

- To fill with the foreground color, press Alt+Backspace (Windows) or Option+Delete (Mac OS).

- 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 fill with the background color, press Ctrl+Backspace (Windows) or Command+Delete (Mac OS).

- 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 (**icon**).
- 3 In the options bar, set Fill to Foreground.
- 4 Hold down Shift, and click in the work canvas area surrounding the image.

**To fill a selection with a pattern:**

- 1 Make a rectangular selection around the part of the image you want to use as the pattern.
- 2 Choose Edit > Define Pattern.
- 3 Enter a name for the pattern.
- 4 Select the part of the image you want to fill.
- 5 Do one of the following:
  - Choose Edit > Fill. For Use, choose Pattern and click OK.

- Select the paint bucket tool (icon). In the options bar, set Fill to Pattern. Then click to fill the selected area with the pattern.

The pattern you defined is repeated as tiles within the selection. Each new pattern replaces the current pattern. If you want to reuse patterns, save a file of swatches for defining patterns. You can create and load sets of swatches using the Preset Manager. (See “Defining preset colors, patterns, and shapes” on page 194.) You can also use the pattern stamp tool to paint with a pattern. (See “Using the pattern stamp tool” on page 168).

**To use a pattern from the PostScript Patterns folder:**

- 1 Choose File > Open. Each 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 “Importing Adobe Illustrator, PDF, and EPS files (Photoshop)” on page 36 <<*xref destination?*>> for these options.)
- 4 Click OK.
- 5 Make a rectangular selection around the pattern, or choose Select > All.
- 6 Choose Edit > Define Pattern. The pattern is defined as an Adobe Photoshop pattern.
- 7 Enter a name for the pattern.
- 8 Open an image, and select the part you want to fill.

- 9 Choose Edit > Fill.

- 10 Choose Pattern from the Use menu, and click OK.

**Stroking a selection or layer with color**

You can use the Stroke command to paint a colored border around a selection or layer.

**To stroke a selection or layer:**

- 1 Specify a foreground color. (See “Choosing foreground and background colors” on page 195.)
- 2 Select the area or layer you want to stroke.
- 3 Choose Edit > Stroke.
- 4 Specify the width of the hard-edged border. Values can range from 1 to 16 pixels.
- 5 For Location, specify whether to place the border inside, outside, or directly over the selection or layer boundaries.
- 6 Specify an opacity and a blending mode. (See “Setting options for painting and editing” on page 188.)
- 7 If you’re working in a layer and want to stroke only areas containing pixels, select the Preserve Transparency option. (See “Preserving a layer’s transparency” on page 232.)
- 8 Click OK to stroke the selection or layer.

## Defining preset colors, patterns, and shapes

You can use the Preset Manager to create, save, load, or delete sets of brushes, swatches, gradients, styles, patterns, shape curves <<contours>>, and custom shapes. The Preset Manager allows you to easily reuse or share preset sets. Each type of set has its own file extension and default folder. The default brushes, swatches, and so on, can't be removed or overwritten using the Preset Manager, but you can reset to the default presets.

When you create a new brush, swatch, and so on, it displays in the Preset Manager but it is not automatically saved as part of the current preset file. Instead it is saved in the Preferences file so it persists between editing sessions. <<Reviewers: please verify this part:>> However, it is lost when you modify it or when a new set of that type replaces rather than appends to the existing set. To permanently save it, you need to select it and save it in the Preset Manager; or you can save brushes, swatches, gradients, styles, and shape curves in the dialog boxes where you create and edit them.

<<ART: NEW show the preset manager dialog box with callout to the pop-up menu. (#pa\_09)>>

<<ED: should there be separate procedures for each option here (create, load, save, and delete)? Or, change the heading to To manage preset sets?>>

### To create, load, save, or delete preset sets:

- 1 Choose Edit > Preset Manager.
- 2 Select the type of preset from the Preset Types list.

3 Shift-click to add or remove contiguous items, or Ctrl-click to add or remove non-adjacent items.

4 Choose one of the following:

- Save Set, then enter a name for the set. If you want to save it to a folder other than the default, navigate to the new folder. You can't use Save Set to overwrite the default preset files.
- Load, then select a set from the list. If you want to load a preset located in another folder, navigate to that folder, then select the preset. Or select a set from the pop-up menu.
- Rename, then enter a new name for the set.
- Delete to delete the selected items in the set. You can't delete the default items.

### To reset or replace sets:

- 1 Select the type of preset you want to reset or replace in the Preset Types list. If there are unsaved items displayed in the list, they will be lost. You may want to save the current set before you continue.
- 2 To reset to the default set for that type, choose Reset from the pop-up menu.
- 3 To replace the current set, choose Replace from the pop-up menu.

<<Double check this later than bld 112. Will you be able to move items within a set or between sets?>>

### To save a subset of a preset set:

- 1 Choose Edit > Preset Manager.
- 2 Select the type of preset from the Preset Types list.



- 3 Shift-click to select contiguous items, or Ctrl-click to select non-adjacent items.
- 4 Choose Save Set, then enter a name for the set. If you want to save it to a folder other than the default, navigate to the new folder. You can't use Save Set to overwrite the default preset files.

## 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.

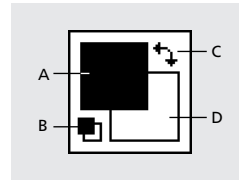
You can designate a new foreground or background color using the eyedropper tool, the Color palette, the Swatches palette, or the Adobe Color Picker.

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.)

### Using color settings in the toolbox

The current foreground color appears in the top color selection box in the toolbox; the current background color appears in the lower box.

<<ART: *substitute with actual UI?*>>



A. Foreground color B. Default Colors  
C. Switch Colors D. Background color

The Info palette, the Color palette, and the Adobe Color Picker let you display color values using a number of color models. (See “About color modes and models (Photoshop)” on page 45.)

#### To change the foreground or background color:

1 Do one of the following:

- To change the foreground color, click the top 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 198.)



*To switch between the foreground and background colors, press X on the keyboard.*

#### To reverse the foreground and background colors:

Click the Switch Colors icon (<<icon>>) in the toolbox.

#### To return to the default foreground and background colors:

Click the Default Colors icon (<<icon>>) in the toolbox.

## Using the eyedropper tool

The eyedropper tool (👉) samples color from an image to designate a new foreground or background color. You can sample from the active image or from another image. (When you're using the eyedropper, you can click in a background window without making it the active window.)

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.

### 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 Select a color:
  - To select a new foreground color from an image, click the color you want.
  - To select a new background color from an image, Alt-click (Windows) or Option-click (Mac OS) the color you want.

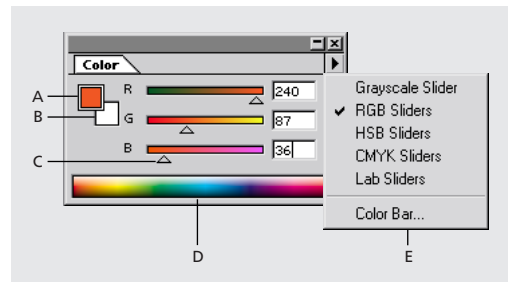
As you drag the eyedropper tool, the foreground color selection box changes dynamically. Alt-drag (Windows) or Option-drag (Mac OS) to activate the background color selection box. Release the mouse button to pick the new color.

💡 *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 bar.

<<ART: keep parts>>



A. Foreground color B. Background color C. Slider  
D. Color bar E. Color palette menu

### To display the Color palette:

Choose Window > Show Color.

**To select the foreground or background color:**

- 1 From the Color palette menu, choose the color model you want to use for color readout values. (See “About color modes and models (Photoshop)” on page 45 for a discussion of these models.)
- 2 To edit the foreground or background color, make sure that its color selection box is active or outlined. To make the foreground or background color selection box active, click the box.
- 3 To specify a new color:
  - Drag the color sliders.

By default, the slider colors change as you drag. If you want to turn off this preview feature to improve performance, choose Edit > Preferences > General, and deselect Dynamic Color Sliders.

- Enter values next to the color sliders.
- Click the color selection box, choose a color as described in “Using the Adobe Color Picker” on page 198, and click OK.

***Note:** An exclamation point inside a triangle in the Color palette indicates an out-of-gamut color, that is, a color that cannot be printed using CMYK inks. The closest CMYK equivalent appears next to the triangle. Click the alert triangle to use the CMYK equivalent. (See “Identifying out-of-gamut colors (Photoshop)” on page 94.)*

**To sample colors from the color bar:**

- 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 Position the pointer over the color bar (the pointer turns into the eyedropper), and click to sample a color.

**To change the display of the color bar:**

Choose a color model from the Color palette menu. The Current Colors style displays a transition from the current foreground color to the current background color.



*To change the display style of the color bar quickly, Shift-click in the color bar until you see the style you want.*

**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 set. You can also save a set of swatches and reload them for use in another image. Although you can add colors to the Swatches palette, you should manage its size and organization.

**To display the Swatches palette:**


Choose Window > Show Swatches.

**To select the 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, Alt-click (Windows) or Option-click (Mac OS) a color in the Swatches palette.

**To add a color to the Swatches palette:**

- 1 Use the eyedropper tool () , the Color palette, or the Adobe Color Picker to select the color you want to add.
- 2 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.

**To replace or insert a color in the Swatches palette:**

- 1 Use the eyedropper tool, the Color palette, or the Adobe Color Picker to select the color you want to add.
- 2 Add a swatch:
  - To replace an existing swatch, hold down Shift, position the pointer over a swatch (the pointer turns into a paint bucket), and click the swatch.
  - To insert a new swatch, press Shift+Alt (Windows) or Shift+Option (Mac OS), and click a swatch.

**To delete a color from the Swatches palette:**

Hold down Ctrl (Windows) or Command (Mac OS), position the pointer over a swatch (the pointer turns into scissors), and click.

**To return to the default Swatches palette:**

- 1 Choose Reset Swatches from the Swatches palette menu. You can also choose Edit > Preset Manager, select Swatches from the Preset Type list, then select Reset Swatches from the palette menu.
- 2 Return to the default palette:
  - Click OK to replace the current swatches with the default set.

- Click Append to attach the default swatches to the end of the current set.

**To save and use custom swatch sets:**

Choose a command from the Swatches palette menu:

- Reset Swatches to use the default set of swatches. You can either replace the current swatch set or append the default swatches to the current set.
- Load Swatches to append the swatches stored in a file to the current set of swatches. Files containing different swatch sets are included in the Adobe Photoshop program folder.
- Replace Swatches to replace the current swatch set with the swatches stored in a file.
- Save Swatches to save the current swatches in a file.

You can also use the Preset Manager to load or save swatches. (See “Defining preset colors, patterns, and shapes” on page 194.)

Exiting the program saves the current Swatches palette in the Adobe Photoshop preferences file.

## Using the Adobe Color Picker

You can use the Adobe Color Picker to select the foreground or background color by choosing from a color spectrum or by defining colors numerically. In addition, you can select colors based on the HSB, RGB, Lab, and CMYK color models and choose from several custom color systems. (See “About color modes and models (Photoshop)” on page 45.) By default, the program uses the Adobe Color Picker.

<<*I changed Photoshop Color Picker everywhere to Adobe Color Picker. Hope that's OK. The preferences command for it is now called Adobe (rather than Photoshop) in ImageReady but Photoshop in Photoshop in bld 112. Follow up on this.*>>

**To display the Adobe Color Picker:**

Do one of the following:

- Click the foreground or background color selection box in the toolbox.
- Click the active color selection box in the Color palette.

**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. The color slider displays the range of color levels available for the selected color component (for example, 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 the current color is black and you click the red component (R) using the RGB color model, 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 along its horizontal axis, for green along its vertical axis.

**To specify a color using the color field and color slide:**

- 1 Click a component next to the HSB, RGB, or Lab values.
- 2 Select a color:
  - Drag the white triangles along the slider.
  - Click inside the color slider.
  - Click inside the color field.

When you click in the color field, a circular marker indicates the color's position in the 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.

**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:

- In CMYK color mode (this is the mode PostScript printers use), specify each component value as a percentage of cyan, magenta, yellow, and black.
- In RGB color mode (this is 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. (See “About color modes and models (Photoshop)” on page 45 for information on the color wheel.)
- In Lab mode, enter a lightness value (*L*) from 0 to 100, and *a* axis (green to magenta) and *b* axis (blue to yellow) values from -128 to +127.

### Recognizing non-Web colors

The *Web-safe colors* are the 216 colors common to the Windows® and 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:

- Click 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.
- Choose a color in the color picker. If you choose a non-Web color, an alert cube (<<icon>>) appears next to the color rectangle in the 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 > Show 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. 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.)
- Choose Web Color Sliders from the Color palette menu (Photoshop), or choose any Slider option from the Color palette menu (ImageReady). Choose a color in the Color palette. If you choose a non-Web color, an alert cube (<<icon from int:c15:m04\_29>>) 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 in order to view the Web-safe alert cube. In ImageReady, you can view the alert cube with any color slider option.

## Recognizing 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 with an exclamation point (<<icon from int:c08:w09\_12>>) 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 94.)

Printable colors are determined by the printing values you enter for the selected ink set in the CMYK Setup dialog box.

### To select the closest CMYK equivalent for a nonprintable color:

Click the alert triangle (<<icon>>) 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, 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, or process color, plates in every image mode except Duotone. To print true spot color plates, create spot color channels. (See “Adding spot colors” on page 211.)*

### 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 Color Picker.

2 For Book, choose a color system. (See “Choosing a custom color system (Photoshop)” on page 201.)

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.

5 Click OK.

## Choosing a custom color system (Photoshop)

The Adobe Color Picker supports various color systems:

**PANTONE®** Used for printing inks. Each PANTONE color has a specified CMYK equivalent. To select a PANTONE color, first determine the ink color you want, using either the *PANTONE Color Formula Guide 747XR* or an ink chart obtained from your printer. PANTONE books are available from printers and graphic arts supply stores.

You can select from PANTONE Coated, PANTONE Uncoated, PANTONE Process, and PANTONE ProSim custom colors. (Contact PANTONE, Inc. in Carlstadt, New Jersey, U.S.A.)

**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 TRUMATCHCOLORFINDER 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 image-setters. In addition, four-color grays using different hues are included. (Contact TRUMATCH Inc. in New York, New York, U.S.A.)

**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. (Contact FOCOLTONE INTERNATIONAL, Ltd. in Stafford, United Kingdom.)

**TOYO Color Finder 1050** Consists of more than 1000 colors based on the most common printing inks used in Japan. The *TOYO Color Finder 1050 Book* contains printed samples of Toyo colors and is available from printers and graphic arts supply stores. (Contact Toyo Ink Manufacturing Co., Ltd. in Tokyo, Japan.)

**ANPA-COLOR** Commonly used for newspaper applications. The *ANPA-COLOR ROP Newspaper Color Ink Book* contains samples of the ANPA colors. (Contact the Newspaper Association of America in Reston, Virginia, U.S.A.)

**DIC Color Guide** Commonly used for printing projects in Japan. (Contact Dainippon Ink and Chemicals, Inc. in Tokyo, Japan.)

## 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 Preferences dialog box. For information on installing and using a plug-in color picker, see the documentation that came with the plug-in.

<<*In bld 102, this changed from Adobe to Photoshop*>>

### To use the Windows Color Picker:

- 1 Choose Edit > Preferences > General.
- 2 Choose Windows from the Color Picker menu, and click OK.



**3** Click the foreground or background color selection box in the toolbox.

The Windows Color Picker lets you select colors from an array of basic colors or define up to 16 custom colors based on the HSB or the RGB color model, but it does not alert you to nonprintable colors.

**4** To choose a color from the Basic Colors palette, click the color you want.

**5** To specify a custom color, click Define Custom Colors to open the Custom Color Selector. This dialog box functions similarly to the Adobe Color Picker. Specify a color by using the color field and color slider or by entering numerical values for each color component.

The new color is displayed on the left side of the Color/Solid box. The right side of this box displays the solid color closest to the color you have specified. (You can choose the displayed solid color by double-clicking the right side of the box.)

**6** When you are satisfied with the color, click Add to Custom Colors to add it to the Custom Colors palette.

**7** To choose a custom color from the Windows Color Picker, click the color you want.

**8** Click OK.

(See your Windows documentation.)

**To use the Apple Color Picker:**

**1** Choose File > Preferences > General.

**2** For Color Picker, choose Apple, and click OK.

**3** Click the foreground or background color selection box in the toolbox.

**4** Select a color model from the list at the left of the dialog box.

The Apple Color Picker lets you select colors based on a number of different color models but does not alert you to nonprintable colors.

**5** Drag the color sliders, click in the color wheel, click a crayon, or enter numeric values to specify a color.

**6** Click OK.

The exact appearance of the Apple Color Picker varies between different system software versions. For more information, see your Mac OS documentation.

**To return to the Adobe Color Picker after using another color picker:**

**1** Choose Edit > Preferences > General.

**2** Choose Photoshop (Photoshop) or Adobe (ImageReady) from the Color Picker menu, and click OK.



# Chapter 9: Using Channels and Masks (Photoshop)

**E**ach image in Photoshop has channels that store information about the image's color. You can create additional channels to store spot colors for printing with special inks and to store masks for sophisticated selections.

## About channels

Photoshop uses special grayscale channels to store an image's color information and information about spot color. If an image has multiple layers, each layer has its own set of color channels.

*Color information channels* are created automatically when you open a new image. The image's color mode (and not its number of layers) 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 8-bit 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, you can create *spot color channels* to specify additional plates for printing with spot color inks. An image can have up to 24 channels, including all color and alpha channels.

The file size required for a channel depends on the pixel information in the channel. For example, if the image has no alpha channels, duplicating a color channel in an RGB image increases the file size by about one-third, in a CMYK image by about one-fourth. Each alpha channel and spot color channel also adds to the file size.

Certain file formats compress channel information and can save space, including the TIFF and Photoshop formats. (See "Managing channels" on page 207.) The size of a file, including alpha channels and layers, appears as the second (right) value in the status bar at the bottom of the window when the Document Size command is chosen from the pop-up menu. (See "About image size and resolution" on page 21.)

***Note:** As long as you save a file in a format supporting the image's color mode, the color channels are preserved. But alpha channels are automatically kept only when you save a file in the Adobe Photoshop, Adobe Photoshop 2.0 (Mac OS only), DCS 2.0, PICT, TIFF, or Raw formats. Saving in other formats may cause channel information to be discarded. (See "About file formats" on page 382.)*

<<**Reviewers--Do we still want to include info on Photoshop 2.0, as in the preceding note?>>**

## Using the Channels palette

The Channels palette lets you create and manage channels and monitor the effects of editing. The palette lists all channels in the image—a 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.

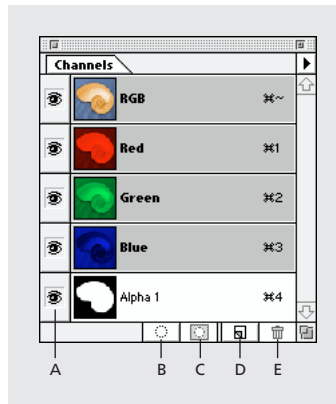
### Viewing channels

You can view any combination of individual channels in the palette. For example, 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 > Show Channels.

<<cut art?>>




A. Show/Hide B. Load Selection  
C. Save Selection D. New Channel E. Trash

- 2 Use the scroll bars or resize the palette to see additional channels.

When a channel is visible in the image, an eye icon <<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 (partially selected pixels are gray) by default.
- 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" on page 217.

### 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 Choose Edit > 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.
- 3 Click OK.

### Selecting and editing channels

You can select one or more individual 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.

#### 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 to the channel; paint with black to remove from the channel; paint with a lower opacity or a color to add to the channel with lower opacities.

### Managing channels

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.

### Changing the order of 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 the default channels, but you can rearrange 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 the heavy black line appears in the position you want, release the mouse button.

*Note:* You can move spot channels above the default color channels only if the image is in Multichannel mode. You cannot move alpha channels above color channels.

**Duplicating channels**

You may want to 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 34.)

*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 images with pixel dimensions the same as 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.
  - 6 Click OK.

**To duplicate a channel by dragging:**

- 1 In the Channels palette, select the channel you want to duplicate.
- 2 Do one of the following:
  - To duplicate a channel within an image, drag the channel into the image window or onto the New Channel button (□) at the bottom of the palette.
  - To duplicate a channel to another image, make sure that the destination image is open. Then drag the channel into the destination image window.

## 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 249.)

### 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.

**Note:** You can also blend the data in one or more channels into an existing or new channel. (See “Mixing color channels” on page 210.)

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 29.) 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.
- 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 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.*

8 When finished selecting channels, click OK.

The selected channels are merged into a new image of the specified type, and the original images 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 with no confirmation:

- 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.

### To delete a channel with confirmation:

- 1 Select the channel in the Channels palette.
- 2 Click the trash button at the bottom of the palette. Then click Yes.

When deleting a channel from a file with layers, regardless of the method you use, Photoshop prompts you first to flatten the visible layers and discard hidden layers (if any) before deleting the channel. This is necessary because removing a color channel converts the image to Multichannel mode, which does not support layers.

## Mixing color channels

The Channel Mixer command lets you modify a color channel using a mix of the current color channels. With this command, you can do the following:

- Make creative color adjustments not easily done with the other color adjustment tools.
- Create high-quality grayscale images by choosing the percentage contribution from each color channel.
- Create high-quality sepia-tone or other tinted images.
- Convert images to and from some alternative color spaces, such as YCrCb.
- Swap or duplicate channels.



**To mix color channels:**

- 1 In the Channels palette, select the composite color channel.
- 2 Choose Image > Adjust > Channel Mixer.
- 3 For Output Channel, choose the channel in which to blend one or more existing (or *source*) channels.
- 4 Drag any source channel's slider to the left to decrease the channel's contribution to the output channel, 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 If desired, drag the slider or enter a value for the Constant option. This option adds a channel of varying opacity to the output channel: negative values act as a black channel, positive values act as a white channel.
- 6 If desired, select Monochrome to apply the same settings to all the output channels, creating a color image that contains only gray values.

Selecting Monochrome is useful for images you plan to convert to grayscale. If you select and then deselect this option, you can modify the blend of each channel separately, creating a handtinted appearance.

- 7 Click OK.

## Adding spot colors

*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 also requires a separate plate on press, it is considered a spot color, too.) For information on printing spot color plates, see "Printing color separations" on page 413.

If you are planning to print an image with spot colors, you need to create spot channels to store the colors.

**Note:** To export spot channels, save the file in DCS 2.0 format. (See "Saving files in Photoshop EPS or DCS format (Photoshop)" on page 377.) <<Still true?>>

### About spot colors

Note the following when working with spot colors:


- If you need 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.
- If you need 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 "Using monotonies, duotonies, tritonies, and quadtonies" on page 425.) <<xref destination?>>
- 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.
- If you print an image that includes spot color channels to a composite printer, the spot colors print out as extra pages.
- You can merge spot channels with color channels, splitting the spot color into its color channel components. Merging spot channels lets you print a single-page proof of your spot color image on a desktop printer.

### 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 > Show 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. (See “Using the Adobe Color Picker” on page 198.)

If you select a custom color, your print service can more easily provide the proper ink to reproduce the image. For more information, see “Choosing custom colors (Photoshop)” on page 201.

- 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.

*Note:* The Solidity option affects only the on-screen preview. It has no effect on the printed output.

- 6 If desired, enter a name for the spot channel. If you chose a custom color in step 4, the channel automatically takes the name of that color.

Remember that it’s important to name spot colors so they’ll be recognized by other applications reading your file. Otherwise the file might not print correctly—or print at all.

- 7 Click OK.

#### To convert an alpha channel to a spot channel:

- 1 Double-click the alpha channel in the Channels palette.

- 2 If needed, rename the channel.
- 3 Select Spot Color.
- 4 Click the color box, and choose a color. (See “Using the Adobe Color Picker” on page 198.)
- 5 Click OK.

The areas of the channel containing grayscale values are converted to spot color.

- 6 If desired, choose Image > Adjust > 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” on page 207.

### 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 name 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. (See “Using the Adobe Color Picker” on page 198.)

By selecting a custom color, your print service can more easily provide the proper ink to reproduce the image. For more information, see “Choosing custom colors (Photoshop)” on page 201.

- 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 option affects only the on-screen preview. It has no effect on the printed output.

- 4 Click OK.

### 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 from the same channel with a solidity of 100%.

In addition, the resulting merged spot channels usually won'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 printing over, or knocking out, the underlying spot color, remove one of the spot colors where they overlap. To help you predict how colors will look when printed, use a printed sample of the overprinted inks to adjust your screen display.

*Note:* In some cases, you may want colors to overprint, such as in varnishes and bump plates.

#### 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 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 408.

5 In the Channels palette, select the underlying spot channel that contains areas you want to knock out. Press Delete.

 This method can be used to knock out areas from any channels under a spot color, such as the CMYK channels.

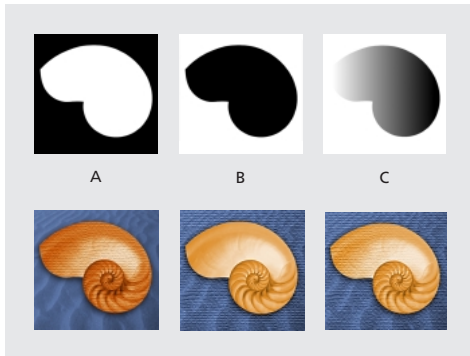
6 If a spot color in one channel overlaps more than one other spot color, repeat this process for each channel that contains areas you want removed.

## About masks

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.

In addition, masks let you save and reuse time-consuming selections as alpha channels. (Alpha channels can be converted to selections and then used for image editing.) Because masks are stored as 8-bit grayscale channels, you can refine and edit them using the full array of painting and editing tools.

When a mask channel is selected in the Channels palette, foreground and background colors appear as grayscale values. (See “Creating temporary masks in Quick Mask mode” on page 215.)



*A. Opaque mask used to protect the background and color the shell. B. Opaque mask used to protect the shell and color the background. C. Semitransparent mask used to color the background and part of the shell.*

In Photoshop, you can create masks, all stored at least temporarily as grayscale channels, in three ways:

- Quick Mask mode lets you create and view a temporary mask for an image. Temporary masks are useful when you don't want to save the mask for later use. (See “Creating temporary masks in Quick Mask mode” on page 215.)
- Alpha channels let you save and load a selection to be used as a mask (See “Storing masks in alpha channels” on page 217).
- Layer masks let you control how different areas within a layer are covered or revealed. By making changes to the layer mask, you can apply a variety of special effects. (See “Using layer masks” on page 239.)


## Creating temporary masks in Quick Mask mode

Quick Mask mode lets you edit any selection as a mask without using the Channels palette and while viewing your image. 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 use a filter to distort the edges of the selection. You can also use selection tools, because the quick mask is not a selection.

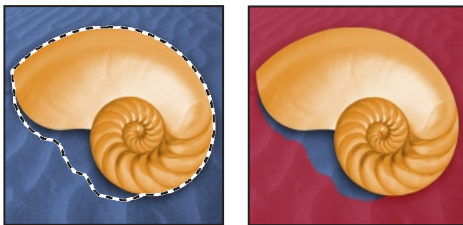
Start with a selected area and use Quick Mask mode to add to or subtract from it to make the mask, or create the mask entirely in Quick Mask mode. Color differentiates the protected and unprotected areas. When you leave Quick Mask mode, the unprotected areas become a selection.

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.

<<keep this piece?>>



*Selected area, and Quick Mask mode applied*

A color overlay (similar to a piece of rubylith) covers and protects the area outside the selection. The original selection is left unprotected by this mask. By default, Quick Mask mode colors the protected area using a red, 50% opaque overlay.

**3** To edit the mask, select a painting or editing tool from the toolbox, or select a filter or adjustment command from the menu bar. By default, painting with black adds to the mask, shrinking the selection. Painting with white removes areas from the mask, expanding the selection. Painting with gray or another color creates a semitransparent area, useful for feathering or anti-aliased effects.

**4** 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.

The selection boundary indicates where 50% of the pixels are selected. That is, if a feathered mask is converted into a selection, the boundary line runs halfway between the black pixels and the white pixels of the mask gradient.

**5** Apply the desired changes to the image. Changes affect only the selected area.

**6** Choose Select > Deselect to deselect the selection, or save the selection as described in the saving procedures on page 15. <<X-ref to which procedure?>>

**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 (the default) to have masked (protected or unselected) areas appear black (opaque), and to have selected areas appear white (transparent). Painting with black increases the masked, protected 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 or protected areas appear white (transparent) and to have selected areas appear black (opaque). Painting with white increases the masked, protected 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 Adobe Color Picker” on page 198.)

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.

5 Click OK.

## 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 either create an alpha channel and then add a mask to it or save an existing selection as an alpha channel.

### About alpha channels


An alpha channel has these properties:

- Each image can contain up to 24 channels, including all color and alpha channels.
- All channels are 8-bit grayscale images, capable of displaying 256 levels of gray.
- 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 the painting and editing tools.


## Creating alpha channels

You can create a new alpha channel and then use painting or editing or tools 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 on Quick Mask options in “Creating temporary masks in Quick Mask mode” on page 215. 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 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.

### 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:

- 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 For Document, choose a destination image for the selection.

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.

- 4 Choose a destination channel for the selection.

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.

5 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.
- Intersect with Channel to keep the areas of the new selection that intersect with the channel contents.

6 Click OK.

Select the channel in the Channels palette to see the saved selection displayed in grayscale.

### Modifying alpha channels

You can edit an alpha channel to add or remove color in it, and you can specify settings for the masking colors and opacity.

For information on rearranging, duplicating, or deleting alpha channels, see “Managing channels” on page 207.

#### 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; 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 name in the Channels palette.
- 2 Enter a new name for the channel.
- 3 Choose display options, as explained in steps 2 through 4 of the procedure on Quick Mask options in “Creating temporary masks in Quick Mask mode” on page 215.

See “Modifying spot channels” on page 213 for information on changing Spot Color channel options.


*Note:* You cannot modify options for the default color channels.

**Loading a selection into an image**

When you have finished modifying an alpha channel or simply want to use a previously saved selection, you can load the selection into the image.

**To load a saved selection using shortcuts:**

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.
- 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:**

- 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 step 5 of the procedure on saving a selection to a new or existing channel in “Creating alpha channels” on page 217.)
- 5 Click OK to load the selection.

**To load a selection from another image:**

- 1 Open the two images you want to use.

*Note:* The images must have identical pixel dimensions. See “Changing the pixel dimensions of an image” on page 29.

- 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 step 5 of the procedure on saving a selection to a new or existing channel in “Creating alpha channels” on page 217.)
- 7 Click OK.

## Extracting objects from their background (Photoshop)

The Extract command provides a sophisticated way to isolate a foreground object from its background. Even objects with wispy, intricate, or undefinable edges may now be clipped from their backgrounds with a minimum of manual work. You must be working in a layer to use the Extract command.

To extract an object, you use tools in the Extract dialog box to highlight the edges of the object. Then you define the object’s interior and preview the extraction. You can refine and preview the extraction as many times as you wish. When you are ready to perform the extraction, Photoshop erases the background to transparency, leaving just the extracted object.

<<May reorganize procedure in next draft>>

### To extract an object from its background:

- 1 In the Layers palette, select the layer containing the object you want to extract.

To avoid losing the original image information, duplicate the layer or make a snapshot of the original image state. For information on snapshots, see “Making a snapshot of an image (Photoshop)” on page 147.

<<*You can also select an area of the image before you extract, but it doesn’t look like there’s much advantage in doing that. Mention?>>*

- 2 Choose Image > Extract.


The Extract dialog box appears. You use the tools in this dialog box to specify which part of the image to extract. If necessary, resize the dialog box by dragging its lower right corner.

- 3 Specify options for tools in the dialog box:


- For Brush Size, enter a value or drag the slider to specify the width of tools used to define an extraction boundary.
- For Highlight, choose a preset color option, 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.




*Smart Highlighting can greatly improve results when you are tracing a sharp edge between a foreground and background that have similar colors or that are have texture.*

4 Select the edge highlighter tool () in the dialog box, and drag in the preview to highlight the edge of the object you want to extract.


Use the following techniques to enhance the effectiveness of your highlight:

- Draw the highlight so that it slightly overlaps both the foreground and background regions around the edge. For fuzzy edges, such as hair or fur, cover areas where the foreground blends into the background.
- Use a smaller brush to highlight sharper edges more precisely. Use a larger brush to highlight wispy, intricate edges such as hair or trees, loosely covering the entire “question” area of edges.
- 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, rather than the object itself. If you modify a highlight based on a channel, the channel name in the menu changes to Custom.
- To turn Smart Highlighting on or off while you drag, press Ctrl (Windows) or Command (Mac OS).
- 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.
- To erase the highlight, select the eraser tool () in the dialog box, and drag over the highlight. This tool is available when a highlight exists. You can completely erase the highlight by pressing Alt+Backspace (Windows) or Option+Delete (Mac OS).


- To switch between the edge highlighter tool and the eraser tool while you drag, press Alt (Windows) or Option (Mac OS).


- To magnify the preview, select the zoom tool () in the dialog box, and click in the preview. To zoom out, hold down Alt (Windows) or Option (Mac OS), and click with the zoom tool in the preview.

- To view a different part of the preview, select the hand tool in the dialog box and drag in the preview.

5 If the object has a well-defined interior, select the fill tool () in the dialog box. This tool is available when a highlight exists. Click inside the object to fill its interior, and then skip to step 8.

6 If the object is especially intricate or lacks a clear interior, make sure that the highlight covers the entire object. To highlight the entire object, press Ctrl+Backspace (Windows) or Command+Delete (Mac OS). Then select Force Foreground.

 *This technique works best with objects that contain tones of a single color.*

7 Select the eyedropper tool () in the dialog box, and then click inside the object to sample the color to be treated as the foreground. You can also click in the Color text box and use a color picker to select the foreground color.

8 Click Preview to preview the extracted object.

Use the following techniques to view and refine the extraction:

- Use the Show menu to switch between previews of the original and extracted images.

- Use the Display menu to preview the extracted object against a colored matte background or as a grayscale mask. To display a transparent background, choose None.
- Select the Show Highlight or Show Fill option to display the object's extraction boundaries.
- Use the cleanup tool (<<*icon*>>) to edit the extracted area. The tool, which is available when you show the extracted object, subtracts opacity and has a cumulative effect. Drag it over an area to erase to transparency. Hold down Alt (Windows) or Option (Mac OS) while dragging to add back opacity.

You can also use the eraser and fill tools to edit the extracted area. Clicking a filled area with the fill tool removes the fill. If needed, you can change the colors of the highlight and fill to view them more clearly.

- Use the edge touchup tool (<<*icon*>>) to edit the extraction boundaries. The tool, which is available when you show the extracted object, 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. <<**How does it distinguish these?**>>

You can also use the edge highlighter and eraser tools to edit the extraction boundaries.

- Drag the Smooth slider or enter a value to help remove stray artifacts in the extraction.

When you are finished editing, click Preview again to view the edited extraction. You can edit and preview the extraction repeatedly until you achieve the desired result.

9 Click OK to apply the final extraction. All pixels on the layer outside the extracted object are erased to transparency.

10 If necessary, use the background eraser and history brush tools to clean up any stray edges in the image.

# Chapter 10: Using Layers

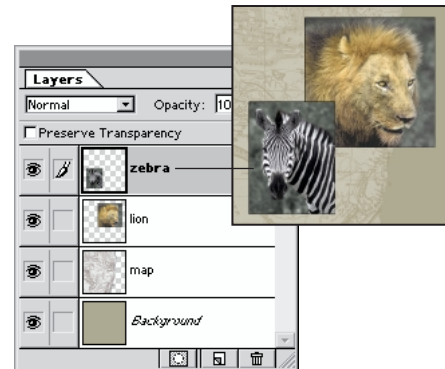
**W**hen you create, import, or scan an image in Photoshop or ImageReady, the image consists of a single layer. You can add more layers to the image, allowing you to organize your work into distinct levels.

## About layers

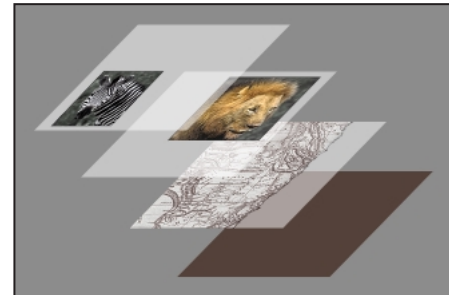
A new image in Photoshop or ImageReady has a single layer. This layer is called the *background layer* and is analogous to the base layer of a painting. You cannot change the stacking order of a background layer or apply a blending mode or opacity to it (unless you convert it to a normal layer).

You can add more layers for any changes you want to make to an image. For example, you might store photographs on separate layers and then combine them into one composite image. Think of the layers as sheets of acetate stacked one of top of the other. Where there is no image on a layer (that is, in places where the layer is transparent), you can see through to the layers below. All layers in a file share the same resolution, the same number of channels, and the same image mode (RGB, CMYK, or Grayscale).

<<ART: reshoot UI and keep both>>



*Zebra is on topmost layer.*



*Transparent areas on a layer let you see through to the layers below.*

You can draw, edit, paste, and reposition elements on one layer without disturbing the others. Until you combine, or *merge*, the layers, each layer remains independent of the others in the image. This means you can experiment freely with graphics, type, opacities, and blending modes. In addition, special features such as layer masks, layer styles, and (in Photoshop) content layers *<<name to change in product, name change will be tracked and text will be updated. Possibly will be called dynamic fill layers>>* let you experiment with and apply sophisticated effects to layers. In ImageReady, you can also use layers to create rollover states and animations.

When you transfer a layered image between Photoshop and ImageReady, all layers, layer masks, layer styles, and content layers are preserved. (Content layers can be applied and edited only in Photoshop but can be viewed in ImageReady.)

## <R1>: About layer sets

Layer sets help you organize and manage layers. You can expand a layer set to display the layers it contains or collapse it to reduce clutter. Only contiguous layers can be part of a layer set, however you can't create or move one layer set within another. You can also use layer sets to apply masks to groups of layers.

Layer sets function like layers; you can view, select, duplicate, move, or change the stacking order of layer sets the same way you do layers. You can easily move layers into and out of layer sets, or create new layers within a layer set.

## Using the Layers palette

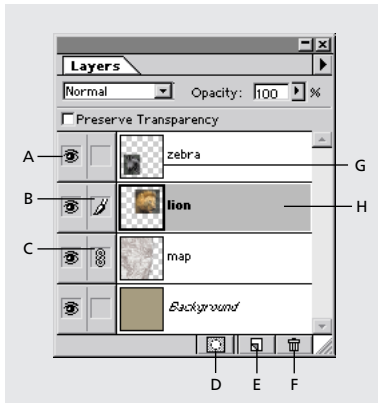
The Layers palette lists all layers and layer sets in an image, starting with the topmost layer. A thumbnail of layer contents appears to the left of the layer name. It is updated as you edit. Use the scroll bars or resize the palette to see additional layers. Click the arrow (icon) to expand or collapse layer sets and layer effects.

*<<These new layer features need to be included in this description of the palette: layer effects UI, clipping group UI, text layer UI, vector masks. ED: There are more than 2 paragraphs here, check to edit or remove last paragraph?>>*

You use the Layers palette to create, hide, display, copy, merge, lock, and delete layers. (Additional commands appear in the menu.) Changes to an image affect only the highlighted or *active* layer. You select a layer to make it active, and only one layer can be active at a time. The active layer's name appears in the image window's title bar, and a paintbrush icon appears next to the layer in the Layers palette, indicating that the layer can be modified. A lock (icon) appears when the layer is locked and tools are not available when you try to use them on a locked layer.

You also use the Layers palette to apply layer masks (raster) and vector masks to a layer, layer styles, or content layers (formerly known as adjustment layers). You can use a clipping group to act as a mask for a group of layers or to specify a blending mode for group of layers.

<<ART: Keep and update the fig of the palette. Show expanded layer set, both kinds of locks, layer effects, various mask types, Text layer, clipping group>>



A. Show/Hide B. Paintbrush icon  
C. Link/Unlink D. New Layer Mask  
E. New Layer F. Trash G. Thumbnail  
H. Highlighted layer is active layer.

### To display the Layers palette:

Choose Window > Show Layers.

## Viewing and selecting layers

With the Layers palette, you can control whether a layer or layer set is visible, whether a preview or thumbnail of a layer's contents is displayed, and also how transparency is displayed. Turning off thumbnails or reducing their size can speed performance and save monitor space.

### To show or hide a layer:

Do one of the following:

- In the Layers palette, click the eye icon next to a layer to hide that layer. Click in the column again to redisplay the layer.
- Drag through the eye column to show or hide multiple layers.
- Alt-click (Windows) or Option-click (Mac OS) the eye icon for a layer to display just that layer. Alt-click (Windows) or Option-click (Mac OS) in the eye column again to redisplay all the layers.

Only visible layers are printed. Making layers temporarily invisible can speed performance.

**Note:** You can make the active layer invisible. Keep in mind, however, that changes still affect the hidden, active layer.

### To select a layer:

Do one of the following:

- In the Layers palette, click a layer to make it active.
- Select the move tool, right-click (Windows) or Control-click (Mac OS) in the image, and choose the layer you want from the context menu. The context menu lists all the layers that contain pixels under the current pointer location.

You can also select layers interactively as you use the move tool. (See "Moving selections and layers within an image" on page 152.)

### To change the display of layer thumbnails:

- 1 Choose Palette Options from the Layers palette menu.
- 2 Click a size or click None to turn off the thumbnails, and click OK.

Layer sets do not have thumbnails.

#### To display a layer in color in the palette:

- 1 Select the layer, and choose Layer Options from the Layers palette menu.
- 2 Choose a color from the menu, and click OK.

#### To change the transparency display:

- 1 Choose Edit > Preferences > Transparency & Gamut. By default, the transparent areas of a document appear as a checkerboard pattern.
- 2 For Grid Size, select a new size for the pattern. If you choose None, transparent areas in the layer appear white.
- 3 For Grid Colors, select an option:
  - Light, Medium, or Dark to specify a gray pattern.
  - Any other color from the list to display the checkerboard in that color.
  - Custom to choose a color that does not appear in the list. Then click either of the color selection boxes to specify a custom color.
- 4 Click OK.

### Changing the stacking order of layers

The stacking order determines whether a layer or layer set appears in front of or behind other layers. See “Grouping layers into sets” on page 230 to learn more about the stacking order within layer sets.

#### To change the order of a layer:

- 1 In the Layers palette, select the layer that you want to move.
- 2 Choose Layer > Arrange, and choose an option from the submenu to arrange the layer:
  - Bring to Front to make the layer the topmost layer.
  - Bring Forward to move the layer one level up in the stacking order.
  - Send Backward to move the layer one level down in the stacking order.
  - Send to Back to make the layer the bottommost layer in the image (except for the background).



*To move a selected layer one level up in the Layers palette, press Ctrl+] (Windows) or Command+] (Mac OS). To move one level down, press Ctrl+[ or Command+[. To move to the topmost level, press Ctrl+Shift+] or Command+Shift+]. To move to the bottommost level (above the background), press Ctrl+Shift+[ or Command+Shift+[.*

#### To change the order of layers by dragging:

- 1 In the Layers palette, select the layer or the layer set name you want to move.
- 2 Drag the layer up or down in the Layers palette. When the highlighted line appears in the desired position, release the mouse button.

**Note:** *By default, the background cannot be moved from the bottom of the layer list. To move the background, first convert it to a layer as described in the procedure to convert a background into a layer on page 235.*



## Linking layers

By linking two or more layers, you can move their contents together. Layers within a layer set are implicitly linked but you can also link the layer set. You can link layers within layer sets, or link layers outside of a layer set to a layer set. You can also perform the following tasks on linked layers:

- Apply transformations. (See “Transforming objects in two dimensions” on page 161.)
- Align layer contents. (See “Moving the contents of layers” on page 230.)
- Merge layers. (See “Merging layers” on page 248.)
- Create clipping groups. (See “Creating clipping groups” on page 237.)

### To link layers:

- 1 Select a layer 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 (<<icon>>) appears in the column.

### To unlink layers:

In the Layers palette, click the link icons to remove them.

## Creating a layered image

You create up to 8000 layers in an image, each with its own blending mode and opacity. However, the amount of memory in your system may put a lower limit on the number of layers possible in a single image.


***Note:** Images created using the Transparent option in the New dialog box are created without a background. Images with no background, as well as images with layers, can be saved only in the Photoshop format.*

## Adding layers

Newly added layers and layer sets appear above the selected layer in the Layers palette. You can add layers to an image in a variety of ways:

- By creating new layers or turning selections into layers.
- By converting a background to a regular layer or adding a background to an image.
- By pasting selections into the image. (See “Copying selections or layers” on page 153.)
- By creating type using the horizontal type tool or vertical type tool. (See “Creating type” on page 281.)

### To create a new layer using default options:

Click the New Layer button () or New Layer Set button (icon) at the bottom of the Layers palette. The layer uses Normal mode with 100% opacity and is named according to its order of creation.

**To add a new layer and specify options:**

- 1 Do one of the following:
  - Choose Layer > New > Layer or 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 at the bottom of the Layers palette.
- 2 Name the layer, and select mode, opacity, and fill options as described in “Specifying layer options” on page 234. Then click OK.

**To turn a selection into a new layer:**

- 1 Make a selection.
- 2 Choose Layer > New, and choose a command from the submenu:
  - To copy the selection into a new layer, choose Layer Via Copy.
  - To cut the selection and paste it into a new layer, choose Layer > New > Layer Via Cut.

The selection contents appear in the same position relative to the image boundaries.

**To convert a background into a layer:**

- 1 Double-click Background in the Layers palette.
- 2 Enter a name, opacity, and mode for the layer. (See “Specifying layer options” on page 234.)
- 3 Click OK.

**To add a background to an image:**

Choose Layer > New > Background to create a Background layer filled with the current background color. (See “Choosing foreground and background colors” on page 195.)

You cannot change the stacking order of a background or apply a blending mode or opacity.

**Duplicating layers**

You can duplicate any layer (including the background) or any layer set within the same image. And you can copy any layer (including the background) or layer set from one image to another.

When copying layers between images, keep in mind that the printed size of the copied layer depends on the resolution of the destination image. For example, if the source image has a lower resolution than the destination image, the copied layer will appear smaller in the destination image when printed. (See “About image size and resolution” on page 21.)


**To duplicate a layer in an image:**

- 1 Select the layer in the Layers palette.
- 2 Duplicate the layer:
  - To duplicate and rename the layer, choose Layer > Duplicate Layer (or Layer > Duplicate Layer Set) or choose Duplicate Layer (or Duplicate > Layer Set) from the Layers palette menu. Name the duplicate layer, and click OK.

- To duplicate without naming, drag the layer name in the Layers palette to the New Layer button (📄) or New Layer Set button (icon) at the bottom of the palette. The new layer is named according to its order of creation.

**To copy a layer between images:**

- 1 Open the two images you want to use.
- 2 In the Layers palette of the source image, select the name of the layer that you want to copy.
- 3 Copy the layer:
  - Choose Select > All to select all of the pixels on the layer that fall inside the canvas boundaries, and choose Edit > Copy. Make the destination image active, and choose Edit > Paste.
  - Drag the layer's name from the Layers palette into the destination image.
  - Use the move tool (↶) to drag the layer from the source image to the destination image. The copied layer appears in the destination image where you release the mouse button (and above the active layer in the Layers palette). If the layer you're dragging is larger than the destination image, only part of the layer is visible, but its contents remain available. Use the move tool to drag other sections of the layer into view.

 *Hold down Shift as you drag a layer to copy it in the same position it occupied in the source image (if the source and destination images have the same pixel dimensions) or to the center of the destination image (if the source and destination images have different pixel dimensions).*

**To copy multiple layers into another image:**

- 1 Make sure that both the source and destination images are open, and select one of the layers you want to copy.
- 2 In the Layers palette, click in the column immediately to the left of any additional layers you want to move. The link icon appears in the column.
- 3 Use the move tool (↶) to drag the linked layers from the source image to the destination image.

**To duplicate a layer into another image or a new image:**

- 1 If you plan to copy a layer to an existing image, open both the source and destination images.
- 2 In the source document's Layers palette, select the name of the layer you want to duplicate.
- 3 Duplicate the layer:
  - Choose Layer > Duplicate Layer or Layer > Duplicate Layer Set.
  - Choose Duplicate Layer or Duplicate Layer Set from the Layers palette menu.
- 4 Type a name for the duplicate layer.
- 5 For Document, choose a destination for the layer. To create a new document for the layer, choose New, and type a name for the new document.
- 6 Click OK.

An image created by duplicating a layer has no background.

## Grouping layers into sets

You group layers into layer sets in the palette. Layer sets allow you to easily move the layers as a group, apply attributes or a mask to the group, or collapse the group to reduce clutter.

*<<ED: Most of this information is woven into earlier tasks, remove it from there and centralize it here, or remove it from here? Should we remove this entire section? If so, note to self, check for xrefs.>>*

### To create a new layer set:

Do one of the following:

- In the Layers palette, click the New Layer Set button (icon) at the bottom of the palette. The new layer set appears above the currently selected layer or layer set.
- Choose Layer > New Layer Set.
- Choose New Layer Set from the Layers palette menu.
- Choose Layer > New Layer Set From Linked, if you have linked layers.

### To drag layers into a set:

- If the layer set is collapsed, drag the layer to the layer set folder (icon) or the layer set name. When the arrow appears in the layer set, release the mouse button. The layer is placed at the bottom of the layer set.
- If the layer set is expanded, you can drag the layer to the desired location within the layer set. When the highlighted line appears in the desired location, release the mouse button.

### To drag layers out of a set:

- Drag the layer up or down in the Layers palette. When the highlighted line appears in the desired location, release the mouse button.

### To collapse or expand a layer set:

- Click the triangle (icon) to expand the layer set and display the layers.
- Click the down triangle (icon) to collapse the layer set and display only the layer set name.

## Moving the contents of layers

Repositioning a layer or layer set moves its contents on the image. You can reposition a layer manually using the move tool, or you can align and distribute a linked group of layers.

You can also lock a layer to prevent the contents from being moved on the image. However, a locked layer can be moved above or below other layers. (See “Locking layers” on page 233 to learn about all of the lock options.)


### Repositioning layers

You can reposition the contents of individual layers layer sets, or linked layers within the image’s boundaries, unless move (<<icon>>) in the Layers palette is selected. If a layer set is locked, none of the layers contained in the set can be moved.

### To reposition a layer in an image:

- 1 In the Layers palette, select the layer that you want to move.

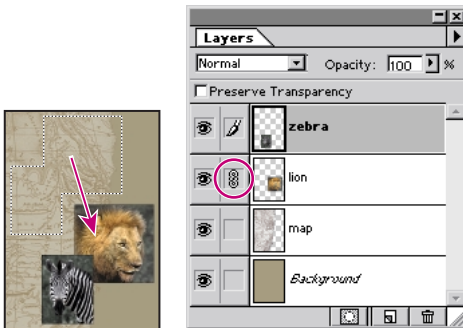
- 2 Select the move tool (⇧+). To activate the move tool when any other tool is selected, hold down Ctrl (Windows) or Command (Mac OS).
- 3 Drag anywhere in the image to move the selected layer into the desired position. To constrain the direction of movement to a multiple of 45°, hold down Shift as you drag.

 *To reposition the layer in 1-pixel increments when the move tool is selected, press the arrow keys on the keyboard. To move the layer in 10-pixel increments (or to move one frame if you're editing a filmstrip file), press Shift and an arrow key.*

#### To reposition multiple layers:

- 1 In the Layers palette, link the layers you want to move. (See “Linking layers” on page 227.)
- 2 Use the move tool (⇧+) to move the linked layers in the image window.

<<ART: reshoot UI and keep>>



Lion and zebra layers linked and moved

## Aligning and distributing linked layers

The Align Linked commands let you align the contents of linked layers to the contents of the active layer or to a selection border. The Distribute Linked commands let you position the contents of linked layers at evenly spaced intervals.

You can't align a layer set. You need to link all of the layers within the set, then align them.

#### To align or distribute linked layers:

- 1 To align layers to a selection border, make a selection.
- 2 In the Layers palette, specify the layers you want to align or distribute:
  - To align a single layer to a selection, make the layer active.
  - To align multiple layers to a selection or to the active layer, link together two or more layers.
  - To distribute multiple layers, link together three or more layers.

For more information, see “Linking layers” on page 227.

- 3 To align layers, choose Layer > Align Linked (or Align To Selection if you made a selection), and choose an option from the submenu:
  - Top to align the topmost pixel on the linked layers to the topmost pixel on the active layer or the topmost edge of the selection border.
  - Vertical Center to align the vertical centermost pixel on the linked layers to the vertical centermost pixel on the active layer or the vertical center of the selection border.

- Bottom to align the bottommost pixel on the linked layers to the bottommost pixel on the active layer or the bottommost edge of the selection border.
- Left to align the leftmost pixel on the linked layers to the leftmost pixel on the active layer or the leftmost edge of the selection border.
- Horizontal Center to align the horizontal centermost pixel on the linked layers to the horizontal centermost pixel on the active layer or the horizontal center of the selection border.
- Right to align the rightmost pixel on the linked layers to the rightmost pixel on the active layer or the rightmost edge of the selection border.

**4** To distribute layers, choose Layer > Distribute Linked, and choose an option from the submenu:

- Top to space the linked layers evenly starting from the top pixel on each layer.
- Vertical Center to space the linked layers evenly starting from the vertical centermost pixel on each layer.
- Bottom to space the linked layers evenly starting from the bottom pixel on each layer.
- Left to space the linked layers evenly starting from the leftmost pixel on each layer.
- Horizontal Center to space the linked layers evenly starting from the horizontal centermost pixel on each layer.

- Right to space the linked layers evenly starting from the rightmost pixel on each layer.

***Note:** Photoshop aligns and distributes only those layers whose pixels have greater than 50% opacity. For example, the Align Linked > Top command aligns to the topmost pixel on the active layer that is more than 50% opaque.*

## Editing layers

A newly created layer or layer set is transparent. You can add color values to the layer using the painting and editing tools, and then apply a layer style, filters, or use special effects to modify the layer. All painting and editing occurs on the active layer (and in the active channel).

### Preserving a layer's transparency

You can confine your painting and editing to those areas of a layer already containing pixels. For example, you may want to edit an object (adding special effects, changing color) without adding pixels to the transparent area outside the object.

#### To confine editing to the opaque portions of a layer:

- 1 Select the layer in the Layers palette.
- 2 Select Preserve Transparency in the Layers palette.







***Note:** For type layers, Preserve Transparency is on by default and cannot be turned off.*

## Sampling from all layers

By default, when working with the magic wand, smudge, blur, sharpen, rubber stamp, or pattern stamp tool, you are applying color sampled 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.

Alternatively, you can choose to paint using sampled data from all the visible layers. For example, you can use the rubber stamp tool to clone an area containing pixels from all the visible layers and layer sets.

### To sample from all visible layers:

- 1 Double-click the magic wand tool () , smudge tool () , blur tool () , sharpen tool () , rubber stamp tool () , or pattern stamp tool () to display its options bar.
- 2 Select Use All Layers in the options bar.

**Note:** Unless you are using the rubber stamp tool, painting or editing in a new layer produces the best results when Use All Layers is selected.

## Filling a new layer with a neutral color

Some layer effects (such as the Lighting Effects filter) cannot be applied to layers with no pixels. Selecting Fill with Neutral Color in the New Layer dialog box resolves this problem by first filling the layer with a preset, neutral color. 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. (See “Adding layers” on page 227.)

**Note:** Not all filters produce a visible effect when applied to a layer filled with a neutral color.

## Locking layers

You lock layers or layer sets to make certain properties of a layer unchangeable. When a layer is locked, a lock displays to the right of the layer name. The lock is solid (icon) when no properties can be changed and is hollow (icon) when only the transparency and layer masks are locked. You can also lock the image so it can't be moved with the move tool. Locked layers can still be moved to a different location within the Layers palette, but they can't be deleted.

### To lock layers:

- 1 Select the layer, then do one of the following:
  - Click the Lock button (icon) in the Layers palette.
  - Choose Lock All Layers in Set from the Layers palette menu.
  - Choose Layers > Lock All Layers in Set.

2 Select one of the following Preserve options:

- None to make all properties editable.
- Transparency to lock the opacity and blending mode setting for the layer.
- Image to lock the image data but the opacity and blending modes can be adjusted.

3 To prevent a layer from moving, do one of the following:

- Click move (icon) in the Layers palette to disable the move tool and prevent the layer from being moved.

#### To lock linked layers:

Select the linked layer, then do the following:

- Click the Lock button (icon) in the Layers palette.
- Choose Lock All Linked Layers from the Layers palette menu.
- Choose Layers > Lock All Linked Layers.

## Specifying layer options

The layer options let you change a layer or layer set's name and its color in the palette, and the blending options let you change its opacity and blending with the pixels underneath. It's important to remember that the opacity and blending modes chosen for a specific layer interact with the opacity and mode settings for the tools you use to paint and edit the pixels on the layer.

<<Track: layer options name may change for Photoshop>>

<<I think the new RGB checkboxes restrict blending into a subset of composite channels. Talk about that in the section on using channel calcs to blend layers (later in the chapter)?>>

For example, suppose you are working on a layer that uses the Dissolve mode and an opacity of 50%. If you paint on this layer using the paintbrush tool set to Normal mode with an opacity of 100%, the paint will appear in Dissolve mode with a 50% opacity because this is the maximum the layer can display.

On the other hand, suppose you are working on a layer created using Normal mode and 100% opacity. If you use the eraser tool with an opacity of 50%, only 50% of the paint will disappear as you erase. For more information on painting blending modes, see “Selecting a blending mode” on page 188.

#### To choose options for a layer:

1 Do one of the following:

- Double-click the layer's name in the Layers palette. (This method does not apply to most content layers in Photoshop.)
- Select the layer in the Layers palette, and choose Layer > Layer Options.
- Select the layer in the Layers palette, and choose Layer Options from the palette menu.

2 To change the name of the layer as it appears in the Layers palette, type a new name.

3 To change the color of the layer in the palette, choose a color from the menu.



- 4 (ImageReady) To group this layer with the previous layer, select Group With Previous Layer.
- 5 (ImageReady) Set one of the following Preserve options:
  - None to allow the layer to be edited.
  - Transparency to lock the opacity and blending mode settings for the layer.
  - Image to lock all image data for the layer.
- 6 To lock the position of the image on the layer, select Lock Position.
- 7 To prevent the layer from being edited, select Lock Layer.

**To choose opacity and blending options for a layer:**

- 1 To change the blending mode and opacity of layers but not layer sets, select the layer in the Layers palette, and do one of the following:
  - (ImageReady) Choose Layers > Layer Options.
  - (ImageReady) Choose Layer Options from the palette menu.
  - (Photoshop) Choose Layers > Layer Style > Blending Options.
  - (Photoshop) Choose Blending Options from the palette menu.
- 2 To set blending modes, select a Mode (ImageReady) or Blend Mode (Photoshop). (See “Specifying layer blending modes” on page 236.)
- 3 To set opacity or fill opacity, drag the slider. (See “Specifying opacity” on page 235.)

- 4 To specify which layers get knocked out within a layer set, select a Knockout option. (See “Specifying advanced blending options” on page 236.)
- 5 To restrict blending into composite channels deselect one or more Channel options. <<To come, RGB section need to explain/ add xref here>>
- 6 <<To come: add blend interior effects as a group and blend clipped layers as a group steps here, need to explain/xref>>
- 7 (Photoshop) To turn off previewing as you choose layer options, deselect Preview in the Blending Options dialog box.
- 8 Click OK.

**Specifying opacity**

You can change the opacity of each layer or layer set using either the Opacity option in the Layer Options dialog box (ImageReady), Blending Options dialog box (Photoshop), or the Opacity slider in the Layers palette. A layer with 1% opacity appears nearly transparent, one with 100% opacity completely opaque.

You cannot change the opacity of an image that has only a background, a locked layer, or a layer set.

Fill opacity affects only the fill of an object rather than the entire layer.

**To specify opacity for a layer:**

Do one of the following:

- In the Layers palette, enter a value for Opacity or drag the slider.

- In the Layer Options dialog box (ImageReady) or the Blending Options dialog box (Photoshop), enter a value for Opacity.
- To specify fill opacity for a layer, In the Layer Options dialog box (ImageReady) or the Blending Options dialog box (Photoshop), enter a value for Fill Opacity.



*If you have selected a tool without an opacity option in its Options palette, use the following shortcuts to change the opacity of the active layer:*

- Press a number key to set the opacity in multiples of 10% (pressing 1 sets to 10%, pressing 0 sets to 100%).
- To specify an exact opacity, type the desired value.

## Specifying layer blending modes

You use layer blending modes to determine how the pixels in a layer are blended with underlying pixels on other layers. By applying modes to individual layers, you can create a variety of special effects. You can't set a blending mode for a layer set, only the individual layers.

**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:

Do one of the following:

- In the Layers palette, choose an option from the mode menu.
- (ImageReady) In the Layer Options dialog box, choose a Mode option.
- (Photoshop) In the Blending Options dialog box, choose a Blend Mode option.

## Specifying advanced blending options

*<<Intro to be updated, once I determine whether RGB options are discussed here or elsewhere>>*

The knockout options allow you to specify which layers are “punched through” to reveal content from other subsequent layers. If you are using a layer set, you can knockout to the bottom layer in the layer set, or you can knockout all of the way to the background layer. You can knockout a content layer that adjusts the color of an image to reveal a portion of the image using the original colors.

*<<Need to add Advanced blending options: blend interior effects/clipped layers as a group Should RGB channels be described here or much later?>>*

### To specify a knockout mode:

- 1 Display the Advanced Blending options by doing the following:
  - (Photoshop) Choose Layer > Layer Style > Blending Options.
  - (ImageReady) Choose Layer > Layer Options.
- 2 Choose one of the following Knockout options:
  - None to knockout no layers.
  - Shallow to knockout to the bottom of a layer set. *<<or clipping group?>>*
  - Deep to knockout to the background layer. If there is no background layer, it knocks out to transparency.

<<ART: NEW *show layers that create knockout effect with image.*>>

## 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 which from the underlying visible layers blend and 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 In the Blending Options dialog box, select a Blend If option:
  - 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 “Color channels (Photoshop)” on page 50.)
- 2 Use the This Layer and Underlying 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.
- 3 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 be excluded from the final image.
- Use the Underlying 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 show through the active layer in the final image.

## Creating clipping groups

In a clipping group, the bottommost layer, or *base layer*, acts as a mask for the entire group. 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 a clipping group, the texture and the text appear only through the shape on the base layer and take on the opacity of the base layer.

In a clipping group, you are creating only a path. In a vector mask <<*possibly called layer clipping path*>> you are also creating a path but the layer has its own characteristics such as fill, opacity, blending mode, and so on.

<<We need to talk about how these compare and interact with layer sets. Also, there will probably be a new icon identifying clipping groups in the palette. Do any Advanced Blending options including knockout/blend clipped effects as group need to be discussed here? >>

Note that only successive layers can be included in a clipping group. When you create a clipping group, dotted lines appear between the grouped layers in the Layers palette. The name of the base layer in the group is underlined, and the thumbnails for the overlying layers are indented.

Applying a blending mode to an indented layer affects only the blending of the layers within the group. Applying a blending mode to the base layer determines how the entire clipping group blends with the underlying layers.

<<ART: Keep. Update this with the new palette.>>



Clipping group with Layer 1 and lion layers

#### To create a clipping group:

- 1 Do one of the following:

- Hold down Alt (Windows) or Option (Mac OS), position the pointer over the solid 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 > Group with Previous.
  - Link together the desired layers in the Layers palette, as described in “Linking layers” on page 227. Then choose Layer > Group Linked.
- The clipping group is assigned the opacity and mode attributes of the bottommost layer in the group.

#### To remove a layer from a clipping group:

Do one of the following:

- Hold down Alt (Windows) or Option (Mac OS), position the pointer over the dotted 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 group, and choose Layer > Ungroup. This command removes the selected layer and any layers above it from the clipping group.

#### To ungroup all layers in a clipping group:

- 1 In the Layers palette, select the base layer in the clipping group.
- 2 Choose Layer > Ungroup.

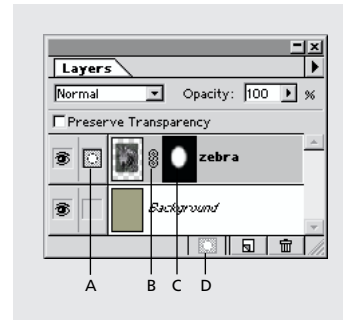
## Using layer masks

You can create a *layer mask* to control how different areas within a layer or layer set are hidden and revealed. By making changes to the layer 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. You can save all layer masks with a layered document.

There are two types of masks: layer masks (or raster masks), and layer clipping paths (or vector masks). <<*This section needs rework pending name change of vector mask to layer clipping paths.*>> You can use one or both types of mask on a single layer or layer set. A layer mask is resolution dependent and is created using the painting or selection tools while a layer clipping path allows you to clip a layer using resolution-independent hard edges created by the pen or shape tools.

In the Layers palette, both types of mask appear as an additional thumbnail to the right of the layer thumbnail. For the layer mask, this thumbnail represents the grayscale (alpha) channel created when you add the layer mask. (See “Storing masks in alpha channels” on page 217.)

<<**ART:** *Keep: Merge info from next two and update this with the new palette to show both layer and vector masks.*>>



A. Layer mask selected B. Mask link icon  
C. Layer mask D. New Layer Mask

## Adding layer masks

You can mask an entire layer or layer set, or just a selected part of it.

### To add a mask that shows or hides the entire layer:

- 1 If needed, choose **Select > Deselect** to clear any selection borders in the image.
- 2 In the Layers palette, select the layer to which you want 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 at the bottom of the Layers palette, choose **Layer > Add Layer Mask > Reveal All**, or choose **Layer > Add Layer Clipping Path > Reveal All**.

- To create a mask that hides the entire layer, Alt click (Windows) or Option-click (Mac OS) the New Layer Mask button, choose Layer > Add Layer Mask > Hide All, or choose Layer > Add Layer Clipping Path > Hide All

**To add a mask that shows or hides a selection:**

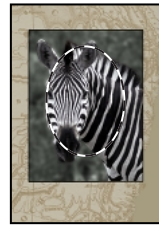
- 1 In the Layers palette, select the layer to which you want to add a mask.
- 2 Select the desired area in the image.
- 3 To create a mask that reveals the selected area and hides the remaining portion of the layer, do one of the following:

- Click the New Layer Mask button (📄), or choose Layer > Add Layer Mask > Reveal Selection.
- Choose > Add Layer Clipping Path> Current Path. Then draw a path using the pen or vector shape tools. When you close the path, the interior of the path is revealed.

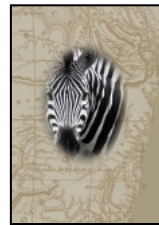
**To create a mask that hides the selected area and reveals the remaining portion of the layer, do the following:**

- Alt-click (Windows) or Option-click (Mac OS) the New Layer Mask button, or choose Layer > Add Layer Clipping Path > Hide Selection.
- Choose the pen (icon), freeform pen (icon) or one of the shape tools: rectangle (icon), ellipse (icon), polygon (icon), line (icon), or custom shape tool (icon), then select shape layer on the options bar. Drag or marquee-drag to create a shape. <<ED: list all pen and shape tools with their icons, or can we group them into pen and shape tools?>>

<<ART: cut both but merge this info with prior, adding vector example.>>



Selection



Layer mask revealing selection



For information on viewing the contents of the layer mask channel, see “Viewing layer masks” on page 242.

**Editing a layer mask**

You edit a layer mask by adding to or subtracting from the masked region.

**To edit a layer mask:**

- 1 Click the layer mask thumbnail in the Layers palette to make it active (the mask icon appears to the left of the layer thumbnail).

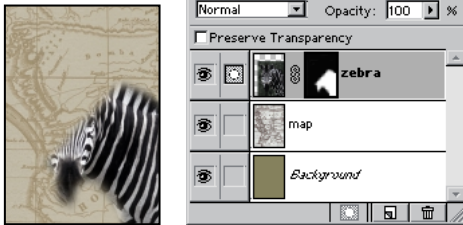
## 2 Select any of the editing or painting tools.

Because the layer mask is a grayscale alpha channel, the foreground and background colors default to grayscale values when the mask is active. As you edit, the mask thumbnail displays the changes.

## 3 Do one of the following:

- To hide the layer and add to the mask, paint the mask with black.

<<ART: cut 2, keep “neck painted with gray”, combine info from all but improve>>



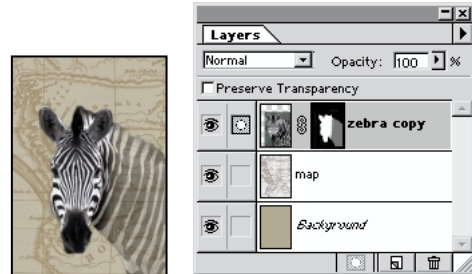
Head and background painted with black

- To reveal the layer and subtract from the mask, paint the mask with white.




Head painted with white

- To make the layer partially visible, paint the mask with gray.



Neck painted with gray

To edit the layer instead of the layer mask, make the layer active 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 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.

## Editing a vector mask (Photoshop)

You edit a vector mask by changing the vector object. To edit a vector mask, see “Adjusting paths (Photoshop)” on page 135. <<ED: May want to change this section title, I replaced most of section with xref at last moment, due to likely name change to layer clipping path>>

You can also convert a vector mask into a layer mask. Once the vector object has been rasterized, it can not be changed back into a vector object.

**To remove a vector mask:**

- 1 Click the vector mask in the Layers palette to make it active.
- 2 Do one of the following:
  - Drag the vector mask to the trash.
  - Choose Layers > Remove Vector Mask > Discard.

**To convert a vector mask to a layer mask:**

- 1 Click the vector mask in the Layers palette to make it active.
- 2 Choose Layers > Remove Vector Mask > Rasterize.

## Unlinking layers and layer masks

By default, a layer is linked to its layer mask or masks, as indicated by the link icon between the thumbnails in the Layers palette. The layer and its layer masks move together in the image when you move either one with the move tool.

You can unlink the layer from its layer masks by clicking the link icon. Unlinking them lets you move them independently and shift the mask boundaries separately from the layer. To re-establish the link, click between the layer and layer mask thumbnails.

## Viewing layer masks

By default, the layer mask channel does not appear in the image. You can view and edit the contents of the mask or temporarily turn off its effects. You can also change the display options for the mask.

**To select and display the layer mask channel:**

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 are hidden. To redisplay the layers, again Alt/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 rubylich masking color. Hold down Alt+Shift/Option+Shift and click the thumbnail again to turn off the color display.

**To turn off the layer mask temporarily:**

- 1 Do one of the following:
  - Press Shift and click the layer mask thumbnail in the Layers palette.
  - Choose Layer > Disable Layer Mask.

A red X appears over the layer mask thumbnail in the Layers palette, and the entire underlying layer appears without masking effects.

2 To turn on the mask, do one of the following:

- Click the layer mask thumbnail in the Layers palette.
- Choose Layer > Enable Layer Mask.



**To change the rubylith display for a layer mask:**

- 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, click the color swatch and choose a new color. (See “Using the Adobe Color Picker” on page 198.)
- 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, changing these settings might make the mask more easily visible against the colors in the image.

- 4 Click OK.

**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 may help reduce file size. For more information, see “About channels” on page 205.

**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, do one of the following:

- Click the Trash button at the bottom of the Layers palette, then click Apply.
- Choose Layer > Remove Layer Mask > Apply.

3 To remove the layer mask without applying the changes, do one of the following:

- Click the Trash button at the bottom of the Layers palette, then click Discard.
- Choose Layer > Remove Layer Mask > Discard.

**Selecting opaque areas on a layer**


By loading a *transparency 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/Command+Shift, and click the layer or layer mask thumbnail in the Layers palette.
- To subtract the pixels from an existing selection, press Ctrl+Alt/Command+Option, 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/Command+Option+Shift, and click the layer or layer mask thumbnail in the Layers palette.

 To move all the contents of a layer, you can use the move tool without loading a transparency mask.

## Using content layers (Photoshop)


A content layer lets 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.

*<<name will change, track the name, then change. Current suggestion “content layer” or “dynamic fill layer” apparently, can’t place on a layer set.>>*

When you create a content layer, its effect appears on all the layers below it. This lets you correct multiple layers by making a single adjustment, rather than making the adjustment to each layer separately.

**Note:** *Content layers can be applied and edited only in Photoshop, but they can be viewed in ImageReady. Also, you can’t apply a content layer to a layer set, instead, Photoshop creates a new layer above the layer set.*

*<<In Mark Hamburg’s 4/99 white paper on layer enhancements, there’s a note that we plan to allow adjustment layers at the base of clipping groups. I haven’t checked into this.>>*

 To confine the effects of a content layer to the layers immediately below it, create a clipping group consisting of these layers. (See “Creating clipping groups” on page 237.)

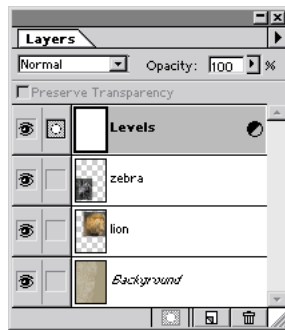
<<ART: reshoot UI combine into one>>



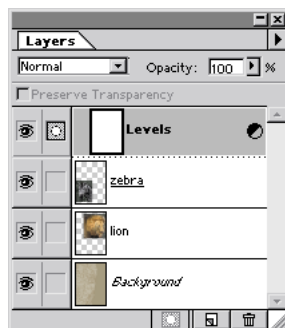
Original



Levels adjustment applied to image



Levels adjustment clipped to zebra layer



## Creating a content layer

Content layers have the same opacity and blending mode options as image layers and can be rearranged in order, deleted, hidden, and duplicated in the same manner as well. However, you also specify a color adjustment type for a content layer. Depending on your choice, the dialog box for the selected adjustment command may appear. (See “Making Color and Tonal Adjustments” on page 85.) The content layer takes the name of the adjustment type and is indicated in the Layers palette by a partially filled circle (icon) to the right of the name. <<Most changes bars here are due to name change.>>

Content layers are also layer masks, as indicated by the mask icon to the left of the layer thumbnail. When a content layer is active, the foreground and background colors default to grayscale values. By painting the content layer, you can apply the content to just portions of the underlying layers.

### To create a content layer:

- 1 To confine the effects of the content layer to a selected area, first make a selection.
- 2 Do one of the following:
  - Ctrl-click (Windows) or Command-click (Mac OS) the New Adjustment Layer button (📄) at the bottom of the Layers palette. <<track this with name change, icon here may need to change too>>
  - Choose Layer > New Content Layer. <<track this with name change>>
- 3 Choose the adjustment you want to make.

- 4 Choose layer options as desired, and then click OK. (See “Specifying layer options” on page 234.)
- 5 If needed, make the desired adjustments and click OK. (See “Making Color and Tonal Adjustments” on page 85.)

**To edit a content layer:**

- 1 Do one of the following:
  - Double-click the content layer’s name in the Layers palette.
  - Select the content layer’s name, and then choose Layer > Change Content. <<track this with name change>>
- 2 Make the desired adjustments, and click OK.

*Note:* If a content layer has no associated adjustment dialog box (for example, Invert Layer), double-clicking the layer’s name opens the Layer Options dialog box.

**To edit a content layer mask:**

- 1 Select the content layer in the Layers palette.
- 2 Select any painting or editing tool.
- 3 Edit the content layer mask:
  - To remove the adjustment effect, paint the content layer with black.
  - To display the full effect of the adjustment over the image layers beneath, paint the content layer with white.
  - To partially remove the adjustment effect, paint the content layer with gray.

4 Use the following methods to view the content layer mask:

- Alt-click (Windows) or Option-click (Mac OS) the adjustment layer thumbnail to view only the grayscale mask. Alt/Option-click the thumbnail again to redisplay the other layers.
- Hold down Alt+Shift (Windows) or Option+Shift (Mac OS), and click the content layer thumbnail to view the mask in a rubyolith masking color. Hold down Alt+Shift/Option+Shift and click the thumbnail again to turn off the rubyolith display.
- Shift-click the content layer thumbnail to turn off the masking effects temporarily; click the thumbnail again to turn on the mask.

*Note:* If you paint the content layer mask with black or gray, you can modify the boundaries and effects of the mask (by applying a filter, for example). Content layer masks that contain only white values are unaffected by most filters.

**Merging content layers**

You can merge a content layer with the image layer below it, the layers in its clipping or linking group, or all other visible layers in the image. You cannot, however, merge a content layer exclusively with another content layer. When you merge a content layer with the layer below it, the adjustments become permanent and apply only within the merged layer. (See “Merging layers” on page 248.)

Content layers whose masks contain only white values do not add significantly to the file size. As a result, it is not necessary to merge these content layers in an effort to conserve file space.

## Managing layered images

Adding nontransparent layers to an image increases its file size. To conserve disk space, you can delete layers or layer sets, merge two or more layers, or flatten all layers in an image into one layer.

*<<Most of these change bars are from moving this from an earlier place in the chapter.>>*

### Tracking file size

File size is proportional to the pixel dimensions of an 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. You should keep track of your file sizes to make sure the files are not becoming too cumbersome.

#### To track file size:

Check the values in the Document Sizes box at the lower left corner of the screen (Windows) or the image window (Mac OS). For more information on displaying file size, see “Changing image size and resolution” on page 26.

The first (left) value indicates the size of the file if flattened. The second (right) value shows the estimated file size of the unflattened file, including any layers and channels.



*To track the use of the Photoshop scratch disk (temporary disk space used for storing data when RAM is insufficient), position the pointer over the triangle at the bottom of the image window, hold down the mouse button, and choose Scratch Sizes. (See Using RAM, scratch disks, and system virtual memory.)<<xref destination?>>*

### Deleting a layer

Delete layers and layer sets you no longer need to reduce the size of your image file.

#### To delete a layer:

- 1 Select the layer in the Layers palette.
- 2 Delete the layer:
  - Click the trash button at the bottom of the Layers palette, and click Yes.
  - Choose Layer > Delete Layer or Layer > Delete Layer Set.
  - Choose Delete Layer or Delete Layer Set from the Layers palette menu.
  - Drag the layer name in the Layers palette to the trash button.



*To delete a selected layer automatically, Alt-click (Windows) or Option-click (Mac OS) the trash button at the bottom of the Layers palette. When you Ctrl-click (Windows) or Command-click (Mac OS) a layer set, only the layer set, not its contents are deleted.*

## Merging layers

Merging layers or layer sets combines several layers into one and keeps file size manageable. When you've finalized the characteristics and positioning of a layer's contents, you can merge the layer with one or more layers to create partial versions of your composite image. The intersection of all transparent areas in the merged layers remains transparent. You can also merge the layers in a linked group or clipping group. (See "Creating clipping groups" on page 237.)

For information on merging content layers, see "Merging content layers" on page 246.

### To merge a layer with the layer below it:

- 1 Make sure that the two layers you want to merge are visible. Select the top layer of the pair in the Layers palette.
- 2 Merge the layer:
  - Choose Layer > Merge Down or Layer > Merge Layer Set.
  - Choose Merge Down or Merge Layer Set from the Layers palette menu.

### To merge all visible linked layers:

- 1 Make visible all layers you want to merge, and link them together, as described in "Linking layers" on page 227.
- 2 Do one of the following:
  - Choose Layer > Merge Linked.
  - Choose Merged Linked from the Layers palette menu.

### To merge a clipping group:

- 1 Make visible all the layers in the group that you want to merge (any hidden layers in the group are discarded when you merge).
- 2 Select the base layer in the group.
- 3 Do one of the following:
  - Choose Layer > Merge Group.
  - Choose Merge Group from the Layers palette menu.

### To merge all the visible layers in an image:

- 1 Hide any layers you do not want to merge. Make sure that no layers are linked.
- 2 Do one of the following:
  - Choose Layer > Merge Visible.
  - Choose Merge Visible from the Layers palette menu.



*To merge all visible layers into a new layer, create a new empty layer, hold down Alt (Windows) or Option (Mac OS), and choose Layer > Merge Visible.*

## Flattening all layers

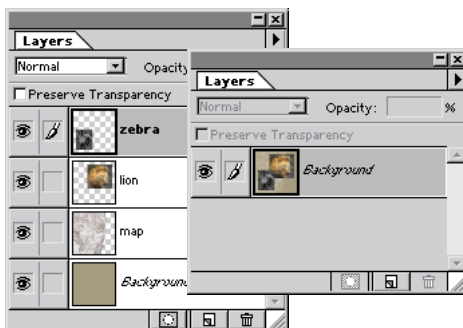
In a flattened image, all visible layers are merged into the background, greatly reducing file size. Flattening an image discards all hidden layers and fills the remaining transparent areas with white. In most cases, you won't want to flatten a file until you have finished editing individual layers.

**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 Flatten the image:
  - Choose Layer > Flatten Image.
  - Choose Flatten Image from the Layers palette menu.

<<**ART:** *reshoot UI and create before/after example*>>



Layered file, and flattened file

## Saving layered documents

You may want to save two versions of your file—a flattened version for final use and a second version with layers intact for future edits.

The Save a Copy command makes it possible to save a copy to your disk (in this case a flattened copy) without replacing the active window. For more information on saving documents and determining file formats, see “Saving and Exporting Images” on page 375.

## Using layer effects

You can apply a number of automated effects layers, including drop shadows, glows, beveling, and embossing. When you apply a layer effect, an “f” icon (f) appears to the right of the layer’s name in the Layers palette. Layer effects are linked to the layer contents. When you move or edit the contents on the layer, the effects are modified correspondingly. Layer effects are especially useful for enhancing type layers. Once effects have been applied to a layer, they become a layer style, and can be saved or edited. (See “Grouping layer effects into styles” on page 253.)

<<**Monitor:** *We may need to reword the relationship between individual effects and a layer style.*>>

**Note:** *You cannot apply layer effects to a background or to a layer set.*

### To hide or show all layer effects in the image:

Choose Layer > Layer Style > Hide All Layer Styles or Show All Layer Styles.

## Adding layer effects

You can apply effects in any combination to a layer.

- The Drop Shadow effect lets you add a shadow that falls behind the contents on the layer.
- The Inner Shadow effect lets you add a shadow that falls just inside the edges of the layer contents, giving the layer a recessed appearance.
- The Outer Glow and Inner Glow effects let you add glows that emanate from the outside or inside edges of the layer contents.
- The Bevel and Emboss effect lets you add various combinations of highlights and shadows to a layer.
- The Satin effect lets you create a satiny finish on a layer.
- (Photoshop) The Overlay effects lets you overlay a color, gradient, or pattern on a layer. (This option corresponds to the Color Fill, Gradient Fill, and Pattern Fill options in ImageReady.)
- (ImageReady) The Fill effects allow you to fill a layer with a color, gradient, or pattern, and correspond to the Overlay options in Photoshop.
- The Stroke effect lets you outline the object on the current layer using color, a gradient, or a pattern.

### To apply a drop shadow or inner shadow:

- 1 Select the layer you want to use, and choose Layer > Layer Style > Drop Shadow or Inner Shadow. Or, click the effects button (<<icon>>) at the bottom of the Layers palette, and select a shadow effect from the list.

- 2 Specify blending mode, opacity, color, lighting angle, blur, and intensity options. (See “Specifying options for layer styles” on page 254.)

- 3 Specify the displacement of the shadow from the layer contents:

- For Distance, enter a value or drag the slider.
- Drag the shadow in the image to reposition it. The distance and lighting angle values update as you drag.

- 4 Click OK.

### To apply an outer or inner glow:

- 1 Select the layer you want to use, and choose Layer > Layer Style > Outer Glow or Inner Glow. Or, click the effects button at the bottom of the Layers palette, and select a glow effect from the list.

- 2 Specify blending mode, opacity, color, blur, and intensity options, as described in “Specifying options for layer styles” on page 254.

- 3 If you are applying an inner glow, select a glow source option:

- Center to apply a glow that emanates from the center of the layer contents.
- Edge to apply a glow that emanates from the inside edges of the layer contents.

- 4 Click OK.

### To apply beveling or embossing:

- 1 Select the layer you want to use, and choose Layer > Layer Style > Bevel and Emboss. Or, click the effects button at the bottom of the Layers palette, and select Bevel and Emboss from the list.



2 Specify blending mode, opacity, and color options for the highlight and shadow, as described in “Specifying options for layer styles” on page 254.

3 For Style, choose one of the following:

- Outer Bevel to create beveling along the outside edges of the layer contents.
- Inner Bevel to create beveling along the inside 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.

4 Specify lighting angle and blur options, as described in “Specifying options for layer styles” on page 254.

5 For Depth, enter a value or drag the slider. A higher value results in a more accentuated bevel.

6 Select Up or Down to indicate the position of the highlight in relation to the layer contents.

7 Click OK.

**To apply a color, gradient, or pattern to a layer:**

1 Select the layer you want to use and do one of the following:

- (Photoshop) Choose Layer > Layer Style > and select Color, Gradient, or Fill Overlay. Or choose Layer > Layer Style > Blending Options and choose Overlay. Then select an overlay fill type. Or, click the effects button at the bottom of the Layers palette, and select Color, Gradient, or PatternOverlay.

- (ImageReady) Choose Layer > Layer Style, and select Color, Gradient, or Pattern Fill. Or, click the effects button at the bottom of the Layers palette, and select Color, Gradient, or Pattern Fill.

2 Specify blending mode, opacity, color, blur, and intensity options, as described in “Specifying options for layer styles” on page 254.

**To apply a satin effect to a layer:**

1 Select the layer you want to use, and choose Layer > Layer Style > Satin Or, click the effects button at the bottom of the Layers palette, and select Satin from the list.

2 Specify blending mode, opacity, color, blur, and intensity options, as described in “Specifying options for layer styles” on page 254.

3 To customize the satin effect, <<*add xref to Curves/Contour editor here*>>

**To apply a stroke effect to a layer:**

1 Select the layer you want to use, and choose Layer > Layer Style > Stroke Or, click the effects button at the bottom of the Layers palette, and select Stroke from the list.

2 Specify blending mode, opacity, color, blur, and intensity options, as described in “Specifying options for layer styles” on page 254.

<<**Note: monitoring menu name because menu name is under discussion.**>>

**To apply additional layer effects:**

1 Do one of the following:

- Choose another layer effect from the Layer Style dialog box, or click Prev or Next to cycle through the effects list. Select Apply, and specify options as described in the previous procedures.
- Choose another layer effect from the Layer > Layer Style submenu.
- Click the effects button in the Layers palette.

2 Specify options as described in the previous procedures.

### Removing layer effects

You can remove an effect that you have applied to a layer.

#### To remove a layer effect:

- 1 In the Layers palette, select the layer containing the effect you want to remove.
- 2 Do one of the following:
  - Choose the desired layer effect in the layers palette and drag it to the trash button.
  - Hold down Alt (Windows) or Option (Mac OS) and select the layer effect you want to remove from the Layer > Layer Style menu. Applied effects have checkmarks next to their command names; removing a layer effect removes the checkmark.
  - (Photoshop) Choose Layers > Layer Style, and deselect the layer effect you want to remove.

#### To remove all layer effects applied to a layer:

- 1 In the Layers palette, select the layer containing the effects you want to remove.
- 2 Do one of the following:

- In the Layers palette, drag the Effects bar to the trash button. <<ART: NEW show part of layers palette. Callout Effects bar.>>
- Choose Layer > Layer Style> Clear Layers.

### Converting layer effects to layers (Photoshop)

To customize or fine-tune the appearance of layer effects, you can convert the effects to regular image layers. Once you have converted an effect to image layers, you can enhance the effect by painting or applying commands and filters. However, you can no longer edit the effect using the Layer Styles dialog box, and the effect will no longer update as you change the original image layer.

#### To convert a layer effect to image layers:

- 1 In the Layers palette, select the layer containing the effect you want to convert.
- 2 Choose Layer > Layer Style> Create Layer(s).  
You can now modify and restack the new layers just like regular layers. Some effects (for example, inner glow) convert to layers within a clipping group.

## Grouping layer effects into styles

*Styles* are sets of one or more layer effects and blending options that you can apply to any layer or vector object. You can apply predefined styles included with Photoshop and ImageReady, or you can define new styles by adding the effects you apply to a layer to the Styles palette. You can create, load, and save sets of styles using the Styles palette, the Style menu accessed from the options bar, or the Preset Manager. (See “Defining preset colors, patterns, and shapes” on page 194.)

### Defining new styles

You define new styles by applying effects to a layer and adding those effects as a new style to the Styles palette. You can define a new style using a single effect or a group of effects.

#### To define a new style:

- 1 Apply effects to a layer. (See “Using layer effects” on page 249.)
- 2 Select a single effect or a group of effects:
  - In the layers palette, click an individual effect name to select it. *<<ART: NEW show part of layers palette. Callout Effects bar and which effect icon to click>>*
  - In the layers palette, click in the Effects bar in that layer or on the style icon (<<icon>>) next to the layer name to select all effects on a layer.
  - (Photoshop) Double-click an effect or the Effects bar. In the Layer Styles dialog box select additional effects if desired.

#### 3 Create a new style:

- Drag the selected effect or style into the list in the Styles palette or onto the New Item button (<<icon>>) in the Styles palette. The effect or style is added as a new style (with a default name) in the Styles palette list.
- Click the New Item button (<<icon>>) at the bottom of the Styles palette, and give the style a name.
- Choose New Style from the Styles palette menu, and give the style a name.
- (Photoshop) In the Layer Styles dialog box, click New. Give the style a name and select Include Layer Effects or Include Layer Blending Options to include them in the new style.

If you create a new style using the New Item button or the New Style menu command, all effects on the current layer are included in the new style.

- 4 To rename a style you created by dragging, double-click the new style in the Styles palette, enter a name for the style, and then click OK.

### Viewing styles

You can view styles in the Styles palette by name, by small swatch, or by large swatch.

#### To change the view of styles in the Styles palette:

Choose a view from the Styles palette menu:

- Select Name to view the styles as a list with small icons.
- Select Swatch to view the styles as swatches with no names.

- Select Large Swatch to view the styles as a list, with a large swatch of the selected style displayed. Styles are displayed in alphabetical order by name from top to bottom (and from left to right in Swatch view).

## Applying styles to layers

**You can apply styles to layers in any image. You can use a style to replace current effects applied to a layer, or add a style and preserve the existing effects.**

### To apply a style to a layer:

- 1 Select a method for applying the style:
  - Double-click the style thumbnail to apply it to the currently selected layer in the active document.
  - Drag the style thumbnail from the Styles palette onto a layer in the Layers palette. Press Shift while dragging to add the style while preserving effects on the destination layer that are not duplicated by the new style. (Any duplicated effects will be replaced by the new style.)
  - Drag the style thumbnail from the Styles palette onto a document. The style is applied to the topmost layer where the style is dropped. Press Shift while dragging to preserve effects on the destination layer that are not duplicated by the new style. (Any duplicated effects will be replaced by the new style.)

If a style is dragged onto a layer without pressing Shift, the style replaces any existing effects on the destination layer.

### To copy styles between layers:

- 1 In the Layers palette, select the source layer containing the style you want to copy.
- 2 Choose Layer > Layer Style > Copy 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 Style.
  - To paste into multiple layers, link the destination layers as described in “Linking layers” on page 227. Then choose Layer > Paste Layer Style to Linked.

The pasted effects will replace any existing effects on the destination layer or layers.

### Editing layer styles

### To edit the layer effects applied to a layer:

- 1 Double-click the layer effects icon (🔗) in the Layers palette.
- 2 Choose Layer > Layer Style and select the desired layer effect from the Layer Styles dialog box, or click Prev or Next to cycle through the effects list. Edit options as described in “Adding layer effects” on page 250.

## Specifying options for layer styles

When applying layer styles, you can specify a number of common options for each effect.

**Preview** Displays a preview of the layer style in the image as you change the layer effect settings.

**Mode** (ImageReady) or Blend Mode (Photoshop) 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 “Specifying layer blending modes” on page 236.)

**Opacity** Sets the opacity of the layer effect as you enter a value or drag the slider.

**Color** Specifies the color of a shadow, glow, or highlight as you click the color box and choose a color. (See “Using the Adobe Color Picker” on page 198.)

**Angle** Determines the lighting angle at which the effect is applied to the layer. You can define a global angle that applies to all layer effects in the image; you can also assign a local angle that applies only to a specific layer effect. Using a global angle gives the appearance of a consistent light source shining on the image.

*<<To come: Need to add more: distance, spread/choke, size, quality: shape, anti-aliased, noise, layer conceals drop shadow, and the rest common items in Layer Style dialog box; shape curve/Contour editor s/be xref'd from here. Track: shape options different in IR and PS>>*

#### **To set a global lighting angle:**

Do one of the following:

- In the Layer Style dialog box, select Use Global Light. For Angle, enter a value or drag the slider.

- Choose Layer > Layer Style > Global Light. Enter a value or drag the angle radius, and click OK.

The new lighting angle appears as the default for each layer effect that uses the global lighting angle.

#### **To set a local lighting angle:**

In the Layer Style dialog box, deselect Use Global Light. For Angle, enter a value or drag the angle radius.

**Blur** Creates a diffuse, softened effect as you enter a value or drag the slider.

**Intensity** Adjusts the strength of the effect as you enter a value or drag the slider. A higher value increases the strength of the effect.

*<<add head2 for shape curve editor here? and xref to preset mgr for managing shape curves>>*

## **Managing styles**

Styles that appear in the Styles palette are located in the Styles folder in the Photoshop application folder. You can remove styles from the Styles palette by deleting them or by dragging them out of the Styles folder to store them in another location.

#### **To delete styles from the Styles palette:**

- 1 Select the style in the Styles palette.
- 2 Drag the style onto the trash button (<<icon>>) in the Styles palette. Or click the trash button, and click Delete to confirm the deletion.

**To remove styles from the Styles palette and store them in another location:**

- 1 Open the Styles folder inside the application folder on your hard drive.
- 2 Locate the style or styles you wish to remove, and drag them to a new location on your computer.

Styles removed from the Styles folder will be removed from the Styles palette after Photoshop is closed and reopened.

## 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 Calculations command (on single channels only) and the Apply Image command (on single and composite channels). These commands offer two additional blending modes not available in the Layers palette: Add and Subtract. Although it's possible to combine channels into new combinations by copying channels into layers in the Layers palette, you may find it quicker to use the calculations commands to blend channel information.

<<*These change bars are from moving the section from an earlier place in the chapter.*>>

<<*Do the new RGB checkboxes in Blending Options apply to this?*>>

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 from 0 (off or black) to 255 (on or white). 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. For information on adjusting an image's pixel dimensions, see "Changing image size and resolution" on page 26.

### 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 make active the desired layer and channel in the destination image.

Pixel dimensions must match for the image names to appear in the Apply Image dialog box.

**Note:** *If the color modes of the two images differ (for example, an RGB and a CMYK image), you can copy a single channel to another channel, but you cannot copy a composite channel to another image's 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 the blending option you want to apply.
- Descriptions of the Add and Subtract options appear at the end of this section. Other blending options are the same ones listed in the options bar of the painting and editing tools and in the Layers palette. (See “Selecting a blending mode” on page 188.)
- 7 Enter an opacity for 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 “About masks” on page 214.)
  - 10 Click OK to apply the blending effect.

## 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. The pixel dimensions of the images must match for image names to appear in the Calculations dialog box.
  - 2 Choose Image > Calculations.
  - 3 To preview the calculation results in the image window, select Preview.
  - 4 Choose the first source image, layer, and channel. To use all the layers in the source image, choose Merged for Layer.
- Select Invert to use the reversed contents, or negative, of the channel. For Channel, choose Gray to get the same effect as converting the image to a grayscale image.
- 5 Choose the second source image, layer, and channel, specifying further options as described in the previous step.
  - 6 For Blending, choose the blending option you want to apply.

A description of the Add and Subtract options appears at the end of this section. Other blending options are the same ones listed in the options bar of the painting and editing tools and in the Layers palette. (See “Selecting a blending mode” on page 188.)

- 7 Enter an opacity for the effect's strength.
- 8 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 "About masks" on page 214.)
- 9 For Result, specify whether to place the blending results in a new image, or in a new channel or selection in the active image.
- 10 Click OK to perform the calculation.

### Calculations blending options

The Add and Subtract blending modes are available only with the Apply Image and Calculations commands. For a description of the remaining blending options. (See "Selecting a blending mode" on page 188.)

**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 ( $255 + \text{any value} = 255$  or greater).

The Add option 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 the Add option, 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.



# Chapter 11: Applying Filters for Special Effects

**F**ilters let you apply special effects to your images, such as impressionistic or mosaic effects, lighting effects, and distortions. You can also create your own effects using the Custom filter or the Filter Factory (included on the Adobe Photoshop CD-ROM).

## 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 15.)

***Note:** If you have problems or questions about third-party plug-ins, contact the plug-in’s manufacturer for support.*

## Using filters


To use a filter, choose the appropriate submenu command from the Filter menu. These guidelines can help you in choosing filters:

- The last filter chosen appears at the top of the menu.
- Filters are applied to the active, visible layer.


- Filters cannot be applied to Bitmap-mode, indexed-color, or 16-bit per channel images.
- Some filters only work on RGB images.
- Some filters are processed entirely in RAM.

## Previewing and applying filters

Applying filters—especially to large images—can be time-consuming. Some filters let you preview the effect before applying it.

 *To save time when trying various filters, experiment on a small, representative part of your image or a low-resolution copy.*

### To preview and apply a filter:

- 1 To apply a filter to an area of a layer, select that area. To apply a filter to the entire layer, leave the image unselected.
  - 2 Choose a filter from the submenus in the Filter menu. If a filter name is followed by ellipses (...), a dialog box appears.
  - 3 If a dialog box appears, enter values or select options.
-  *To display the dialog box for the last filter you applied, press **Ctrl+Alt+F** (Windows) or **Command+Option+F** (Mac OS).*
- 4 If the dialog box contains a preview window, use the following navigation methods to preview the effect:

- Click in the image window to center a specific area of the image in the preview window.

*Note:* This does not work with all preview windows.

- 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.

A flashing line beneath the preview size indicates that the preview is still being rendered.

5 If available, select the Preview option to preview the filter effect on the entire image.

6 Click OK to apply the filter.

A progress indicator in the status bar (Windows) or progress bar (Mac OS) lets you gauge the time remaining until the filter is applied.

### Blending filter effects (Photoshop)

The Fade command fades the effect of a filter, painting tool, or color adjustment. You choose a blending opacity and a mode to determine how pixels are modified. The blending modes available 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 content layers (Photoshop)” on page 244.)

*Note:* The Fade command can also be applied to Brush Strokes filters and any other painting tool.

### To fade the effect of a filter, painting tool, or color adjustment:

- 1 Apply a filter or an Image > Adjust command to an image or selection.
  - 2 With the affected area still selected, choose Filter > Fade.
  - 3 Select the Preview option to preview the effect.
  - 4 Drag the slider to adjust the opacity, from 0% (transparent) to 100%. (See “Specifying opacity, pressure, or exposure” on page 190.)
  - 5 For Mode, choose a blending mode. (See “Selecting a blending mode” on page 188.)
- Note:* The Color Dodge, Color Burn, Lighten, Darken, Difference, and Exclusion modes do not work on Lab images.
- 6 Click OK.

### 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.

<<remove page references and change to online help reference.>>

<<icon>> For information on loading images and textures with Displace or Lighting Effects, see the Displace filter in “Distort filters” on page 267 or “Using a Lighting Effects texture” on page 280.

**To load images and textures:**

- 1 Choose the filter you want from the appropriate submenu.
- 2 For Texture, choose Load Texture, 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.

- 3 Click OK.

**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 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.
- 7 Click OK.

**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 260.)

**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 a new layer with a neutral color” on page 233.)

**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. You might try Add Noise, Chalk & Charcoal, Clouds, Conté Crayon, Craquelure, Difference Clouds, Glass, Grain, Graphic Pen, Halftone Pattern, Mezzotint, Mosaic Tiles, Note Paper, Patchwork, Pointillize, Reticulation, Rough Pastels, Sponge, Stained Glass, Texture Fill, Texturizer, and Underpainting.

**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 “Reverting to any state of an image” on page 144.)

**Improve image quality and consistency** You can disguise faults, alter or enhance, 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 “Automating Tasks” on page 415)

## Improving performance with filters

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.)

- Experiment on a low-resolution copy of your file, and note the filters and settings used. Then apply the filters and setting to the high-resolution original.
- Free up memory before running the filter by using the Purge command. For more information, see “Correcting mistakes” on page 143.
- Allocate more RAM to Photoshop. If necessary, exit from 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, or 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.

<<*The following material is print only!*>>

## 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.



For information on individual filters within these submenus, see online Help.

**Artistic filters** 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. For information on the Rough Pastels and Underpainting filters, see “Using texture and glass surface controls” on page 261.

**Blur filters** Soften a selection or an image. Blur filters 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.

**Note:** To apply a Blur filter to the edges of a layer, be sure to deselect the Preserve Transparency option in the Layers palette.

**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.

**Distort filters** Geometrically distort an image, creating 3D or other reshaping effects. Note that these filters can be very memory intensive. For more information about the Displace filter, see “Defining undistorted areas” on page 261 and online Help. For more on Glass filter controls, see “Using texture and glass surface controls” on page 261.

**Noise filters (Photoshop)** 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. The Add Noise filter can be used to reduce banding in feathered selections or graduated fills or to give a more realistic look to heavily retouched areas.



For more on the Dust & Scratches filter, see online Help.

**Pixelate filters** Sharply define a selection by clumping pixels of similar color values in cells.



For more on the Color Halftone filter, see online Help.

**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. For information on the 3D Transform filter, see “Transforming objects in three dimensions” on page 165.



For more information on the Lighting Effects filter, see online Help.



*When using the Clouds filter, generate a more stark cloud pattern by holding down Alt (Windows) or Option (Mac OS) as you choose Filter > Render > Clouds.*

**Sharpen filters** Focus blurry images by increasing the contrast of adjacent pixels. They include the Sharpen Edges (Photoshop) and Unsharp Mask filters, which find and sharpen areas where significant color changes occur (such as the edges). The Unsharp Mask filter is commonly used for high-end color correction. (See “Sharpening an image” on page 112.)

**Sketch filters** 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. For information on the Conté Crayon filter, see “Using texture and glass surface controls” on page 261.



*For a truer effect, change the foreground color to one of the common Conté Crayon colors (black, sepia, sanguine) before applying the filter.*

**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 such as Find Edges and Trace Contour (Photoshop) 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 111.)




For more on the Extrude filter, see online Help.

**Texture filters** Give images the appearance of depth or substance, or add an organic look. (See “Using texture and glass surface controls” on page 261.)


**Video filters** Include the NTSC (National Television Standards Committee), which restricts the gamut of colors to those acceptable for television reproduction, and the De-Interlace filter, which smooths moving images captured on video.

 *When creating images for use on television or video, use the Color Settings > RGB Setup command to set your RGB space to NTSC (1953).*

**Other filters** Let you create your own filters, use filters to modify masks, offset a selection within an image, and make quick color adjustments. For more on the Offset filter, see “Defining undistorted areas” on page 261

 For more information on the Custom filter, see online Help.

**Digimarc filters** Embed a digital watermark into an image to store copyright information.


 For more information on Digimarc filters, see online Help.

<<*The following material is help only!*>>

## <F>: 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.

**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 261.

**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 261.

**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.

## <F>: Blur filters

The blur filters soften a selection or an 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.

***Note:** To apply a Blur filter to the edges of a layer, be sure to deselect the Preserve Transparency option in the Layers palette.*

**Blur and Blur More (Photoshop)** 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 Adobe Photoshop applies a weighted average to the pixels. This filter adds low-frequency detail and can produce a hazy effect.

**Motion Blur (Photoshop)** Blurs in a particular direction (from  $-360^\circ$  to  $+360^\circ$ ) 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 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.

## <F>: 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.

**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.

## <F>: Distort filters

The Distort filters geometrically distort an image, creating 3D or other reshaping effects. Note that these filters can be very memory intensive.

**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.

Creates displacement maps using a flattened file saved in Adobe Photoshop format (except Bitmap mode images) or one that is saved with the Include Composite Image With Layered Files option selected in the Saving Files preferences. You can also use the files included with your software (search for the Dispmaps folder in Windows or the Displacement Maps folder in Mac OS).

**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 261.)
- 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 261.

**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 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. For more information, see “Defining undistorted areas” on page 261.

**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 wave-length (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 261 for more information.)

 *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.

## <F>: 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.
- 6 Click OK.

**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.

## <F>: 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 (Photoshop)** 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 (Photoshop)** 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 pop-up menu in the Mezzotint dialog box.

**Mosaic (Photoshop)** 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.

## <F>: 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.

**3D Transform** Maps images to cubes, spheres, and cylinders, which you can then rotate in three dimensions. For more information, see “Transforming objects in three dimensions” on page 165.

**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.

**Difference Clouds** Uses randomly generated values that vary between the foreground and background 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.

**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 crosshair.

**Lighting Effects** Lets you produce myriad lighting effects on RGB images by varying 17 light styles, 3 light types, and 4 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.

**Texture Fill** Fills a selection with a grayscale file or part of a file. To add the texture to the document or selection, you open the grayscale document you want to use as the texture fill.

## <F>: Sharpen filters

The Sharpen filters focus blurry images by increasing the contrast of adjacent pixels.

**Sharpen and Sharpen More (Photoshop)** Focus a selection and improve its clarity. The Sharpen More filter applies a stronger sharpening effect than does the Sharpen filter.

**Sharpen Edges (Photoshop) 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, to emphasize the edge and create the illusion of a sharper image. (See “Sharpening an image” on page 112.)

## <F>: Sketch filters

Filters in the Sketch submenu add texture to images, often for a 3-D 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.

**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, light colors use the background color.

**Chalk & Charcoal** Redraws an image’s highlights and midtones with a solid midtone gray background 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 261.)

**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 Texture > Emboss and 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, light areas are sunken (or reverse the effect by choosing the Invert option).

**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.

## <F>: 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 111.)

**Diffuse (Photoshop)** 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.

**Emboss (Photoshop)** 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  $-360^\circ$  to lower (stamp) the surface to  $+360^\circ$  to raise the surface to); 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 object:
  - 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 the Solid Front Faces option. To fill the front face with the image, keep deselected the Solid Front Faces option.
  - 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.
- 4 Enter a value in the Depth text box to indicate how far the tallest object appears to protrude from the screen, from 0 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.

**7** Click OK.

**Find Edges (Photoshop)** 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.

**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, offsetting the selection from its original position. You can choose with what 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 of the image on top of the original and reveals part of the original image underneath the tiled edges.

**Trace Contour (Photoshop)** 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 5.)

**4** Click OK.

**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.

## <F>: 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 261.)

## <F>: 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.



*When creating images for use on television or video, use the Color Settings > RGB Setup command to set your RGB space to NTSC (1953).*

## <F>: 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 (Photoshop)** 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.

**DitherBox™** Creates a custom dither pattern for a selected RGB color. (See “Creating and applying custom dither patterns” on page 363.)

**High Pass (Photoshop)** 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 the opposite effect 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 (Photoshop)** 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. As does 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 261.)

**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. (See “Creating background images” on page 372.)

## <F>: 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 390.

## <F>: Using the Lighting Effects filter

The Lighting Effects filter lets you produce myriad lighting effects on RGB images by varying light styles, light types, and 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.

**Note:** *The Lighting Effects filter works only on RGB images.*

### To use the Lighting Effects filter:

- 1 Choose Filter > Render > Lighting Effects.
- 2 For Style, choose a style. Press Tab to cycle through the lights in a style. (See “Choosing a Lighting Effects style” on page 279.)
- 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 278.)
- 4 To change the color of the light, click the color box in the Light Type section 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 198, or “Using other color pickers” on page 202.

- 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, 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 280.)
- 7 Click OK to apply the filter.

### **<F>: 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.
- 4 Click OK to apply the filter.

#### **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 square at the end of the line. Shorten the line for a bright light, 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).
- 4 Click OK to apply the filter.

#### **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 black square 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.
- 4 Click OK to apply the filter.

## <F>: 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 white (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:**

- 1 In the Lighting Effects dialog box, choose a style for Style.
- 2 Click Delete.

## <F>: 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” on page 217.)
- 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).
- 5 Click OK.

# Chapter 12: Using Type

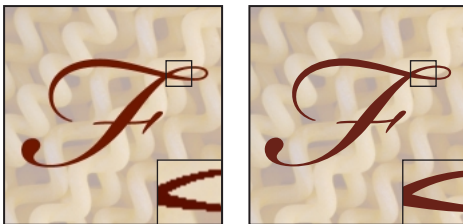
**A**dobe Photoshop and Adobe ImageReady let you add type to an image and edit it directly in the document window. You can quickly change the font, style, size, and alignment of the type and specify more advanced characteristics such as leading, kerning, and tracking. You can also create type in double-byte fonts, enabling you to create designs that include Chinese, Japanese, and Korean text (if you have the correct system software installed on your computer).

## About type

Graphics applications create two different kinds of type:

**Outline type** Consists of mathematically defined shapes and can be scaled to any size without losing its crisp, smooth edges.

**Bitmap type** Is composed of pixels. The sharpness of bitmap type depends on the type size and the resolution of the image. Zooming in or scaling up bitmap type shows jagged edges on the type.



Bitmap type and outline type; inset zoom 300%

By default, Photoshop type is bitmap type, while the ImageReady type is outline type. However, you can convert type in the following ways:

- In Photoshop, use the Type > Create Outline command to convert bitmap type into outline type. Once you convert a type layer to outline type, you can no longer edit its text, so use the Create Outline command only after the text is finalized.
- In ImageReady, type remains outline type until you save the optimized file or until you rasterize the type using the Layer > Type > Render Layer command. When you open a vector image (such as an Adobe Illustrator file) that contains outline type, ImageReady rasterizes the type into pixels or bitmap type (except for an image in Photoshop file format, in which outline type is preserved as outlines).

## Creating type

You can create horizontal or vertical type anywhere in an image. Depending on how you use the type tool, you can enter text at a point or create a text flow inside a bounding box. Creating type at a point is a good for entering a single word or line of text. Creating a text flow inside a bounding box is useful when you want to enter and format the type as one or more paragraphs, such as for a brochure.

<<ART: Text entered at a point and in a bounding box>>

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 and cannot be edited.*

### About using the type tool (Photoshop)

Clicking in an image with the type tool puts the type tool in edit mode. You can enter and edit text when the tool is in edit mode; however, you must commit changes to the type layer before you can perform other operations. For example, you cannot select a command from the Layers menu or use a painting tool while the text tool is in edit mode. To determine if the type tool is in edit mode, look in the options bar—if you see the OK and Cancel buttons, the type tool is in edit mode.

#### To commit text to a type layer:

Do one of the following:

- Click OK in the options bar.
- Press the Enter key on the keypad.
- <<Auto-commit options>>

<<*Engineering reviewers—Which tools cause auto-commit when you select them?*>>

### Entering text at a point

When you enter type at a point, each line of text is independent—the length of text lines grows or shrinks as you edit them, but they don't wrap to the next line.

#### To enter text at a point:

- 1 Select the type tool (T).
- 2 (Photoshop) Select the filled type option <<ICON>> in the options bar.
- 3 Select an orientation option in the options bar:
  - Horizontal <<ICON>> to enter text horizontally.
  - Vertical <<ICON>> to enter text vertically.
- 4 Select additional type options in the options bar, Character palette, and Paragraph palette. (See “Formatting characters” on page 287; “Formatting paragraphs” on page 293.)
- 5 Click in the image to set an insertion point for the text. The small line through the I-beam marks the position of the text *baseline*. For horizontal type, the baseline marks the line on which the text rests; for vertical type, the baseline marks the center axis of the type characters.
- 6 Enter the text you want. Press Enter (Windows) or Return (Mac OS) to begin a new line of text.
- 7 (Photoshop) Commit the text to the type layer. (See “About using the type tool (Photoshop)” on page 282.)

The text you entered appears in a new type layer.



## Entering text in a bounding box

When you enter text in a bounding box, the lines of text wrap to fit the bounding box dimensions. You can enter multiple paragraphs or text and select a paragraph justification option.

You can resize the bounding box, which causes the text to reflow within the adjusted shape. In Photoshop, you can adjust the bounding box while you're entering text or after you create the type layer. You can also rotate, scale, and skew text using the bounding box.

### To enter type in a bounding box:

- 1 Select the type tool (T).
- 2 (Photoshop) Select the filled type option <<ICON>> in the options bar.
- 3 Select an orientation option in the options bar:
  - Horizontal <<ICON>> to enter text horizontally.
  - Vertical <<ICON>> to enter text vertically.
- 4 Select additional type options in the options bar, Character palette, and Paragraph palette. (See “Formatting characters” on page 287; “Formatting paragraphs” on page 293.)
- 5 Drag diagonally to define a bounding box for the text.
- 6 Enter the text you want. Press Enter (Windows) or Return (Mac OS) to begin a new paragraph.
- 7 (Photoshop) If desired, resize, rotate, or skew the bounding box.
- 8 (Photoshop) Commit the text to the type layer. (See “About using the type tool (Photoshop)” on page 282.)

The text you entered appears in a new type layer.

### To resize or transform a 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.
    - (ImageReady) With the type tool active, select the type layer.
  - 2 Drag to achieve the desired effect.
    - To resize the bounding box, position the cursor over a handle—it turns into a double arrow (<<ICON>>)—and drag. Shift-drag to maintain the proportion of the bounding box.
    - (Photoshop) To rotate the bounding box, position the cursor outside of the bounding border—it turns into a curved, two-sided arrow (<<ICON>>)—and drag. Shift-drag to constrain the rotation to 15° increments.
    - (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 (<<ICON>>).
    - (Photoshop) To scale the text as you resize the bounding box, hold down Ctrl (Windows) or Command (Mac OS) and drag a side handle. The pointer turns into an arrowhead (<<ICON>>).
- <<Reviewers—Please verify accuracy of modifier descriptions. Are there additional modifiers to document for bounding box transforms?>>

## Creating a type selection border (Photoshop)

When you use the type tool with the mask type option selected, 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.

### 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 regular image layer, not a type layer.
- 2 Select the type tool (T), and select the masked type option <<ICON>> in the options bar.
- 3 Select additional type options, and enter text at a point or in a bounding box (as described in the previous sections).

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 its text and apply layer commands to it. You can change the orientation of the type; apply anti-aliasing; and, in Photoshop, convert between point text to box text. You can move, restack, copy, and change the layer options of a type layer as for a regular layer. You can also make the following changes to a type layer and still edit the text:

- Apply transformation commands from the Edit menu, except for Perspective and Distort. To apply the Perspective or Distort commands, or to transform just part of the type layer, you must convert the type layer to a regular layer.
- Use layer effects.
- Use fill shortcuts (see “Filling and stroking selections and layers” on page 191).

## 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 type tool.
- 2 Select the type layer in the Layers palette or click in the text to automatically select a type layer. In ImageReady, select Auto Select Layer in the options bar to use automatic layer selection.
- 3 Position the cursor 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 (Photoshop) Commit the changes to the type layer. (See “About using the type tool (Photoshop)” on page 282.)

## Rendering type layers

Some effects—such as those provided by filters—are not available for type layers. You must render the type prior to applying the effect. *Rendering* converts the type layer to a regular layer and makes its contents uneditable as text. A warning message appears if you choose a command that requires a rendered layer; click OK to render the layer.

### To convert a type layer to a regular layer:

- 1 Select the type layer in the Layers palette.
- 2 Choose Layer > Type > Render Layer.

## Changing type layer orientation

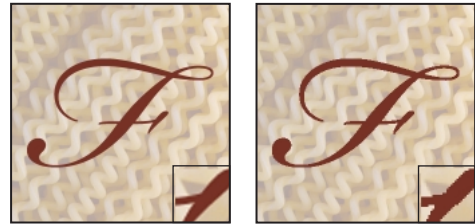
The orientation of a type layer determines the direction of text lines in relation to the document window (for point type) or bounding box (for box type). When a type layer is vertical, the text lines flow up and down; when a type layer is horizontal, the text line flow side to side. Don't confuse the orientation of a type layer with the direction of characters in a text line. (See "Rotating vertical type" on page 292.)

### To change the orientation of a type layer:

- 1 Select the type layer in the Layers palette
- 2 Choose Layer > Type > Horizontal or Vertical.

## 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 on, and off; inset zoom 200%.*

When creating text for online use, anti-aliased edges greatly increase the number of colors in the original image, which limits how much you can reduce the number of colors with the Optimize palette. This, in turn, limits your ability to reduce the optimized file size and may cause stray colors to appear along the edges of the type. Thus, when limiting the number of colors and file size 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 online and gives you more freedom in deciding whether to apply anti-aliasing to text.

**Note:** One problem that can occur with anti-aliasing is that of text being rendered inconsistently at small sizes and low resolution (such as for web graphics). Deselecting the Fractional Width option in the Character palette menu will correct this inconsistency.

**To apply anti-aliasing to a type layer:**

- 1 Select the type layer in the Layers palette.
- 2 Choose Layer > Type and choose an option from the submenu, or choose an option from the Anti-Aliasing menu (<<ICON>>) in the options bar:
  - None to apply no anti-aliasing.
  - Crisp to make type appear more sharp.
  - Strong to make type appear heavier.
  - Smooth to make type appear smoother.

<<Documentation—Verify final commands.>>

**Converting between point text and box text (Photoshop)**

The terms *point text* and *box text* refer to how the type was created—from a point or in a bounding box. You can convert point text to box text to adjust the flow of text within a bounding box. Or, you can convert box text to point text to make each line in the text flow independent from the others.

**To convert between point text and box text:**

- 1 Select the type layer in the Layers palette.
- 2 Choose Layer > Type > Convert to Point Text or Convert to Box Text.

**Warping type layers (Photoshop)**

*Warping* simulates the effect of entering type along a path; for example, you can warp text 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.

**To warp text:**

- 1 Select a type layer.
- 2 Do one of the following:
  - Select the type tool, and click the warp icon (<<ICON>>) in the options bar.
  - Select Warp from the Layer > Type submenu.
- 3 Choose a warp style from the Style pop-up menu.
- 4 Select the orientation of the warp effect—either Horizontal or Vertical.
- 5 If desired, specify values for additional warping options:
  - Bend to specify how much warp is applied to the layer. At 0%, no warp is applied to the layer. (Entering 0% is the same as choosing None for the warp style.)
  - Horizontal Distortion and Vertical Distortion to apply perspective to the warp.
- 6 Click OK.

## Formatting characters

Photoshop and ImageReady give you precise control over individual characters in type layers, including font, size, color, leading, kerning, tracking, baseline shift, alignment, and rotation. You can set type attributes before you enter text 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 Select the type tool (T).
- 2 Select the type layer in the Layers palette or click in the text to automatically select a type layer. In ImageReady, select Auto Select Layer in the options bar to use automatic layer selection.
- 3 Position the cursor in the text and do one of the following:
  - Drag to select one or more characters.
  - Shift-click to select a range characters.
  - Choose Edit > Select All to select all the characters in the layer.

- (Photoshop) To select a word, double-click it. To select a line of text, triple-click it. To select all characters in a bounding box, quadruple-click anywhere in the text.

***Note:** In Photoshop, selecting and formatting characters in a type layer puts the type tool into edit mode. You must commit the changes before you can perform other operations. (See “About using the type tool (Photoshop)” on page 282.)*

## 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 > Show Character.
- Click the Character palette tab.
- (Photoshop) With the type tool selected, click Palettes 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. You can also apply *faux* type styles—simulated versions of Bold and Italic styles.

<<**Reviewers—In following note, what is the correct location for installing fonts locally? There is no Fonts folder in the application folder.**>>

**Note:** In addition to the fonts installed on your system, Photoshop uses font files in the local Fonts folder, located inside the application folder. Installing a Type 1, TrueType, or CID font into the local Fonts folder causes the font to appear in the Photoshop application 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.



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.

- 2 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 the style you want set, you can choose Faux Bold or Faux Underline from the Character palette menu to apply a simulated style.

## Choosing a type size

The *type size* determines how large the type appears in the image. Photoshop and ImageReady use different units to measure type size.

- In Photoshop, type size is measured in points, with a default type size of 12 points. One PostScript point is equal to 1/72 of an inch in a 72-ppi image. You can switch between using the PostScript and traditional definitions of point size.
- In ImageReady, pixels are the only unit of measurement, including for type size.

### To choose a type size:

In the Character palette or options bar, enter or select a new value in the Size <<(ICON)>>.

### To specify the point size definition (Photoshop only):

- 1 Choose File > 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. You can change the color of type using the color selection box in the Character palette or the options bar (ImageReady only).

<<**Documentation—verify ImageReady color selection methods**>>

**To change the type color:**

Do one of the following:

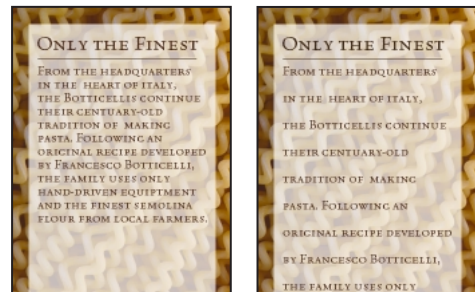
- Click the color selection box in and select a color using the color picker. In ImageReady, if the color selection box isn't showing in the Character palette, choose Show Options from the Character palette menu or click the Show Options button on the palette tab (◆) to view it.
- (ImageReady) Select 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.
- (ImageReady) 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 Color Table palette, or the Swatches palette.
- (ImageReady) Drag a color from the toolbox foreground or background color selection box or from the Color palette, the Color Table palette, or the Swatches palette, and drop the color on the type layer.
- (ImageReady) Apply a color fill layer effect to the type layer. See "Using layer effects" on page 249.
- (ImageReady) Press Alt+Delete (Windows) or Option+Delete (Mac OS) to fill the text with the foreground color, or press Control+Delete (Windows) or Command+Delete (Mac OS) to fill the text with the background color.

**Specifying leading**

The amount of vertical space between lines of type is called *leading*. Leading is measure from the baseline of a line of text to the baseline of the line above it. *Baseline* is the invisible line on which most text 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.

The default Auto-Leading option sets the leading at 120% of the type size (for example, 12-point leading for 10-point type).

<<Art—Simplify and reduce size of graphic?>>



5-point type with 5-point leading and with 10-point leading

**To change the leading:**

In the Character palette, do one of the following:

- Choose the desired leading from the Leading menu <<(ICON)>>.
- Select the existing leading value and enter a new value.

**To change the default auto leading percentage:**

- 1 Display the Paragraph palette.

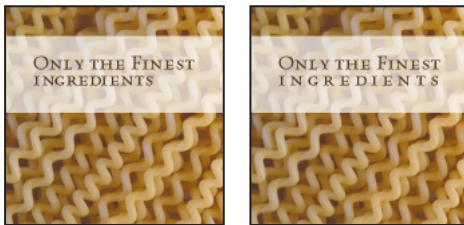
- 2 Choose Justification from the palette menu.
- 3 For Auto Leading, specify a new default percentage.

## 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 auto-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. Because kerning and tracking units are 1/1000 *em*, 100 units in a 10-point font are equivalent to 1 point.

<<Art—Simplify and reduce size of graphic?>>



Default, and tracking set to 350

### To use a font's built-in kerning information:

In the Character palette, select Metrics (Photoshop) or Auto (ImageReady) from the Kerning menu <<(ICON)>>.

<<Documentation—Verify Metrics/Auto options for final draft.>>

### To adjust kerning manually:

- 1 Click with the type tool to set an insertion point between two characters.

**Note:** If a range of text is selected, you can't manually kern the text. Instead, use tracking.

- 2 In the Character palette, enter or select a numeric value for Kerning <<(ICON)>>.

- 3 (Photoshop) Commit the changes to the type layer. (See “About using the type tool (Photoshop)” on page 282.)

### To specify tracking:

In the Character palette, enter or select a numeric value for Tracking <<(ICON)>>.

## Adjusting horizontal or vertical scale

*Horizontal scale* and *vertical scale* specify the proportion between the height and width of the type relative to the baseline. Unscaled characters have a value of 100%. You can adjust scale to compress or expand selected characters in both width and height.

<<Reviewers—The following information is from the InDesign doc. Is this planned functionality for Photoshop and ImageReady?>>



Scaling type using a transformation tool affects the type's horizontal scale as well as the type size, leading, indentation, and baseline shift. You can return type scaled using a transformation tool to its original horizontal scale by setting the horizontal scale to 100%.

<<Art—Add graphic?>>

*Horizontal scale values with 9-point font*

**Note:** Depending on the value you enter when you use vertical type, the horizontal scale may make the text appear narrower, because it functions relative to the baseline. The opposite is true for vertical scale.

#### **To adjust the horizontal or vertical scale of type:**

In the Character palette, enter a new percentage for Horizontal Scale <<(ICON)>> or Vertical Scale <<(ICON)>>.

### **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.

<<Art—Simplify and reduce size of graphic?>>



*Default, and baseline shift of -10 points*

#### **To specify baseline shift:**

In the Character palette, enter or select (ImageReady) a value for Baseline Shift <<(ICON)>>. 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.

In ImageReady, if the Baseline shift option is not visible in the Character palette, choose Show Options from the palette menu or click the Cycle Options icon <<(ICON)>>.

### **Changing case**

You can enter or format text as uppercase characters, either all caps or small caps. When you format text as small caps, Photoshop or ImageReady uses the small caps designed as part of the font, if available.

#### **To change the case of text:**

Choose All Caps or Small Caps from the Character palette menu. A check mark indicates that the option is selected. Selecting Small Caps will not change characters that were originally typed in uppercase.

<<Documentation—ImageReady has Normal Caps command, Photoshop doesn't.>>

## Making characters superscript or subscript

You can enter or format text as superscript or subscript characters. Superscript characters are reduced in size and shifted above the text baseline; subscript characters are reduced in size and shifted below the text baseline.

### To specify superscript or subscript characters:

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 and through text; the line is always black, regardless of the text color.

<<Reviewers—What is color of underline/strikethrough—always black or the same color as the text?>>

### To apply an underline or strikethrough:

Choose Underline or Strikethrough from the Character palette menu. A check mark indicates that the option is selected.

## Using ligatures and old style numerals

When working with OpenType fonts, you can use ligatures and old style typographic numerals in your text, if the font provides them. *Ligatures* are typographic replacements for certain pairs of characters, such as “fi” and “fl.” Old style numerals are shorter than regular numerals, and some old style numerals descend below the text baseline.

<<Art—Add graphic>>

### To use ligatures or old style numerals:

Choose Ligatures or Old Style from the Character palette menu. A check mark indicates that the option is selected.

## 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, 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.

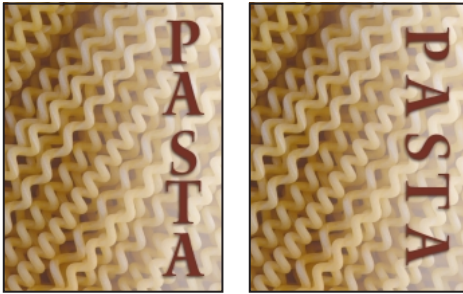
### To turn fractional character widths on or off:

Choose Fractional Widths from the Character palette menu. A check mark indicates that the option is selected.

## Rotating vertical type

When working with vertical type, you can rotate the direction of characters by 90°. Unrotated characters flow perpendicular to the text line; rotated characters flow parallel to the text line. You cannot rotate double-byte characters.

<<Art—Simplify and reduce size of graphic?>>



Original, and with vertical rotation 90°

#### To rotate characters in vertical type:

Choose Rotate Character from the Character palette menu. A check mark indicates that the option is selected.

## Formatting paragraphs

A paragraph is any range of text 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 text. When working with point text, each line of text is a separate paragraph; when working with box text, paragraphs can have multiple lines of text, depending on the dimensions of the bounding box.

### Selecting paragraphs

You can set paragraph formatting options for a single paragraph, multiple paragraphs, or all paragraphs in a type layer.

#### To select paragraphs for formatting:

Do one of the following:

- Select the type tool (T) and click in a paragraph to apply formatting to a single paragraph.
- Select the type tool (T) and make a selection within a range of paragraphs to apply formatting to multiple paragraphs.
- Select the type layer in the Layer palette to apply formatting to all paragraphs in the layer.

### Using the Paragraph palette

To display the Paragraph palette, choose Window > Show Paragraph or click the Paragraph palette tab.

### Aligning and justifying text

You can *align* text to one edge of a paragraph (left, center, or right for horizontal type; top, center, or bottom for vertical type) and *justify* text to both edges of a paragraph. Alignment options are available for both point text and box text, while justification options are only available for box text.

#### To specify alignment:

In the Paragraph palette, click an alignment option. The options for horizontal text are:

<<ICON>> Aligns text to the left, leaving the right edge of the paragraph ragged.

<<ICON>> Aligns text to the center, leaving both edges of the paragraph ragged.

<<ICON>> Aligns text to right, leaving the left edge of the paragraph ragged.

The options for vertical text are:

<<ICON>> Aligns text to the top, leaving the bottom edge of the paragraph ragged.

<<ICON>> Aligns text to the center, leaving both edges of the paragraph ragged.

<<ICON>> Aligns text to bottom, leaving the top edge of the paragraph ragged.

**To specify justification for box text:**

In the Paragraph palette, click a justification option. The options for horizontal text are:

<<ICON>> Justifies all lines except the last, which is left-aligned.

<<ICON>> Justifies all lines except the last, which is centered.

<<ICON>> Justifies all lines except the last, which is right-aligned.

<<ICON>> Justifies all lines including the last, which is force-justified.

The options for vertical text are:

<<ICON>> Justifies all lines except the last, which is top-aligned.

<<ICON>> Justifies all lines except the last, which is centered.

<<ICON>> Justifies all lines except the last, which is bottom-aligned.

<<ICON>> Justifies all lines including the last, which is force-justified.

## Indenting paragraphs

*Indentation* specifies the amount of space between text and the bounding box or line that contains the text. Indentation affects only the selected paragraph or paragraphs, so you can easily set different indentations for paragraphs.

**To specify paragraph indentation:**

In the Paragraph palette, enter a value for an indentation option:

- Left Indent <<(ICON)>> to indent from the left edge of the paragraph.
- Right Indent <<(ICON)>> to indent from the right edge of the paragraph.
- First Line Left Indent <<(ICON)>> to indent the first line of text in the paragraph. The first line indent is relative to the left indent. To create a first line hanging indentation, enter a negative value.

## Changing space above or below paragraphs

You can control the space before and after paragraphs using the paragraph spacing options.

**To specify paragraph spacing:**

In the Paragraph palette, enter a value for Space Before <<(ICON)>> and Space After <<(ICON)>>.

## Specifying hanging punctuation

*Hanging punctuation* controls whether punctuation marks fall inside or outside the margins. If hanging punctuation is turned on, the following characters appear outside the margins: periods, commas, single-quotation marks, double-quotation marks, apostrophes, hyphens, em dashes, en dashes, colons, and semicolons.

Punctuation hangs when text is aligned right, aligned left, centered, or justified. When a punctuation character is followed by an end quotation mark, both characters hang.

### To use hanging punctuation:

Choose Roman Hanging Punctuation from the Paragraph palette menu. A check mark indicates that the option is selected.

## Controlling hyphenation and justification

The settings you choose for hyphenation and justification affect the horizontal spacing of lines and the aesthetic appeal of text 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.

### Adjusting hyphenation

You can hyphenate words manually or automatically.

### 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 Select the Hyphenate option, if necessary.
- 3 Enter values for the following options:
  - Words Longer than \_ Letters to specify the minimum number of characters for hyphenated words.
  - 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 *aromatic* instead of *aromatic* or *aromatic*.
  - 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 text. This option applies only when using the single-line composer. (See “About composition methods” on page 296)
- 4 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 and keep multiple words from breaking.

**To prevent selected text from breaking:**

Choose No Break from the Character palette menu.

**Adjusting spacing**

You can precisely control the way in which Photoshop and ImageReady space letters and words and scales characters. Adjusting spacing options is especially useful when working with justified text, although you can also adjust spacing for unjustified text.

*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 justification options:**

- 1 Choose Justification from the Paragraph palette menu.
- 2 Enter values for Word Spacing, Letter Spacing, and Glyph Spacing:
  - For justified text 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.

<<Reviewers—The following information is from *In Design*. Please verify for Photoshop and provide details about *Glyph Spacing*>>

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 <?> to <?>; at 100%, <?>.

3 Click OK

**Working with composition**

The appearance of text on the page depends on a complex interaction of processes called *composition*. Using the word spacing, letter spacing, glyph scaling, and hyphenation options you've selected, Photoshop and ImageReady evaluate possible line breaks and chooses the one that best supports the specified parameters.

**About composition methods**

Photoshop and ImageReady offer two composition methods: Adobe Every-line composer and 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 every-line composer** Considers a network of break points for a range of lines, and thus can optimize earlier lines in the paragraph in order to eliminate especially unattractive breaks later on. Working with multiple lines of text results in more even spacing and fewer hyphens. The every-line composer is selected by default.

The every-line composer approaches composition by identifying possible breakpoints, evaluating them, and assigning a weighted penalty to them based on these principles:

- 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 single-line composer** Offers a traditional approach to composing text one line at a time. This option is useful if you prefer to have manual control over how lines break. The 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 Multi-line Composer or Adobe Single-line Composer from the Paragraph palette menu. A check mark indicates which option is selected.

## Setting CJK options (Photoshop)

Photoshop provides a full range of options for working with Chinese, Japanese, and Korean (CJK) type.

### Viewing CJK options

To view CJK options and commands in the Character and Paragraph palettes, choose Edit > Preferences > General and select Show CJK Features.

<<*Reviewers—Will provide a draft of this section on a separate review schedule.*>>





# Chapter 13: Designing Web Pages

**A**dobe Photoshop and Adobe ImageReady provide you with a comprehensive environment for designing complex, image-rich Web pages. You can use the tools and techniques you're already familiar with to design Web pages that include images, text, and links. Creating sophisticated effects—such as rollovers, image maps, and animations—is quick and easy. Best of all, you never have to view or edit the underlying HTML and Javascript.

## About designing Web pages with Photoshop and ImageReady

When designing Web pages using Adobe Photoshop and Adobe ImageReady, keep in mind the tools and features that are available in each application.

- Photoshop provides tools for creating and manipulating images for use as Web pages. You can divide an image into slices, add links and HTML text, optimize the image, and save it as a Web page.
- ImageReady provides many of the same image-editing tools as Photoshop. In addition, it includes tools and palettes for adding advanced Web features—such as rollovers, image maps, and animations—to images.

### Using Web palettes (ImageReady)

ImageReady provides the following palettes for working with Web features: Rollover, Slice, or Image Map.

### To display the Rollover, Slice, or Image Map palette:

Do one of the following:

- Click the tab of the palette you want to display.
- Choose Window > Show Rollover, Window > Show Slice, or Window > Show Image Map.

### Other factors to consider

When you save an image as a Web page, you can choose to generate an HTML file. This file contains information that tells a Web browser what to display when it loads the page. It can contain pointers to images (in the form of GIF, PNG, and JPEG files), HTML text, linking information, and code for creating rollover and animation effects.

You can preview most Web effects directly in Photoshop or ImageReady. However, the appearance of an image on the Web depends on the computer platform, color display system, and browser used to display the image. Be sure to preview images in different browsers, on different platforms, and with different color bit depths. (See “Previewing an image in a browser (ImageReady)” on page 16.)

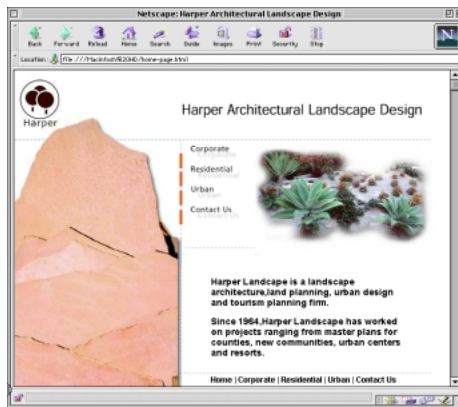
## Creating and viewing slices

Dividing an image into slices lets you add Web features to an image. A slice is a rectangular area of an image that you can use to create links, rollovers, and animations in the resulting Web page. You can also use slices to selectively optimize an image for Web viewing.

### About slices

You use slices to divide a source image into functional areas. When you save the image as a Web page, each slice is saved as an independent file that contains its own settings, color palette, links, rollover effects, and animation effects. You can use slices to achieve faster download speeds and increased image quality when working with documents that contain different types of images, or text and images.

<<Art—Example of a Web page divided into functional areas with slices. See graphic on p 508 of CIB.>>



Web page with slices displayed in browser

You set how the Photoshop or ImageReady application generates HTML code for aligning slices—either using tables or cascading style sheets—in the Document Settings dialog box. You can also set how slice files are named. (See “Setting output preferences and file information” on page 369.)

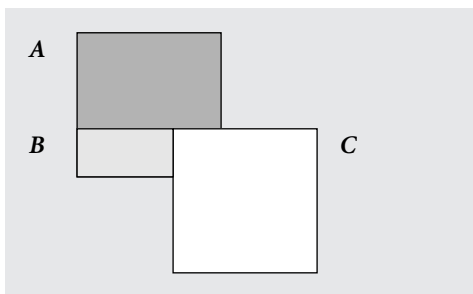
Photoshop and ImageReady provide the slice and slice select tools for creating and working with slices. In addition, ImageReady provides a Slices menu and Slice palette with commands for working with slices.

### Types of slices

Slices you create are called *user-slices*. When you create a new user-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. Auto-slices are regenerated every time you add or edit user-slices.

A *subslice* is a type of auto-slice that is generated when you create overlapping user-slices. Subslashes indicate how the image will be divided when you save the optimized file. You cannot select or edit subslices separately from the underlying slice. In ImageReady, subslices are regenerated every time you arrange the stacking order of slices.

<<Art—Diagram of subslices. Following is a quick sketch>>




A. Underlying slice B. Subslice C. Top slice


User-slices, auto-slices, and subslices look different—user-slices are defined by a solid line, while auto-slices are defined by a dotted line. Subslices are indicated by a red dotted line in Photoshop and slice symbol (<<ICON>>) in ImageReady.


### Creating user-slices

You can create user-slices with the slice tool, from a layer, from a selection (ImageReady), or from guides (ImageReady). When you create a slice from a layer, the slice area encompasses all the pixel data in the layer. If you edit the layer's content, the slice area automatically adjusts to encompass the new pixels.

 When defining an area for use as a rollover, place the rollover element on a separate layer, and create a slice from that layer. 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. (See “Working with rollovers (ImageReady)” on page 318.)

### 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.
  - Constrained 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. Hold down Shift as you drag to constrain the slice to a square. Hold down Alt (Windows) or Option (Mac OS) to draw from the center.

 In ImageReady, you can snap a new slice to a guide or another slice in the document using the Slices > Snap to Slices command. (See “Moving and resizing user-slices” on page 304.)

### To create a slice from a layer:

- 1 Select a layer in the Layers palette.
- 2 Do one of the following:

<<Reviewers—Will the following commands be the same in both apps?>>

- (Photoshop) Choose Layer > Make Slice From Layer.
- (ImageReady) Choose Layer > Create Slice From Layer.

**To create a slice from a selection (ImageReady):**

- 1 Select a portion of the image.
- 2 Choose Slices > 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 cover the full selection.

**To create slices from guides (ImageReady):**

In a document containing guides, choose Slices > Create Slices From Guides. All slices created from guides are user-slices.

When you create slices from guides, any existing slices are deleted.

### Converting auto-slices to user-slices

You can move, duplicate, combine, divide, resize, delete, arrange, and align 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.

Converting an auto-slice to a user-slice prevents it from being changed when regeneration occurs. Dividing, duplicating, combining, and setting options for auto-slices automatically converts them to user-slices.

**To convert auto-slices to user-slices:**

- 1 Select an auto-slice. In ImageReady, you can select multiple slices.

2 Do one of the following:

- (Photoshop) Click Promote to User Slice in the options bar.
- (ImageReady) Choose Slices > Promote To User-slice(s).

### Viewing slices

You can view slices in Photoshop, the Photoshop Save for Web dialog box (see “Optimizing images” on page 342), 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; dotted lines indicate that the slice is an auto-slice.

**Slice colors** Differentiate user-slices from auto-slices. By default, user-slices have blue lines and symbols, while auto-slices have gray lines and symbols.


In addition, ImageReady uses color adjustments to dim unselected slices. These adjustments are for display purposes only and do not affect the final document’s color. By default, the color adjustment for auto-slices is twice the amount of that for user-slices.

**Slice numbers** (<<ICON>>) Slices are numbered from left to right and top to bottom, beginning in the upper left corner of the document. If you change the arrangement or total number of slices, slice numbers are updated to reflect the changes.

**Slice symbols** Indicate whether a slice is an Image (<<ICON>>) or No Image (<<ICON>>) slice; if the slice is a layer-based slice (<<ICON>>); and if the slice is linked (<<ICON>>). (See “Choosing a content type” on page 308 and “Linking slices (ImageReady)” on page 312.)

**To show or hide slices:**

Do one of the following:

- (Photoshop) Choose View > Show > Slices.
- (Photoshop Save for Web dialog box and ImageReady) Click the Slices Visibility button (.

**To change the color of slice lines (ImageReady):**

*<<Documentation—In Photoshop x112, you can set line color in options bar. This approach is inconsistent with ImageReady—verify after UI frost.>>*

- 1 Choose Edit > 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 the display of slice numbers and slice symbol (ImageReady):**

*<<Documentation—Not in Photoshop x112. Verify after UI frost.>>*

- 1 Choose Edit > 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 of the numbers and symbols display.

**To change slice color adjustments (ImageReady):**

- 1 Choose Edit > 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 value determines by how much the brightness and contrast of unselected slices are dimmed.

**To display slice lines only (ImageReady):**

- 1 Choose Edit > Preferences > Slices.
- 2 Under Slice Lines, select Show Lines Only to display slice lines only and deselect color adjustment and numbers and symbols display.

## Selecting and modifying slices


You can move, duplicate, combine, divide, resize, delete, arrange, and align user-slices. There are fewer options for modifying auto-slices because they are generated automatically. However, you can promote an auto-slice to a user-slice at any time.

In Photoshop, you cannot divide, combine, or align slices. Jump to ImageReady for additional slice-editing capabilities.

## Selecting slices


You select a slice with the slice select tool in order to apply modifications to it. In the Photoshop Save for Web dialog box and in ImageReady, you can select multiple slices.

### To select a slice:

- 1 Select the slice select tool ()
- 2 Click on a slice in the document.

*Note:* When working with overlapping slices, click the visible section of an underlying slice to select it.

### To select multiple slices (Photoshop Save for Web dialog box and ImageReady):

With the slice select tool () , do one of the following:

- Shift-click to add slices to the selection.
- (Photoshop Save for Web dialog box) Drag across the slices you want to select in the image area.
- (ImageReady) 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 ImageReady, you can save, load, and delete slice selections. Use a slice selection to reselect specific slices quickly and accurately.

### 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 the name of the slice selection you want to load from the sub menu.

### To delete a slice selection (ImageReady):

Choose Slices > Delete Slice Selection, and select the name of the slice selection you want delete from the submenu.

## 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 a slice using numeric coordinates. (See “Resizing and moving a slice using numeric coordinates” on page 309)

### To move or resize user-slices:

- 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 multiples of 45 degrees.

- To resize a slice, grab a side or a corner handle of the slice and drag to resize the slice. In ImageReady, if you select and resize adjacent slices, common edges shared by the slices are resized together.

**To snap slices to a guide or another user-slice:**

1 Do one of the following:

- (Photoshop) Choose View > Snap to > Guides.
- (ImageReady) Choose Slices > Snap to Slices.

A check mark indicates that the feature is turned on.

2 Move the selected slices as desired. When you release the mouse button, the slices snap to any guide or slice within 4 pixels.

**Dividing slices (ImageReady)**

In ImageReady, the Divide Slice dialog box lets you divide one or more slices horizontally, vertically, or both.

**To divide slices:**

- 1 Select one or more slices.
- 2 Do one of the following:
  - Choose Slices > Divide Slice(s).
  - Choose Divide Slice(s) 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 width wise.

5 Define how you want to divide each selected slices:

- 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 set. Duplicate slices are always user-slices, regardless of whether the original is a user-slice or an auto-slice.

In ImageReady, you can also copy and paste slices within or between documents.

**To duplicate slices:**

- 1 Select a slice. In ImageReady, you can select multiple slices.
- 2 Do one of the following:

- Alt-drag (Windows) or Option-drag (Mac OS) from inside the selection. (Dragging from the edge will resize the slice.)
- (ImageReady) Choose Slices > Duplicate Slice(s).
- (ImageReady) Choose Duplicate Slice(s) from the Slice palette menu.

The duplicate slices appears on top of the original (offset 10 pixels down and to the right) and can be moved, resized, or otherwise modified.

#### To copy and paste slices (ImageReady):

- 1 Select one or more slices.
- 2 Choose Copy from the Slice palette menu.
- 3 If you want to paste into another document, open and display that document.
- 4 Choose Paste from the Slice palette menu.

#### 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.

#### To combine slices:

- 1 Select two or more slices.
- 2 Choose Slices > Combine Slices.

#### Arranging user-slices

When user-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 user-slices. You can specify which user-slice is on the top and bottom of the stack and move user-slices up or down in the stacking order.

*Note:* You cannot arrange the stacking order of auto-slices.

#### To change the stacking order of user-slices:

- 1 Select a user-slice. In ImageReady, you can select multiple slices.
- 2 Select a stacking order option:

*<<Documentation—Verify description of options bar icons is consistent with other chapters.>>*

- (Photoshop) With the slice select tool active, click a stacking order option (<<Full ICON>>) in the options bar.
- (ImageReady) Choose Slices > Arrange, and choose an option from the submenu; or choose an option from the Slice palette menu.

You can select the following stacking order options:

**Bring to Front** (<<ICON>>) to make the selection the topmost slice in the image.



**Bring Forward** (<<ICON>>) to move the selection one level up in the stacking order.

**Send Backward** (<<ICON>>) to move the selection one level down in the stacking order.

**Send to Back** (<<ICON>>) to make the selection the bottommost slice in the image.

### 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.

#### To align user-slices:

- 1 Select the user-slices you want to align.
- 2 Choose Slices > Align, and choose an command from the submenu:
  - Top to align the top edges of the selected slices to the top edge of the topmost slice selected.
  - Vertical Center to align the vertical centers of the selected slices to the vertical midpoint of the selected slices.
  - Bottom to align the bottom edges of the selected slices to the bottom edge of the bottommost slice selected.
  - Left to align the left edges of the selected slices to the left edge of the leftmost slice selected.
  - Horizontal Center to align the horizontal centers of the selected slices to the horizontal midpoint of the selected slices.
  - Right to align the right edges of the selected slices to the right edge of the rightmost slice selected.

### Deleting user-slices

When you delete a user-slice, auto-slices are regenerated to fill the document area. You cannot delete auto-slices.

#### To delete user-slices:

- 1 Select a user-slice. In ImageReady, you can select multiple slices.
- 2 Do one of the following:
  - Press Backspace or Delete.
  - (ImageReady) Choose Slices > Delete Slice(s), or choose Delete Slice from the Slice palette menu.

#### To delete all user-slices:

Do one of the following:

- (Photoshop) Choose View > Clear Slices.
- (ImageReady) Choose Slices > Delete All.

### Locking slices (Photoshop)

<<Reviewers—What is the purpose of locking slices?>>

#### To lock all slices:

Choose View > Lock Slices.

### Specifying slice options

Setting slice options lets you specify how the slice data will appear in a Web browser. You specify slice options in the Slice Options dialog box (Photoshop) and the Slice palette (ImageReady).

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.*

### Choosing a content type

Formatting and display options for a slice vary according to its content type. There are two types of slices:

- Image slices contain image data, including rollover states. This is the default content type.
- No Image slices contain a solid color or HTML text. Because No Image slices contain no image data, they download more quickly. Photoshop and ImageReady do not display No Image slice content. To view No Image slice content, preview the image in a browser. (See “Previewing an image in a browser (ImageReady)” on page 16.)

#### To specify a content type:

- 1 Select a slice.
- 2 (Photoshop Save for Web dialog box) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), select a slice type from the Type pop-up menu.
- 4 (Photoshop) Click OK.

### Specifying a slice name

The Name option lets you change the default name of the slice. This option is only available for Image slices. You can also change the default naming pattern for slices. (See “Setting slice naming preferences” on page 371)

#### To change the name of a slice:

- 1 Select a slice.
- 2 (Photoshop Save for Web dialog box) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), type a new name in the Name text box.
- 4 (Photoshop) Click OK.

### Specifying a slice background color

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. In Photoshop, this option is available only if you activate the Slice Options dialog box from within the Save for Web dialog box.

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 (ImageReady)” on page 16.)

#### To choose a background color:

- 1 Select a slice whose background color you want to change.

- 2 (Photoshop Save for Web dialog box) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 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, Eyedropper (to use the color in the eyedropper sample box), White, Black, or Other (using the color picker).
  - (ImageReady) Select None, Foreground Color, Background Color, or Other (to use the color picker), or select a color from the pop-up palette.
- 4 (Photoshop) Click OK.

### Assigning a URL to an Image slice

Assigning a URL to a slice makes the entire slice area a hotspot in the resulting Web page. When a user clicks in the hotspot, the Web browser links 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 you want to assign a URL to.
- 2 (Photoshop) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 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 (including http://).

- 4 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).

- 5 (Photoshop) Click OK.

### Resizing and moving a slice using numeric coordinates

The Dimensions options let you set the exact position and dimensions of the slice in relation to the document window. This option is not available if you access the Slice Options dialog box through the Photoshop Save for Web dialog box.

In ImageReady, if the Dimensions 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.

**To resize and move a slice using numeric coordinates:**

- 1 Select a slice.
- 2 (Photoshop) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 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 document. (See XREF to Using Rulers in Editing and Retouching.)* <<xref destination?>>

- 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.
- 4 (Photoshop) Click OK.

**Specifying browser messages**

You can specify what messages appear in the browser using the Message and Alt options. These options are only available for Image slices.

**Message** Lets you change the default message in the browser's status area for a selected slice or slices. By default the slice's URL is displayed.

**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.

In ImageReady, if the Message and Alt 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.

**To specify browser messages:**

- 1 Select a slice you want to specify browser messages for.
- 2 (Photoshop) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 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.
- 4 (Photoshop) Click OK.

**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 the HTML text in the document window—you can preview the text in a browser. (See “Previewing an image in a browser (ImageReady)” on page 16.) Keep in mind that the appearance of text is affected by the browser settings and computer platform it is viewed on. Be sure to preview HTML text in different browsers, with different browser settings, and on different platforms to see how text will appear on the Web.

**To add HTML text to a slice:**

- 1 Select a slice you want to add HTML text to.
- 2 (Photoshop) Double-click the slice with the slice select tool to display the Slice Options dialog box.
- 3 In the Slice Options dialog box (Photoshop) or the Slice palette (ImageReady), select No Image from the Type pop-up menu.
- 4 Type the desired text in the provided text box. You can use standard HTML tags to format the text.
- 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
- 6 (Photoshop) Click OK.

**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 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 slices:**

Select one or more Image slices, and specify options in the Optimize panel/palette. (See “Optimizing images” on page 342.)

**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 Optimize palette settings.

**Linking slices (ImageReady)**

Linking slices lets you share optimization settings between slices. You must use ImageReady to link slices; however, you can apply settings to linked slices in either the Save for Web dialog box (Photoshop) or the Optimize palette (ImageReady). 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 “Previewing and controlling dithering” on page 361.)

**To link slices:**

- 1 Select two or more slices 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.

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 all the slices in one set.

**To unlink user-slices:**

Do one of the following:

- To unlink a user-slice, select the slice, and then choose Slices > Unlink Slice.
- To unlink all user-slices in a set, select a slice in the set, and choose Slices > Unlink Set.
- To unlink all user-slices in a document, choose Slices > Unlink All.

## Creating and viewing image maps (ImageReady)

Image maps are similar to slices in that they enable you to link an area of an image to a URL. You can set up multiple linked areas—called hotspots—in an image, with links to text files; other images; audio, video, or multimedia files; other pages in the Web site; or other Web sites. You can also create rollovers effects in image maps. When you save the document as a Web page, the HTML file includes the coordinates for the hotspots and links in the image map.

Image maps enable you to link circular, polygonal, or rectangular areas in an image, while slices enable you to link only rectangular areas. If you need to link only rectangular areas, using slices may be preferable to using an image map. Using slices enables you to apply different optimization settings to different areas of an image.

***Note:** To avoid unexpected results, do not create image maps in slices that contain URL links—the image map links may cause slice links to be ignored in some browsers.*

### Creating image maps

You can create image maps using an image map tool or a layer.

**Tool-based image maps** Are created using an image map tool—you drag in the document window to define a hotspot. You can view and set options for tool-based image maps in the Image Map palette.

**Layer-based image maps** Are created from a layer—the layer's content defines the shape of the hotspot. If you edit the layer's content, the image map automatically adjusts to encompass the new pixels. Use layer-based image maps when defining an area for use as a rollover. You can convert a layer-based image map to a tool-based image map.

Image maps cannot extend beyond the edges of the image. If you overlap image maps, the topmost image map is the active hotspot in the overlapping areas.

#### To create an image map using an image map tool:

- 1 Select the rectangle image map tool (<<ICON>>), the circle image map tool (<<ICON>>), or the polygon image map tool (<<ICON>>) in the toolbox.
- 2 For the rectangle or circle image map tool, select Fixed Size to specify set values for the image map's dimensions. Enter pixel values in whole numbers.
- 3 Do one of the following to define the image map:
  - With the rectangle or circle image map tool, drag over the area you want to define. Hold down Shift as you drag to constrain the image map to a square or circle. To drag an image map from its center, hold down Alt (Windows) or Option (Mac OS) after you begin dragging
  - 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. To close the border, position the pointer over the starting point (a closed circle appears next to the pointer), and click.

4 In the Image Map palette, specify link information for the image map. (See “Moving and resizing tool-based image maps” on page 315.)

**To create an image map from a layer:**

- 1 In the Layers palette, choose a layer from which to create an image map. (To use multiple layers in one hotspot, first merge the layers.)
- 2 Display the Layer Options palette or the Layer Options dialog box. (See “Specifying layer options” on page 234.)
- 3 Do one of the following:
  - Select Image Map in the Layer Options palette.
  - Select Use Layer as Image Map in the Layer Options dialog box.
- 4 Select Polygon, Rectangle, or Circle from the Shape pop-up menu to determine the shape of the image map.
- 5 If you are using the Layer Options dialog box, click OK.

**Converting layer-based image maps to tool-based image maps**

Because a layer-based image map is tied to the pixel content of a layer, the only way to move, resize, or align it is to edit the layer. You can convert a layer-based image map to a tool-based image map to unlink it from the layer.

**To convert a layer-based image map to a tool-based image map:**

- 1 Select a layer-based image map using the image map selection tool (<<ICON>>). (See “Selecting image maps” on page 315).


- 2 Choose Promote Layer Based Image Map from the Image Map palette menu.

**Viewing image maps**

When you select the image map selection tool, image maps show automatically. You can also show or hide image maps using the Image Map Visibility button.

Image map preferences determine how image maps appear in the document window. You can set preferences for image map lines, line color, and color adjustments.

**To show or hide image maps:**

Click the Image Map Visibility button () in the toolbox.

**To set image map display preferences:**

- 1 Choose Edit > Preferences > Image Maps.
- 2 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 maps to a contrasting color.
- 3 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 hot spots.
- 4 To display image map lines only and deselect color adjustment display, select Show Lines Only.
- 5 To show a bounding box for circular image maps, select Show Bounding Box.



## Selecting and modifying image maps (ImageReady)

How you select and modify an image map depends on whether it is a tool-based image map or a layer-based image map. You can move, duplicate, arrange, and align tool-based image maps using the Image Map palette. In contrast, you use the Layers palette to modify layer-based image maps.

### Selecting image maps

You select image maps with the image map selection tool.

***Note:** You cannot select layer-based image maps with the image map selection tool. To edit options for a layer-based image map, select its layer in the Layers palette, and edit the options using the Layer Options palette or dialog box.*

#### To select a tool-based image map:

- 1 Select the image map selection tool (<<ICON>>).
- 2 Click on an image map in the image. Shift-click to add image maps to the selection.

You can also select multiple image maps by clicking outside an image map and dragging across the image maps you want to select.

## Moving and resizing tool-based image maps

You can move and resize tool-based image maps by dragging. You can also move and resize rectangular and circular image maps using numeric coordinates.

***Note:** To move or resize a layer-based image map, move or edit the layer.*

#### To move tool-based image maps:

- 1 Select one or more image maps you want to move.
- 2 Move the pointer inside the image map border, and drag it to a new position. Press Shift to restrict movement to multiples of 45 degrees.

#### To resize a tool-based image map:

- 1 Select an image map you want to resize.
- 2 Grab a handle on the image map border and drag to resize the image map.

#### To resize and move a tool-based image map using numeric coordinates:

- 1 Select a rectangular or circular image map.
- 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 or point of the image map and the origin point of the ruler in the document window.

- Y to specify the distance in pixels between the top edge or point of the image map 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 document. (See XREF to Using Rulers in Editing and Retouching.) <<xref destination?>>*

- W to specify the width of a rectangular image map.
- H to specify the height of a rectangular image map.
- R to specify the radius of a circular image map.

*<<Reviewers—Will the Duplicate and Delete commands in the Image Map palette menu work for layer-based image maps? Not in x112>>*

### Duplicating image maps

*<<Documentation—verify for layer-based image maps>>*

You can create a duplicate image map with the same dimensions and settings as the original.

#### To duplicate an image map:

- 1 Select one or more image maps.
- 2 Do one of the following:
  - Choose Duplicate Image Map(s) from the Image Map palette menu.
  - Hold down Alt (Windows) or Option (Mac OS), and drag from inside the image map or image maps.

The duplicate image map appears on top of the original (offset 10 pixels down and to the right) and can be moved, resized, or otherwise modified.

### Arranging image maps

When image maps overlap, the last image map you create is the top image map in the stacking order. You can specify which image map is on the top and bottom of the stack and move image maps up or down in the stacking order.

#### To change the stacking order of image maps:

- 1 Select one or more image maps you want to arrange.
- 2 Choose an option from the Image Map palette menu:
  - Bring to Front to make the selection the topmost image map in the image.
  - Bring Forward to move the selection one level up in the stacking order.
  - Send Backward to move the selection one level down in the stacking order.
  - Send to Back to make the selection the bottommost image map in the image.

### Aligning tool-based image maps

You can align tool-based image maps to the top, bottom, left, right, and middle.

*Note: To align layer-based image maps, use the Layer > Align Linked command.*

**To align tool-based image maps:**

- 1 Select the tool-based image maps you want to align.
- 2 Choose an option from the Image Map palette menu:
  - Align Top to align the top edges or points of the selected image maps to the top edge or point of the topmost image map selected.
  - Align Vertical Center to align the vertical centers of the selected image maps.
  - Align Bottom to align the bottom edges or points of the selected image maps to the bottom edge or point of the bottommost image map selected.
  - Align Left to align the left edges or points of the selected image maps to the left edge or point of the leftmost image map selected.
  - Align Horizontal Center to align the horizontal centers of the selected image maps.
  - Align Right to align the right edges or points of the selected image maps to the right edge or point of the rightmost image map selected.

**Deleting image maps**

<<*Documentation—verify for layer-based image maps*>>

You can delete selected image maps by pressing Backspace or Delete, or choosing Delete Image Map from the Image Map palette menu.

**Specifying image map options (ImageReady)**

You can specify a name, URL, target frame, and Alt text for an image map in the Image Map palette.

**To change the name of an image map:**

- 1 Select an image map whose name you want to change.
- 2 In Image Map palette, enter a new name in the Name text box.

**To specify link options for an image map:**

- 1 Select an image map whose link options you want to set.
- 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 a full URL (including http://).

For layer-based image maps, you can also specify a URL in the Layer Options palette or the Layer Options dialog box. The URL you enter displays under the layer name in the Layers palette.

- 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 image in nongraphical browsers. In most browsers, it also appears if the user positions the mouse over the image map.

## Selecting an image map type (ImageReady)

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. (Note that server-side image maps do not work with sliced images.) 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.

You select an image map type in the Document Settings dialog box. (See “Setting HTML preferences” on page 370.) If you select a server-side image map, ImageReady generates a separate map file based on the server option you select.

*<<Reviewers—Is this deferred? If not, do we need to tell users to edit the HTML file to update the location of the map configuration file on the server? >>*

## Working with rollovers (ImageReady)

You use the Rollover palette, in conjunction with the Layers palette, to add rollover effects to a Web page. You can display an animation as a rollover state, or you can create secondary rollovers in which moving a mouse over one area causes an image change in another area. ImageReady adds JavaScript code to the resulting HTML file to specify rollover states.

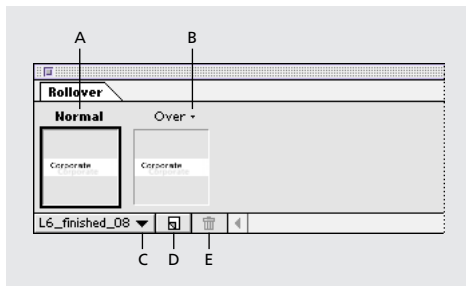
*Note:* When working with rollovers, it is important to preview images in a Web browser to ensure your document will function correctly for Web users. Also remember that image appearance will be different on different platforms.

### About rollovers


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. Creating a rollover effect combines three components: slices or image maps, states, and layers.

You use a slice or image map to define the active area for a rollover. By default, every slice or image map has one state—the Normal state. When you add a state to the rollover, you capture a snapshot of the slice or image map in the previous state. You can then use the Layers palette to make changes to the image in the new state. You can also add an animation to a rollover state.

<<Art—Replace with before and after of rollover states. Retain Normal and Over.>>



How you work with layers is an essential part of creating rollovers. Placing the image content for a rollover on its own layer allows you to use Layers palette commands and options to create rollover effects. When creating rollovers or animations, some changes you make to a layer affect only the active state or frame, while others affect all states or frames. (See “Using layers to edit frames” on page 330.)

 *When creating a slice for a rollover, use a layer-based slice. This is recommended 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. (See “Creating user-slices” on page 301.)*

When you save an image with rollover states as a Web page, each rollover state is saved as a separate file. By default, rollover states are named using the corresponding slice name plus the mouse action that triggers the rollover state. When you change the name of a slice, rollover states in the slice are renamed. You can change the default naming pattern for slices and rollover states in Slices Preferences. (See XREF.)

## Using the Rollover palette

You use the Rollover palette to create and set options for rollover states. The Rollover palette displays thumbnails for each state of a rollover. The first state in the Rollover palette is always the Normal state.

### To change the thumbnail view of rollover states:

- 1 Choose Palette Options from the Rollover palette menu.
- 2 Select a thumbnail size.
- 3 Under Thumbnails Show, define the content of the thumbnail:
  - Current Slice to show only the current slice in the thumbnail.
  - Entire Document to show the entire image in the thumbnail.
- 4 Click OK.

### To select a slice or image map in the Rollover palette:

Choose a slice or image map from the pop-up menu at the lower left corner of the Rollover palette.

## Creating rollover states


When you create a rollover state, you can select the mouse action which activates the state (except for the first state in a rollover, which is always the Normal state).

### To create a rollover state:

1 Select the slice or image map you want to add the rollover to.

*Note:* When creating a slice or image map for a rollover, use a layer-based slice or a layer-based image map. This is recommended because the dimensions of a layer's content may change in the course of creating a rollover.

2 In the Rollover palette, create a new state:

- Click the New State button () at the bottom of the palette.
- Choose New State from the Rollover palette menu.

The new rollover state is identical to the state immediately preceding it, until you make modifications to the image.

3 Use the default rollover state assigned by ImageReady, or select a rollover state from the pop-up menu above the rollover thumbnail:

- Over to define the rollover state when the Web viewer rolls over the slice or image map with the mouse with the mouse button up. (Over is automatically selected for the second rollover state.)

- Down to define the rollover state when the Web viewer presses the mouse button on the slice or image map. (This state appears as long as the viewer keeps the mouse button pressed on the slice.)

- Click to define the rollover state when the Web viewer clicks the mouse on the slice or image map. (This state appears after the viewer clicks the mouse and remains until the viewer activates another rollover state.)

- Out to define the rollover state when the Web viewer rolls the mouse out of the slice or image map. (The Normal state usually serves this purpose.)

- Up to define the rollover state when the Web viewer releases the mouse button over the slice or image map. (The Over state usually serves this purpose.)

- Custom to define a new rollover state. (You must create JavaScript code and add it to the HTML file for the document in order for the Custom rollover option to function. See a JavaScript manual for more information.)

- None to preserve the current state of the image for later use as a rollover state. (A state designated as None will not be displayed on the Web page.)

The Rollover States pop-up menu displays only the rollover states that have not yet been used for the selected slice or image map (with the exception of the None and Custom states, which are always available and can be used repeatedly). You can redefine rollover states as you work (with the exception of the Normal state).

4 Modify the image for the rollover state using the Layers palette and the ImageReady painting and image-editing features.

### Previewing rollover states

You can preview rollover states directly in the ImageReady document window by switching to rollover preview mode. You can also preview rollovers in a browser. (See “Previewing an image in a browser (ImageReady)” on page 16.)

#### To use rollover preview mode:

- 1 Click the Rollover Preview button (<<ICON>>) in the toolbox.
- 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 to preview the Over state; click the slice or image map to preview the Click state.

#### To exit rollover preview mode:

Click the Rollover Preview button in the toolbox.

### Adding animation to rollover states

You use the Animation palette, in conjunction with the Rollover palette, to add an animation to a rollover state

#### To add an animation to a rollover state:

- 1 In the Rollover palette, create a new rollover state or select the thumbnail for a rollover state in which you want to display an animation.

2 In the Animation palette, create frames for the animation. (See “Creating animations” on page 325).

### Matching layers across rollover states

When you use Layers palette commands to create effects for a rollover state, the changes apply only to the active state. However, you can use the Rollover palette to apply layer changes to all states in a rollover or all rollover states associated with an image. For more information about working with layers when creating rollovers, see “Using layers to edit frames” on page 330.

#### To match layer changes across rollover states:

- 1 In the Layers palette, select the layer containing the element you want to match across states.
- 2 In the Rollover palette, choose an option from the palette menu:
  - Match Layer Across States to apply layer attributes for the selected state to all states in the current rollover.
  - Match Layer Across All Rollovers to apply layer attributes for the selected state to all states in all rollovers associated with the current image.

### 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 Rollover palette as states, or copy states from the Rollover palette and paste them into the Animation palette as frames.

***Note:** Copy commands in the Animation palette and the Rollover 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 Rollover 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 Rollover palette menu.

**Deleting rollover states**

You can delete individual states or all states in a rollover.

**To delete rollover states:**

- To delete one state, select a rollover state, and either click the trash button (🗑️) on the Rollover palette or choose Delete State from the Rollover palette menu.
- To delete all states in a rollover, choose Delete Rollover from the Rollover palette menu.

## Creating Web galleries (Photoshop)

You use the Web Photo Gallery command to automatically generate a Web site from a set of images—complete with a thumbnails index page, individual JPEG image pages, and navigable links. Photoshop processes the images and creates HTML code to simplify the task of publishing your images online.

**To create a Web gallery:**

- 1 Choose File > Automate > Web Photo Gallery.
- 2 Click Source to specify the folder containing the images you want to export. Select Include All Subdirectories to include images inside any subfolders of the chosen folder.
- 3 Click Destination to specify the destination folder for the exported HTML files.
- 4 Select a style for the gallery from the Styles pop-up menu.
- 5 Choose Banner from the Options pop-up menu to enter information and set options for the banner of the gallery pages:
  - For Site Name, enter the title of the Web site.
  - For Photographer, enter the authorship credit.
  - For Date, enter the date you want to appear on the Web site. By default, Photoshop uses the current date.
  - For Font and Font Size, choose options for the banner text in the gallery.



**6** Choose Gallery Images from the Options pop-up menu to set options for individual image pages (an individual image page loads when a user clicks on a thumbnail image):

- For Border Size, enter the width of the border around the image in pixels.
- Select Resize Images to have Photoshop resize the source images for placement on individual image pages. Then specify resizing options—for Size, choose an option from the menu or enter a resize percentage; for Quality, choose an option from the menu, enter a value between 0 and 12, or drag the slider. A higher value results in better image quality but larger file size.

**7** Choose Gallery Thumbnails from the Options pop-up menu to set options for the thumbnail index page:

- Select Use Filename to display the filename under each thumbnail.
- Select Use File Info Caption to display Caption text from the File Info dialog box under each thumbnail. (See “Adding file information (Photoshop)” on page 389.)
- For Font and Font Size, select options for the thumbnail text.
- For Size, select a size of thumbnails, or enter a pixel value for the width of thumbnails.
- For Columns and Rows, specify how many columns and rows will appear in the thumbnail index page.
- For Border Size, specify the width of the border around each thumbnail in pixels.

**8** Choose Customize Colors from the Options pop-up menu to set colors for gallery elements. Click a color swatch to select a new color using the Color Picker.

**9** Click OK to create the HTML gallery pages.

Photoshop places the following HTML and JPEG files in your destination folder:

- A gallery homepage, index.htm. Open this file in any Web browser to preview your photo gallery.
- JPEG images, inside an images subfolder.
- HTML page files, inside a pages subfolder.
- JPEG thumbnail images, inside a thumbnails subfolder.



# Chapter 14: Creating Animations (ImageReady)

**A**dobe ImageReady provides a powerful, easy way to create multiple-frame animations from a single document.

Using the Animation and Layers palettes, you can create, edit, copy, paste, and rearrange frames in a sequence. You can use the powerful Tween feature to quickly create new frames that vary a layer's opacity, position, or layer effects, and create the illusion of a single element in a frame moving or fading in or out. You can also optimize the animation, specify looping and repeat options for playback, and flatten frames into layers. The number of frames you can create is limited only by the amount of memory available to ImageReady on your system.

If you're creating an animation as part of a Web page, you can use animation techniques in conjunction with the Web features. (See "Dividing images into slices" on page 1 <<*xref destination?*>> and "Working with rollovers (ImageReady)" on page 318.) You can also save animations as Photoshop files (for reediting) and export animations as QuickTime movies.

## 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.

How you work with layers is an essential part of creating animations in ImageReady. Placing each element of an animation on its own layer enables you to change the position and appearance of the element across a series of frames using the Layers palette commands and options.

<<*ART—Show an element changing over time*>>

## Creating animations

You use the Animation palette, in conjunction with the Layers palette, to create animation frames from an original, multilayer image. You can assign a delay time to each frame, use the Tween command to generate new frames, and specify looping for the animation.

## 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.

### To view the Animation palette:

Do one of the following:

- Choose Window > Show Animation.
- Click the Animation palette tab.

### To change the thumbnail view of frames:

- 1 Select Palette Options from the Animation palette menu.
- 2 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:

In the Animation palette, do one of the following:

- Click the New Frame button ()

- Choose New Frame from the Animation palette menu.

## Selecting frames

Before you can work with a frame, you must select it as the current frame. The contents of the current frame display in the document window.

You can select multiple frames, either contiguous or discontinuous, to edit them or apply commands to them as a group. When multiple frames are selected, only the current frame displays 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:

- In the Animation palette, click the thumbnail of the frame you want to select as the current frame.
- In the Animation palette or the Layers palette, click the Forward button <<(ICON)>> to select the next frame in the series as the current frame.
- In the Animation palette or the Layers palette, click the Backward button <<(ICON)>> to select the previous frame in the series as the current frame.
- In the Animation palette, click the Rewind button <<(ICON)>> 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 discontinuous 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:**

Alt-click (Windows) or Command-click (Mac OS) a frame to deselect it.

**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. Ctrl-click (Windows) or Command-click (Mac OS) to add frames to the selection.
- 2 Drag the selection to the new position.

***Note:** If you drag multiple discontinuous frames, the frames are placed contiguously in the new position.*

**To reverse the order of contiguous frames:**

- 1 Select the contiguous frames you want to reverse.
- 2 Choose Reverse Frames from the Animation palette menu.

**To delete selected frames:**

Do one of the following:

- Select Delete Frame from the Animation palette menu.
- Click the trash button in the Animation palette and click Yes to confirm the deletion.
- Drag the selected frame or frames onto the Trash button.

**To delete an entire animation:**

Select Delete Animation from the Animation palette menu.

**Copying and pasting frames**

To understand what happens when you copy and paste a frame, think of a frame as a container for the layers that make up an image. When you copy a frame, you copy all the layers in the frame; when you paste a frame, you add layers to the destination frame. The pasted layers are visible in the destination frame, but hidden in other frames of the animation.

You can paste layers into a frame in the same animation or another animation. You can also modify the paste operation to add new frames to an animation or replace frames in an animation.

**To copy and paste layers between frames:**

- 1 Select one or more frames.
- 2 Choose Copy Frame(s) from the Animation palette menu.
- 3 Select a destination frame in the current animation or another animation. If you are copying and pasting multiple frames, the first of the copied frames is pasted into the selected destination frame; subsequent copied frames are pasted into subsequent destination frames.
- 4 Do one of the following:
  - Choose Paste Frame(s) from the Animation palette menu. Identical layers are not added to the destination frame.
  - Hold down Alt (Windows) or Option (Mac OS), and choose Paste Frame(s) to paste all layers into the destination frame (regardless of whether copied layers are identical to destination layers).

<<*Reviewers—Please verify accuracy of modifier description. Does Alt/Option work as described.*>>

**To paste new frames into an animation:**

- 1 Select a frame after which to add the copied frames.
- 2 Hold down Shift, and choose Paste Frame(s) from the Animation palette menu. The pasted layers are visible in the new frame, but hidden in other frames.

**To replace destination frames with copied frames:**

- 1 Select a destination frame to be replaced by the copied frame. If you copied multiple frames, the first of the copied frames replaces the selected destination frame; subsequent copied frames replace subsequent destination frames.
- 2 Press Shift+Alt (Windows) or Shift+Option (Mac OS) and choose Paste Frame(s) from the Animation palette menu.

**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. 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.

<<*Art—Add graphic demonstrating tweening (possible Animation palette before and after tweening. Incorporate Layers palette if possible.*>>

When you apply the Tween command, ImageReady compares the attributes of the selected layers between the beginning and ending frames. The visual element you want to tween must be on the same layer in the beginning frame and the ending frame. 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.

**To create new frames using tweening:**

**1** To apply tweening to specific layers, select them 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 discontinuous frames for tweening.*

**3** Do one of the following:

- Click the Tween button (<<ICON>>) in the Animation palette.

- Choose 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.

- 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.

- 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.

**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:

<<*Documentation—verify bug #12075 fixed. Otherwise, update procedure to select first frame in animation before selecting a looping option.*>>

- 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.

#### To specify a delay time:

- 1 Select one or more frames.
- 2 In the Animation palette, click on 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 accurate when previewing an animation in ImageReady. For an accurate preview of delay time, preview animations in a browser.

## Working with layers in animations

Working with layers is the key to creating animations in ImageReady. Each new frame starts out as a duplicate of the preceding frame—you edit the frame by adjusting its layers. You can apply layer changes to a single frame, a group of frames, or the entire animation.

### Using layers to edit frames

*Note:* The following information applies to rollover states as well as animation frames.

When you work with layers in a frame, you can create or copy selections in the layer; adjust color and tone; change the layer's opacity, blending mode, or position; add layer effects; and perform editing tasks as you would with layers in any image. Using layer attributes to create animation effects is very simple, and it allows you to save an animation file in Photoshop format for later reediting.



Keep in mind that some changes you make to layers affect only the active frame, while others affect all frames:

**Frame-specific changes** Affect only the active frame in the animation. Changes you make to a layer using Layers palette commands and options—including a layer’s opacity, blending mode, visibility, position, and layer effects—are frame-specific.

**Global changes** Affect all frames in an animation. Changes you make to the layer’s pixel values, using painting and editing tools, color and tone adjustment commands, filters, type, and other image-editing commands, affect every frame in which the layer is included. In addition, using a layer mask affects all frames.

### Adding layers to frames

When you create a new layer, it is added to all frames in an animation, but is visible only in the active frame. For example, if you create a new layer in the second frame of a three frame animation, the new layer is added to all three frames, but is hidden in the first and third frames.

### Showing and hiding layers in frames

When you show or hide a layer in a frame, the visibility of the layer changes for that frame only. For example, if you use a multilayer image to create a three-frame animation, and you hide the top layer in the second frame, that layer will still be visible in first and third frames.

### Matching layers across frames

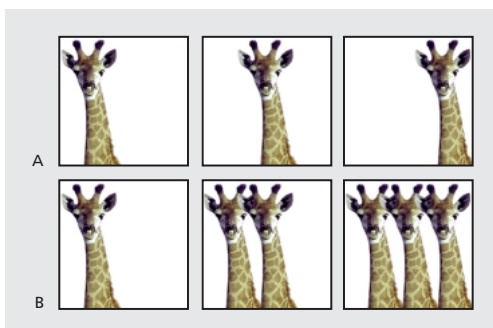
When you use Layers palette commands to edit a layer, the changes apply only to the selected frame. To apply layer changes to all frames in an animation use the Match Layer Across Frames command.

#### To match layer changes across frames:

- 1 In the Layers palette, select the layer containing the element you want to match across frames.
- 2 In the Animation palette, choose Match Layer Across Frames from the palette menu. The layer attributes for the selected frame are applied to all frames in the animation.

## 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.



A. Frame with background transparency with Restore to Background option B. Frame with background transparency with Do Not Dispose option

<<Art—Redo icons in following paragraph.>>

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 Ctrl-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.

- 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). To accurately preview an animation using the Restore to Background option, preview the animation in a browser.
- 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.

## 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 use the Animation palette to preview an animation in ImageReady. You can also use the Preview In command to view the animation in a browser.

<<[Documentation—Update with XREF to Chapter 1](#)>>

**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 330.)
- 2 To stop the animation, click the Stop button (□).
- 3 To rewind the animation, click the Rewind button <<(ICON)>>.

**To preview an animation in a browser:**

- 1 Choose File > Preview In, and select a browser from the submenu.
- 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 non animated images. (See “Optimizing images” on page 342.) You should always optimize an animation in GIF format because GIF is the only format that supports the display of animated images on the Web.

***Note:** While you can optimize an animated image in JPEG or PNG format, ImageReady cannot generate HTML code for displaying the animation. The resulting Web page will display only the first 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 which has changed from the preceding frame. Animation files created using this option are smaller but are incompatible with GIF editors which do not support the option. (This option is selected by default and is recommended.)
- Redundant Pixel Removal to make all pixels in a frame which are unchanged from the preceding frame transparent. This option is selected by default, and is recommended.

**Important:** Set the frame disposal method to Automatic when using the Redundant Pixel Removal option. (See “Setting the frame disposal method” on page 332.)

3 Click OK.

4 Apply optimization settings as described in “Optimizing images” on page 342.

 When optimizing the colors in an animation, use the adaptive, perceptual, or selective palette. This insures that the colors are consistent across frames. (See “Selecting a palette option” on page 350.)

## Saving animations

You can save an animation as a series of GIF files, a Photoshop file, or a QuickTime movie.

## Saving animations as animated GIFs

Animations that you view in a Web browser are called *animated GIFs*. They are made up of a series of separate GIF files, one for each frame of the animation. The HTML file specifies where the animation appears on the Web page and attributes such as frame delay time and looping.

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 the source document.

### To save an animation as an animated GIF:

- 1 Optimize the animation as described in “Optimizing animations” on page 333.
- 2 Save the image as described in “Saving optimized images” on page 367

## Saving animations as Photoshop files

Saving an animation as a Photoshop file preserves all the information about each frame. You can reopen the file in ImageReady and continue to work with the animation. You can also open and edit the file in Photoshop, but you cannot edit the animation frames separately or play the animation.

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. If you add new layers to the file while in Photoshop, the layer is added to all frames of the animation. However, the new frame will only show 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 layer will be changed when you reopen the file in ImageReady.

**To save an animation as a Photoshop file:**

- 1 Select the frame of the animation you want to display when you open the file in Photoshop.
- 2 Save the file in PSD format. (See “Saving files” on page 375.)

**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.
- 2 Select QuickTime Movie from the Format menu.

**Note:** On Windows, QuickTime Movie format is only available when QuickTime is installed on your computer.

<<UI—Label for file format text box is not consistent between Windows and Mac.>>

- 3 Type a filename, and choose a location for the file.

- 4 Click Save.

- 5 If desired, adjust the compression settings, and click OK. QuickTime selects compression settings for the file, based on the currently selected animation frame.

## 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 Select Make Frames From Layers in 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.

**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 > 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, FLIC, and PICT 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, 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.

# Chapter 15: Optimizing Images for the Web

**C**reating small graphics files is key to distributing images on the World Wide Web. With smaller files, Web servers can store and transmit images more efficiently, and viewers can download images more quickly. Likewise, when preparing images for CD-ROM or other multimedia viewing, it's important to make the image files as small as possible. This conserves file storage space and decreases the amount of RAM needed for image display.

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. You can optimize images in the three major graphic file formats used on the Web: GIF (Graphics Interchange Format), JPEG (Joint Photographic Experts Group), and PNG-8 or PNG-24 (Portable Network Graphics, with 8-bit or 24-bit color).

While Photoshop contains a rich set of features for optimizing images for the Web, there may be times when you want more sophisticated Web capabilities. ImageReady provides all of the image optimization features of Photoshop, as well as advanced capabilities such as animation and rollovers.

## 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. There are two methods of optimizing images:

- For basic optimization, the Photoshop Save As command lets you save an image as a GIF, JPEG, or PNG file. Depending on the file format, you can specify image quality, background transparency or matting, color display, and downloading method. However, the Save As command does not preserve any Web features—such as links, animations, and rollovers—that you've added to a file.

For complete information on using the Save As command to save an image as a GIF, JPEG, or PNG file, see “Saving files” on page 375.

- 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 background 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 code to display your image—as well as links, rollovers, and animations—in a Web browser.

In ImageReady, you can automate optimization by saving Optimize palette settings as a *droplet*, a small application that applies the settings to an image or batch of images when activated. (See “Using a droplet to automate optimization settings (ImageReady)” on page 366.)

## Viewing images during optimization

View options in Photoshop and ImageReady enable you to switch easily between optimized and original (non-optimized) versions of an image and view up to four versions of an optimized image simultaneously.

In Photoshop, you must choose File > Save for Web to view and modify optimized images. In ImageReady, you can view and modify optimized images at any time in the document window.

### Selecting a view

There are four options for viewing optimized images:

- Original to view the image with no optimization.

- Optimized to view the image with the current optimization settings applied. See “Optimizing images” on page 342 for more information on applying optimization settings.
- 2-Up to view two versions of the image side by side. By default, 2-Up view displays the original image and the optimized image with current optimization settings.
- 4-Up to view four versions of the image side by side. By default, 4-Up view displays the original image, the optimized image with current settings, and two smaller, lower-quality versions of the image based on modifications of the current optimization settings.

#### To select a view option:

- 1 (Photoshop) Choose File > Save for Web.
- 2 In the Save for Web dialog box (Photoshop) or the document window (ImageReady), click a tab at the top of the image display to select a view option.

#### To select a view version when optimizing images:

Click the version you want to select. A black frame indicates the selected version.

### Working in 2-Up and 4-Up view

When you choose 2-Up or 4-Up view, Photoshop or ImageReady determines a layout for the images, depending on the aspect ratio (width/height ratio) of the image, and whether annotations or rules are shown. Images can appear in vertical layout, horizontal layout, or 2 X 2 layout (two rows and two columns). 2 X 2 layout is available for 4-Up view only.



You can select a version of the image in 2-Up or 4-Up view to apply new optimization settings. You can automatically *repopulate* 2-Up and 4-Up views—generate new optimized versions of the image based on the selected version. You can also revert an optimized version to the original version of the image.

In ImageReady, you can change the default optimizations in Optimization Preferences. See “Setting optimization preferences (ImageReady)” on page 365.

**To repopulate optimized versions of an image in 2-Up or 4-Up view:**

- 1 Select an optimized version of the image in the 2-Up or 4-Up view.
- 2 In the Optimize panel of the Save for Web dialog box (Photoshop) or the Optimize palette (ImageReady), select Repopulate Views from the menu.

Photoshop and ImageReady generate smaller optimized versions of the image based on the optimization settings of the selected version. The selected version and the original version, if present, are not altered during repopulation. For this reason, the Repopulate Views option works with 2-Up view only if the original version of the image is not present.

**To restore an optimized version of an image to the original version:**

- 1 Select an optimized version of the image in the 2-Up or 4-Up view.
- 2 In the Optimize panel/palette, choose Original from the Settings pop-up menu.

## Navigating in a view

If the entire image is not visible in the view area, you can navigate to bring another area of the image into view. This is particularly useful when working in 2-Up or 4-Up view.

**To navigate in a view:**

- 1 Do one of the following:
  - Select the hand tool in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady).
  - Hold down the spacebar.
- 2 Drag in the view area to pan over the image.

## Viewing annotations

In 2-Up and 4-Up view, an annotation area appears by default below each optimized image, showing its optimization settings. In Photoshop, the annotation always shows; in ImageReady, you can hide or show the annotation.

**To hide or show annotations in 2-Up and 4-Up views (ImageReady):**

Choose View > Hide/Show Optimization Info.

## Choosing a file format for optimization

The file format you choose for an optimized image is determined by the color, tonal, and graphic characteristics of the original image. In general, continuous-tone images such as photographs should be compressed as JPEG files. Illustrations with flat color or sharp edges and crisp detail, such as type, should be compressed as GIF or PNG-8 files.

PNG-24 file format is suitable for continuous-tone images. However, PNG-24 files are often much larger than JPEG files of the same image. PNG-24 format is recommended only when working with a continuous-tone image that includes multilevel transparency. (Multilevel transparency is supported by the PNG-24 format but not the JPEG format. See “Preserving multilevel transparency in PNG-24 images” on page 361.)



A photograph suitable for compression as a JPEG or PNG-24 image, and an illustration suitable for compression as a GIF or PNG-8 image

Choose a format that contains sufficient pixel depth to display the color information in the image. (See “About bit depth” on page 51.) PNG-8 and GIF files support 8-bit color. JPEG and PNG-24 files support 24-bit color. Depending on the format, you can specify image quality, background transparency or matting, color display, and downloading method.

The appearance of an image on the Web also depends on the computer platform, color display system, operating system, and browser used to display the image. Preview images in different browsers on different platforms to see how the images will appear on the Web.

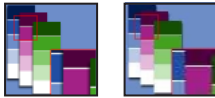
### About JPEG format

The JPEG format supports 24-bit color and preserves the broad range and subtle variations in brightness and hue found in photographs and other continuous-toned images. JPEG is supported by most browsers.

JPEG compresses file size by selectively discarding data. Because it discards data, JPEG compression is referred to as *lossy*. A higher quality setting results in less data being discarded, but the JPEG compression method can degrade sharp detail in an image, particularly in images containing type or vector art.

**Note:** Artifacts, such as wave-like patterns or blocky areas of banding, are added to a file each time you save the file as a JPEG. You should always save JPEG files from the original image, not from a previously saved JPEG.

<<Art—Per Dean, combine following three graphics>>



Original image, and JPEG with Low quality setting

You can create a *progressive* JPEG file, in which a low-resolution version of the image appears in a browser while the full image is downloading.

The JPEG format does not support transparency. When you save an image as a JPEG, transparent pixels are filled with the Matte color. (See “Making transparent and matted images” on page 358.)

If you know the background color of the Web page where you will place the image, you can match the Matte color to the Web page background color to simulate the effect of background transparency.

If your image contains transparency and you do not know the Web page background color, or if the background will be a pattern, you should use a format that supports transparency (GIF, PNG-8, or PNG-24).

### About GIF format

The GIF format uses 8-bit color and efficiently compresses solid areas of color while preserving sharp detail, such as that in line art, logos, or illustrations with type. You also use the GIF format to create animated images. GIF is supported by most browsers.

The GIF format traditionally uses a *lossless* compression method, in which no data is discarded during compression. You can save a GIF file multiple times without discarding data. However, because GIF files are 8-bit color, optimizing an original 24-bit image as an 8-bit GIF will generally degrade image quality.

In addition, Photoshop and ImageReady allow you to create a lossy version of a GIF file. The lossy GIF format includes small compression artifacts (similar to those in JPEG files) but yields significantly smaller files.



GIF image with Web color palette with 100% dither and with 0% dither

You can reduce the number of colors in a GIF image and choose options to control the way colors dither in the application or in a browser. GIF supports background transparency and background matting, in which you blend the edges of the image with a Web page background color.

### About PNG-8 format

The PNG-8 format uses 8-bit color. Like the GIF format, PNG-8 efficiently compresses solid areas of color while preserving sharp detail, such as that in line art, logos, or illustrations with type.

Because PNG-8 is not supported by all browsers, it may be advisable to avoid this format for situations in which your image must be accessible to the widest possible Web viewing audience. For more information on browser support for PNG, see your browser's documentation.

The PNG-8 format uses a *lossless* compression method, in which no data is discarded during compression. However, because PNG-8 files are 8-bit color, optimizing an original 24-bit image as a PNG-8 can degrade image quality. PNG-8 files use more advanced compression schemes than GIF, and can be 10–30% smaller than GIF files of the same image, depending on the image's color patterns.

**Note:** *With certain images, especially those with very few colors and very simple patterns, GIF compression may create a smaller file than PNG-8 compression. View optimized images in GIF and PNG-8 format to compare file size.*

As with the GIF format, you can reduce the number of colors in the image and choose options to control the way colors dither in the application or in the browser. The PNG-8 format supports background transparency and background matting, in which you blend the edges of the image with a Web page background color.



PNG-8 with 0% dither, and with 100% dither

## About PNG-24 format

The PNG-24 format supports 24-bit color. Like the JPEG format, PNG-24 preserves the broad range and subtle variations in brightness and hue found in photographs. Like the GIF and PNG-8 formats, PNG-24 preserves sharp detail, such as that in line art, logos, or illustrations with type.

The PNG-24 format uses the same lossless compression method as the PNG-8 format, in which no data is discarded. For that reason, PNG-24 files are usually larger than JPEG files of the same image. PNG-24 browser support is similar to that for PNG-8.

Like the PNG-8 format, the PNG-24 format supports background transparency and background matting, in which you blend the edges of the image with a Web page background color. In addition, the PNG-24 format supports multilevel transparency, in which you can preserve up to 256 levels of transparency to blend the edges of an image smoothly with any background color. However, multilevel transparency is not supported by all browsers.

## Optimizing images

To optimize an image for the Web, you select a file format and other options in the Optimize panel (Photoshop) or the Optimize palette (ImageReady). You can apply different optimization settings to different slices in an image. The options in the Optimize panel/palette vary depending on the file format you select.

You can optimize an image or slice to a specified file size and resize an image during optimization. In ImageReady, you can use channels to selectively optimize an image.

**To view the Optimize panel/palette:**

Do one of the following:

- (Photoshop) Choose File > Save for Web. The Optimize panel is displayed on the right side of the dialog box, beneath the Cancel button.
- (ImageReady) Choose Window > Show Optimize or click the Optimize palette tab. 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

**Using named optimization settings**

You can save optimization settings as a named set and apply the settings when working with other images. Settings that you save appear in the Settings pop-up menu in the Optimize panel/palette. Photoshop and ImageReady also include several predefined named settings.

When you adjust optimization settings so that they no longer match a named set, the Settings menu displays the term “Unnamed.” In ImageReady, when you select multiple slices with different optimization settings, the Settings menu option is blank.

**To save optimization settings:**

- 1 Choose Save Settings from the Optimize panel/palette menu.

- 2 Name the settings and choose a location where they will be saved. By default, named settings are saved in the following location.

**Windows** Optimize folder in the Windows/Application Data/Adobe/Photoshop/6.0 / Adobe Photoshop Settings folder

**Mac OS** Optimize folder in the System/Preferences/Adobe Photoshop Settings folder

- 3 Click OK.

**To apply named optimization settings to an image:**

With an optimized image displayed, select a named set of optimization settings from the Settings pop-up menu.

**To edit a named set of optimization settings:**

- 1 Select the named set from the Settings pop-up menu.

- 2 Adjust the settings as desired in the Optimize panel /palette.

(The Settings menu displays the term “Unnamed,” since the settings no longer match a named set.)

- 3 Choose Save Settings from the Optimize panel/palette menu, and save the settings with the name of the original set.

- 4 Click OK, and then click Replace.

**To delete named optimization settings:**

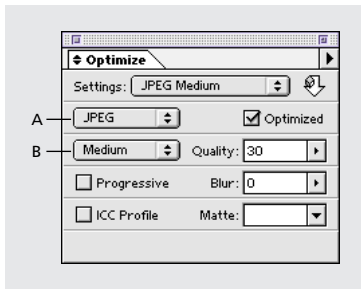
- 1 In the Optimize panel/palette, select a named set of optimization settings from the Settings pop-up menu.

- 2 Choose Delete Settings from the Optimize panel/palette menu.

## Setting optimization options for JPEG format

JPEG is the standard format for compressing continuous-tone images, such as photographs. (See “About JPEG format” on page 340.)

<<Art: Reshoot UI>>



ImageReady Optimize palette JPEG options, with hidden options shown:  
A. File format B. Quality menu

### To optimize an image in JPEG format:

- 1 Choose a view in which to apply the optimization setting. (See “Selecting a view” on page 338.)
- 2 Select the slice or slices you want to apply the optimization setting to. (See “Selecting slices” on page 304.)
- 3 In the Optimize panel/palette, choose JPEG from the file format menu.
- 4 Do one of the following to specify the image quality:
  - Choose an option from the Quality menu.
  - Drag the Quality pop-up slider.
  - Enter a value in the Quality box.

A higher quality setting preserves more color information but results in larger file sizes. View the JPEG at several quality settings to determine the best balance of quality and file size.

- 5 To create an enhanced JPEG with a slightly smaller file size, select Optimized.

**Note:** The Optimized JPEG format is recommended for maximum file compression. However, some older browsers do not support this feature.

- 6 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. The Progressive option requires use of the Optimized JPEG format. Selecting Progressive automatically selects Optimized.

Progressive JPEGs require more RAM for viewing, and are not supported by some browsers.

- 7 To apply a blur to the image to smooth rough edges, enter a value for Blur or drag the pop-up slider.

This option blurs pattern artifacts created along sharp edges in the image and creates a smaller file size, but may also reduce image detail. A setting of 0.1 to 0.5 is recommended.

The Blur option applies an effect identical to that of the Gaussian Blur filter.

- 8 To preserve the ICC profile of the image with the file, select ICC Profile.

(In ImageReady, click the Show Options control (◆) on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the ICC Profile option.)

ICC profiles are used by some browsers for color correction. The ICC profile option preserves ICC profiles embedded by Photoshop. The option is only available with images created in Photoshop, in Photoshop file format. For information on ICC profiles, see <<XREF>>.

9 If the original image contains transparency, select a Matte color to simulate the appearance of background transparency. (See “Making transparent and matted images” on page 358.)

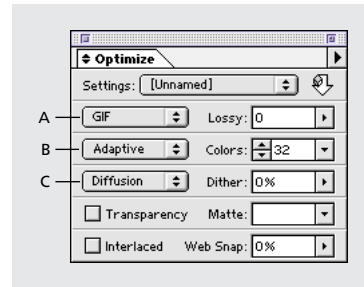
(In ImageReady, click the Show Options control (◆) on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the Matte option.)

## Setting 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. (See “About GIF format” on page 341.)

Like the GIF format, PNG-8 efficiently compresses solid areas of color while preserving sharp detail, however, not all Web browsers can display PNG-8 files. (See “About PNG-8 format” on page 341.)

<<Art: Reshoot UI>>



*ImageReady Optimize palette GIF options, with hidden options shown:*

A. File format B. Color Palette menu  
C. Dither algorithm menu

### To optimize an image in GIF or PNG-8 format:

- 1 Choose a view in which to apply the optimization setting. (See “Selecting a view” on page 338.)
- 2 Select the slice or slices you want to apply the optimization setting to. (See “Selecting slices” on page 304.)
- 3 In the Optimize panel/palette, choose GIF or PNG-8 from the file format menu.
- 4 For GIF format only: Drag the Lossy slider or enter a value to allow the compression process to remove pixels from the image (and reduce file size).

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. See “Previewing and controlling application dither” on page 362.

**Note:** You cannot use the Lossy option with the Interlaced option, or with Noise or Pattern Dither algorithms.

5 Select a color palette, as described in “Selecting a palette option” on page 350.

6 To choose a specific number of colors, select a number from the Colors pop-up menu, enter a value in the number field, or use the arrows to change the number of colors.

This option specifies the maximum number of colors. If the image contains fewer colors than the number specified, the color palette will contain only the number of colors in the image.

7 Select Interlaced to create an image that displays as low-resolution versions in a browser while the full image file is downloading. Interlacing can make downloading time seem shorter and assures viewers that downloading is in progress. However, interlacing also increases file size.

(In ImageReady, click the Show Options control (◆) on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the Interlaced option.)

8 Select a Dither option and amount. For information on dither, see “Previewing and controlling dithering” on page 361.

9 If the image contains transparency, choose an option for preserving or filling transparent pixels:

- Select Transparency (the default setting) to preserve fully transparent pixels as transparent. (Partially transparent pixels are filled with the Matte color or converted to fully transparent or fully opaque pixels, depending on the Matte option you choose.)

- Deselect Transparency to fill fully and partially transparent pixels with the Matte color.

**Note:** The original image must contain transparent pixels in order for you to create transparency in the optimized image. You can use the magic eraser tool (⌘) to easily create transparency in a document. In Photoshop, you can also use the background eraser tool (⌘).

(In ImageReady, click the Show Options control (◆) on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the Transparency option.)

For more information on setting transparency and Matte color, see “Making transparent and matted images” on page 358.

10 To automatically shift colors to the closest Web palette equivalents (and prevent the colors from dithering in a browser), drag the Web Snap slider or enter a value to specify a tolerance level for colors to be shifted. A higher value shifts more colors. See “Previewing and controlling dithering” on page 361.

(In ImageReady, click the Show Options control (◆) on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the Web Snap option.)



## Setting optimization options for PNG-24 format

PNG-24 format is suitable for compressing continuous-tone images. However, PNG-24 files are often much larger than JPEG files of the same image. PNG-24 format is recommended only when working with a continuous-tone image that includes multilevel transparency. (See “About PNG-24 format” on page 342.)

### To optimize an image in PNG-24 format:

- 1 Choose a view in which to apply the optimization setting. (See “Selecting a view” on page 338.)
- 2 Select the slice or slices you want to apply the optimization setting to. (See “Selecting slices” on page 304.)
- 3 In the Optimize panel/palette, choose PNG-24 from the file format menu in the Optimize panel/palette.
- 4 Select Interlaced to create an image that displays low-resolution versions in a browser while the full image file is downloading. Interlacing can make downloading time seem shorter, and assures viewers that downloading is in progress.
- 5 If the image contains transparency, choose an option for preserving or filling transparent pixels:
  - Select Transparency (the default setting) to preserve transparent pixels as transparent.
  - Deselect Transparency to fill transparent pixels with the Matte color.

## Optimizing by file size

You can optimize an image or slice to match a specified file size. This feature enables you to quickly achieve a desired file size without having to test different optimization settings.

### To optimize a file according to a specified file size:

- 1 Select Optimize to File Size from the Optimize panel/palette menu.
  - 2 Select a Start With option:
    - Current Settings to use current optimization settings.
    - Auto Select GIF/JPEG to automatically generate a GIF or JPEG. (Photoshop or ImageReady selects GIF or JPEG format, depending on an analysis of colors in the image.)
  - 3 Select a Slices option:
    - Current Slice to optimize the selected slice to the specified file size.
    - All Slices Separately to optimize each slice in the document to the specified file size.
    - All Slices Together to optimize the sum of the size of all slices to the specified file size.
- <<*Reviewers—Please verify information in Step 3. This is new documentation.*>>
- 4 Specify a value for Desired File Size.
  - 5 Click OK.

## Using channels to apply optimization settings (ImageReady)

<<Reviewers—Zoned optimization information to be completed. Will provide this section for review on a separate schedule.>>

## Resizing the image during optimization

You can resize the image to specified pixel dimensions or to a percentage of the original size. In ImageReady, you can select options to resize irregularly sized images during batch processing.

Changing the pixel dimensions (and therefore display size) of an image is referred to as *resampling*. When you *downsample* (or decrease the number of pixels), information is deleted from the image. When you *resample up* (or increase the number of pixels), new pixel information is added based on color values of existing pixels. You specify an *interpolation* method to determine how pixels are added or deleted. Keep in mind that changing pixel dimensions affects not only the size of an image on-screen, but also its image quality.

### To change the pixel dimensions of an image:

1 Choose a method to view Image Size commands:

- In Photoshop, choose File > Save for Web and click the Image Size tab.
- In ImageReady, choose Image > Image Size.

**Note:** In Photoshop, you can also resize an image by choosing Image > Image Size. However, to resize an optimized version of an image only (and not the original version), you must use the commands in the Save for Web dialog box.

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

3 Constrain the image proportions by selecting:

- Width to constrain proportions using the new width value.
- Height to constrain proportions using the new height value.
- Either (ImageReady) to constrain proportions using either the new width value or the new height value. Use the Either option when resizing a batch of images of different sizes or proportions that need to fit into a standard new image size.
- Percent to constrain proportions while resizing the image by a percent value.

4 Under New Size, enter values for Width, Height, or Percent.

The New Size text field displays the new file size for the image.

5 Under Quality, select an interpolation method:

- Jagged (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.
- Smooth (Bicubic) for the slower, but more precise, method, resulting in smoother tonal gradations.

6 In ImageReady, select Do Not Enlarge to prevent images that are smaller than the new dimensions from being sized up. This option is useful when resizing a batch of irregularly sized images.

7 Click Apply (Photoshop) or OK (ImageReady).

### 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.*

The Regenerate option is available only when the optimized image is out of date (when Auto Regenerate is turned off and the image or its optimization settings are modified, or when optimization has been cancelled).

#### To cancel optimization:

Click the Stop button next to the progress bar at the bottom of the image window.

## 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 Web-safe colors, and lock selected colors to prevent them from being dropped from the palette.

<<Reviewers—please provide information about the Rebuild Color Table option.>>

If an image has multiple slices, the colors in the color table may vary between slices. If you select multiple slices that use different color tables, the color table is empty and its status bar displays the message “Mixed.”

**To view the color table:**

- 1 (ImageReady) Choose Window > Show Color Table.
- 2 Select a slice that is optimized in GIF or PNG-8 format. (See “Selecting slices” on page 304.)

The color table for the slice appears in the Color Table panel in the Save for Web dialog box (Photoshop) or the Color Table palette (ImageReady).

**Important:** *Be careful not to confuse the Color Table panel/palette with the Color palette or Swatches palette.*

**Selecting a palette option**

You can change the palette—or set of colors—in the color table by selecting a palette option in the Optimize panel/palette. There are three categories of palette 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, Adaptive, and Neural Net (ImageReady) are dynamic options.

- Fixed options use a set palette of colors, regardless of the colors in the image. Web, Mac OS, Windows, and user-created tables are fixed options.
- The Custom option is a hybrid of the dynamic and fixed options. It uses the palette generated by a dynamic option to create a fixed palette.

**To select a color reduction algorithm:**

Choose an option from the palette 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.

**Neural Net** (ImageReady)

<<Reviewers—please provide description of Neural Net option.>>

**Web** Uses the standard 216-color 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. See “Previewing and controlling dithering” on page 361.

**Custom** Preserves the current perceptual, selective, or adaptive color table as a fixed palette that does not update with changes to the image.

**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 355.

## Sorting 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.

### To sort a color table:

Choose a sorting order from the Color Table palette menu. To view the menu, click the triangle in the upper right corner of the Color Table panel/palette.

- **Unsorted.** Restores the original sorting order.
- **Sort By Hue.** 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.

## Adding new colors to the color table

You can add colors that were left out in building the color table. However, the effect of adding a new color depends on the color palette type for the table. Adding a color to a dynamic table replaces 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 “Selecting a palette option” on page 350.)

***Note:** Adding a color changes a named optimization setting (see “Using named optimization settings” on page 343) back to [Unnamed].*

### To add a new color:

- 1 Deselect all colors in the color table (see “Selecting colors” on page 352).
- 2 Choose a color:

- Click the color selection box in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady). Choose a color from the Color Picker (see <<XREF>>).
- Select the eyedropper tool (👉) in the Save for Web dialog box (Photoshop) or the toolbox (ImageReady) and click in the image.
- (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.
- (ImageReady) Choose a color from the Color palette or the Swatches palette (see <<XREF>>).

### 3 Do one of the following:

- Click the New Color button (👉) in the Color Table panel/palette.
- Select New Color from the Color Table palette menu.

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 354.)

## Including transparency in a color table

The color table includes a transparency swatch (👉) only if the original image contains transparent pixels. You can preserve transparent pixels in the optimized image or use the matting option to fill them with a solid color. (See “Making transparent and matted images” on page 358.)

## Including black and white in a color table (ImageReady)

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 AfterEffects®.

### 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 195.)
- 2 Add the color to the color table as described in “Adding new colors to the color table” on page 351.

## Selecting colors

You select colors directly in the optimized image or in the color table.

### 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. In ImageReady, Shift-click to select additional colors.




### To select a color directly in the color table:

Click the color in the Color Table panel/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 discontinuous 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):**

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 discontinuous 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.

## Editing 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 edit a color:**

- 1 Double-click the color in the color table to display the default color picker.
- 2 Select a color.

A small black diamond () appears in the center of each edited color. The edited color replaces the original color in the image.

*Note:* Editing a color also locks it—a white square appears in the lower right corner of the color. (See “Locking colors in the color table” on page 354)


## 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 at least 256 colors. (See "Previewing and controlling dithering" on page 361.)

### 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 352.)


2 Do one of the following:

- Click the Web Shift button () in the Color Table panel/palette.
- Choose Web Shift/Unshift Selected Colors from the Color Table palette menu.

A small white diamond () appears in the center of a Web-shifted color and in all Web-safe colors.


### 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 panel/palette.
- Choose Unshift All 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. See "Previewing and controlling dithering" on page 361.

(In ImageReady, click the Show Options control () on the Optimize palette tab or choose Show Options from the Optimize palette menu to view the Web Snap option.)

## 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. (See "Previewing and controlling dithering" on page 361.)*

### To lock a color:

1 Select one or more colors in the color table (see "Selecting colors" on page 352).

2 Lock the color:

- 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:
  - 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 palette type automatically changes to Custom. 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 352).
- 2 Delete the color:
  - 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 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 following location:

**Windows** Color Tables folder in the Windows/Application Data/Adobe/Photoshop/6.0 /Adobe Photoshop Settings folder

**Mac OS** Color Tables folder in the System/Preferences/Adobe Photoshop Settings folder

- 3 Click Save.

**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, or a GIF file (to load the file’s embedded color table).
- 3 Click Open.

## Using master palettes

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, you 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, you 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 Color Tables folder, inside the Settings 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 Palette menu in the Optimize palette, select the master palette from this menu. (The Color Palette menu includes all palettes saved in the Palettes folder, inside the Settings folder in the Adobe Photoshop folder.)
- Load the master palette, as described in “Loading and saving color tables” on page 355.

## 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 > Show Info or click the Info palette tab to view the palette.
- 2 (Photoshop) Choose Palette Options from the palette menu. Under First Color Readout, Second Color Readout, or both, 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:

- (Photoshop) 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 which 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 a hexadecimal value. To paste the color into an HTML file, choose Edit > Paste with the HTML file displayed in the destination application.

### To copy a color as a hexadecimal value using menu commands:

- 1 Select a color to copy.
- 2 Copy the color:
  - (Photoshop) 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 a hexadecimal value. 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.

## Making transparent and matted images

Transparency makes it possible to place a non-rectangular graphic object against the background of a Web page. Background transparency, supported by GIF and PNG formats, preserves transparent pixels in the image. These pixels blend with the Web page background in a browser.

Background matting, supported by GIF, PNG, and JPEG formats, simulates transparency by filling or blending transparent pixels with a matte color which you choose to match the Web page background on which the image will be placed. Background matting works only if the Web page background will be a solid color, and if you know what that color will be.

The original image must contain transparent pixels in order for you to create background transparency or background matting in the optimized image. You can create transparency when you create a new layer.

***Note:** You can use the magic eraser tool to easily create transparency in a document. In Photoshop, you can also use the background eraser tool.*

**To create background transparency in a GIF or PNG image:**

In the Optimize panel/palette, select Transparency. The option is selected by default.

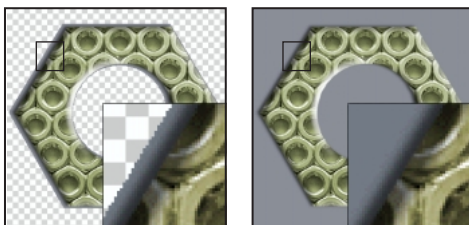
Fully transparent pixels in the image are preserved as transparent. If the image is anti-aliased, you can matte partially transparent pixels to blend with a Web page background color. You can also create hard-edged transparency to prevent the halo effect that results if an anti-aliased image is matted on a color that differs from the image's original background color. If the image contains alpha transparency, you can create multilevel transparency to preserve up to 256 levels of transparency (in PNG-24 format only).

## Creating background matting in GIF and PNG images

When you know the Web page background color on which an image will be displayed, you can use the matting feature to fill or blend transparent pixels with a matte color that matches the Web page background. The Web page background must be a solid color, not a pattern.

You can matte GIF and PNG images in two ways. You can choose to preserve fully transparent pixels as transparent, and matte only the partially transparent pixels, such as those at the edge of an anti-aliased image. When the image is placed on a Web page, the Web background shows through the transparent pixels, and the edges of the image blend with the background. This feature prevents the halo effect that results when an anti-aliased image is placed on a background color that differs from the image's original background. This feature also prevents the jagged edges that result with GIF hard-edged transparency.

You can also deselect Transparency to fill all transparent pixels with the matte color. Fully transparent pixels are filled with the matte color, and partially transparent pixels are blended with the matte color.



*GIF with a Matte color Transparency option selected, and with Transparency option deselected*

#### **To create a matted GIF or PNG image:**

- 1 Open or create an image that contains transparency.
- 2 In the Optimize panel/palette, select GIF, PNG-8, or PNG-24 from the format menu.
- 3 (ImageReady) For GIF or PNG-8 format, select Show Options from the Optimize palette menu.

#### 4 Choose whether to preserve transparency:

- Select Transparency to preserve fully transparent pixels as transparent.
- Deselect Transparency to fill fully transparent pixels with the matte color.

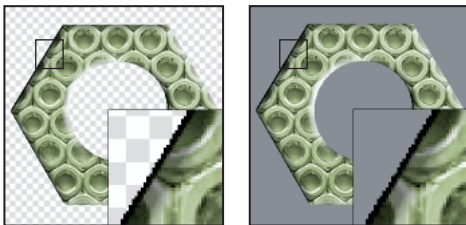
#### 5 Select a color from the Matte pop-up menu:

- (Photoshop) Select None, Eyedropper (to use the color in the eyedropper sample box), White, Black, or Other (using the color picker).
- (ImageReady) Select None, Foreground Color, Background Color, or Other (using the color picker), or select a color from the Matte pop-up palette.

### **Creating hard-edged transparency in GIF and PNG-8 images**

When you apply background matting to images that include anti-aliasing, a halo effect can result when the matte color is different from the original background color of the image. Anti-aliasing creates partially transparent pixels around the edges of the image to blend the image with the original background color.

When working with GIF or PNG-8 files, you can create hard-edged transparency, in which all pixels that are more than 50% transparent in the original image are fully transparent in the optimized image, and all pixels that are more than 50% opaque in the original image are fully opaque in the optimized image. Hard-edged transparency prevents the halo effect. However, hard-edged transparency can cause jagged edges in the image. To prevent jagged edges, apply background matting to the image. See “Creating background matting in GIF and PNG images” on page 358.



*GIF with hard-edged transparency, and displayed in browser (inset at 300% magnification)*

#### **To create hard-edged transparency in a GIF or PNG-8:**

- 1 Open or create an image that contains transparency.
- 2 In the Optimize panel/palette, select GIF or PNG-8 from the file format menu.
- 3 Select Transparency.
- 4 Select None from the Matte pop-up menu to make all pixels with greater than 50% transparency into fully transparent pixels, and all pixels with 50% or less transparency into fully opaque pixels.

#### **Creating background matting in JPEG images**

When creating a JPEG from an original image that contains layer transparency, you must matte the image against a matte color. Since the JPEG format does not support transparency, blending with a matte color is the only way to create the appearance of background transparency in a JPEG. Fully transparent pixels are filled with the matte color, and partially transparent pixels are blended with the matte color. When the JPEG is placed on a Web page with a background that matches the matte color, the image appears to blend with the Web page background.

#### **To create a matted JPEG image:**

- 1 Open or create an image that contains transparency.
- 2 In the Optimize panel/palette, select JPEG from the format menu.
- 3 Select a color from the Matte pop-up menu:
  - (Photoshop) Select None, Eyedropper (to use the color in the eyedropper sample box), White, Black, or Other (using the color picker).
  - (ImageReady) Select None, Foreground Color, Background Color, or Other (using the color picker), or select a color from the Matte pop-up palette.

## Preserving multilevel transparency in PNG-24 images

When you create a PNG-24 image, you can preserve variable transparency, such as that in an anti-aliased image on a transparent layer, using a feature called *alpha transparency*. Alpha transparency preserves up to 256 levels of transparency in a PNG image. When the PNG is displayed in a browser using a plug-in that supports alpha transparency, the PNG displays multilevel transparency, and the image's edges will blend with any Web background.

### To create variable transparency in a PNG-24 image:

- 1 Open or create an image that contains transparency.
- 2 In the Optimize panel/palette, select PNG-24 from the format menu.
- 3 Select Transparency.
- 4 Select None from the Matte menu.

## Previewing and controlling dithering

Most images viewed on the Web are created using 24-bit color displays (millions of colors mode), but many Web browsers are used on computers using only 8-bit color displays (256-color mode), so that Web images often contain colors not available to many Web browsers. Computers use a technique called dithering to simulate colors not available in the color display system. Dithering creates adjacent pixels of different colors to give the appearance of a third color. For example, a red color and a yellow color may dither in a mosaic pattern to produce the illusion of an orange color that does not appear in the color palette.

When optimizing images, keep in mind that two kinds of dithering can occur:

- *Application dither* occurs in GIF and PNG-8 images when Photoshop or ImageReady attempts to simulate colors that appear in the original image but not in the color palette you specify for the optimized image. You can control the application dither that Photoshop or ImageReady applies by selecting a range of colors to be dithered.

You can choose a dithering pattern to be applied to the image. In addition, you can create customized dither patterns for GIF or PNG-8 images using the DitherBox filter. (See “Creating and applying custom dither patterns” on page 363.)

**Note:** *Applying a dithering pattern is not recommended for JPEG or PNG-24 images.*

- *Browser dither* occurs when a Web browser using an 8-bit color display (256-color mode) attempts to simulate colors that appear in an optimized image but not in the color palette used by the browser. Browser dither can occur with GIF, PNG, or JPEG images and can occur in addition to application dither in GIF or PNG-8 images. You can control the amount of browser dither by shifting selected colors in the image to Web-safe colors. Options in the color picker, the Color palette in Photoshop or ImageReady, and the Color Table panel (Photoshop) or the Color Table palette (ImageReady) let you specify Web-safe colors when choosing a color.

### Previewing and controlling application dither

You can preview application dither in GIF and PNG-8 images. The Dither Algorithm pop-up menu lets you choose a dithering method for the image. The Dither percentage slider lets you control the range of colors simulated by dithering. A higher dithering percentage creates the appearance of more colors and more detail in an image, but can also increase the file size. For optimal compression, use the lowest percentage of application dither that provides the color detail you require.

Images with primarily solid colors may work well with Dither set to none. Images with continuous-tone color (especially color gradients) may require dithering to prevent color banding.

#### To choose a dithering method:

Select an option from the Dithering Algorithm pop-up menu:

- No Dither applies no application dither to the image.
- Pattern applies a halftone-like square pattern to simulate any colors not in the color table.
- Diffusion applies a random pattern that is usually less noticeable than Pattern dither. The dither effects are diffused across adjacent pixels. In ImageReady, 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.
- Noise applies a random pattern similar to the Diffusion dither method, but without diffusing the pattern across adjacent pixels. No seams appear with the Noise dither method.

#### To specify the amount of application dither applied:

- 1 Choose a dithering method from the Dither algorithm menu. To specify no dithering for the image, select No Dither from the menu.
- 2 If you selected any option other than No Dither in step 1, drag the Dither slider or enter a value to select a dithering percentage.

### Previewing browser dither

You can preview browser dither directly in Photoshop or ImageReady, or in a browser that uses an 8-bit color display (256-color mode).



**To preview browser dither:**

With an optimized file displayed, preview dither in the respective application:

- (Photoshop) Choose Browser Dither from the document panel menu in the Save for Web dialog box. (To view the menu, click on the triangle by the upper right corner of the document panel.)
- (ImageReady) Choose View > Preview > Browser Dither. A check mark next to the command indicates that it is turned on. Choose View > Preview > Browser Dither again to turn the command off.

**To preview browser dither in a browser:**

- 1 Set your computer's color display to 8-bit color (256 colors). See your computer operating system's documentation for information on changing the color display.
- 2 Do one of the following:
  - Launch your browser and open an optimized image directly in the browser.
  - (ImageReady) With an optimized image displayed, click the Preview in Browser button in the toolbox. (See "Previewing an image in a browser (ImageReady)" on page 16.)

**Minimizing browser dither**

Using colors in the Web palette ensures that colors won't dither when displayed in browsers on either Windows or Macintosh operating systems capable of displaying at least 256 colors.

You have several options for choosing Web-safe colors:

- When creating an original image, you can use the Color Picker, Color palette, and Swatches palette to choose Web-safe colors. (See <<*XREF to Painting chapter*>>.)
- In optimized GIF and PNG-8 images, you can shift existing colors to Web-safe colors using the color table. (See "Shifting to Web-safe colors" on page 354.)

**Creating and applying custom dither patterns**

You can use the DitherBox filter to create a custom dither pattern for a selected RGB color. You can then fill a selection or a layer in an image with the dither pattern.

You can save custom dither patterns in groups called *collections*, and use the dither patterns with other images.

DitherBox uses the current foreground color as the RGB color which will be simulated by the custom dither pattern. When working in the DitherBox filter, you can choose another RGB color on which to base the dither pattern.

**To create and apply a custom dither pattern:**

1 With an image displayed in the document window (Photoshop) or in Original view (ImageReady), use the eyedropper tool to select a foreground color which you want to simulate with a customized dither pattern. (The foreground color becomes the basis for the custom dither pattern in DitherBox.)

*Note: In Photoshop, you create custom dither patterns while in the main Photoshop work area (not in the Save for Web dialog box). Make sure the image is in RGB color mode. See Photoshop online Help for information on color modes.*

2 Use the selection tools (⌘, [ ], ⌘) or the Layers palette to select an area or a layer in the image that you want to fill with the custom dither pattern.

3 Choose Filter > Other > DitherBox.

The RGB swatch in the DitherBox dialog box displays the current foreground color in ImageReady. Double-click on the swatch to open the color picker and select another RGB color on which to base the custom dither pattern.

4 Choose one of the following from the color palette pop-up menu in the DitherBox dialog box:

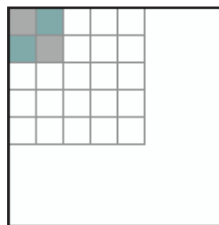
- Web Safe Colors to create a dither pattern using colors from the Web palette.
- Load to load another color palette and create a dither pattern using those colors. Then navigate to the color palette and open it.

*Note: If you use non-Web palette colors in a custom dither pattern, the colors will dither in a browser using an 8-bit color display. Using non-Web colors is recommended only for non-Web display.*

By default, a new dither pattern you create is saved in the current dither pattern collection.

5 Select a pixel pattern for the custom dither pattern from the pattern list, between 2 and 8 pixels square.

6 Click the arrow button (▶) to display the dither pattern that most closely matches the selected RGB color in the Pattern preview box. If no dither patterns are currently saved in a collection in the DitherBox filter, the Pattern preview box displays the dither pattern that matches the RGB color.



7 To edit the custom dither pattern, do one of the following:

- To add a color to the dither pattern, click a color in the color palette. Then select the pencil tool (P) in the DitherBox dialog box and click in the dither pattern grid to add the color.
- To delete a color from the dither pattern, select the eraser tool (E) in the DitherBox dialog box and click the color in the dither pattern grid.

The Pattern preview box displays the changes you make to the dither pattern.

8 When you are satisfied with the dither pattern, click Fill to fill the selected area or layer in the current image.

The custom dither pattern is applied to the image, and the DitherBox dialog box closes.

**To apply a previously saved custom dither pattern to an image:**

- 1 With an image displayed in Photoshop or ImageReady, select an area or a layer in the image that you want to fill with the custom dither pattern.
- 2 Choose Filter > Other > DitherBox.
- 3 Select the collection containing the dither pattern you want to use from the Collection pop-up menu.
- 4 Select the dither pattern you want to use from the Collection contents list.
- 5 Click Fill.

The dither pattern is applied to the image, and the DitherBox dialog box closes.

**To edit dither pattern collections:**

Do one of the following in the DitherBox dialog box:

- To rename a collection, select the collection from the Collection pop-up menu. Then select Rename from the Collection pop-up menu. Enter a new name for the collection, and click OK.
- To create a new collection, select New from the Collection pop-up menu. Enter a name for the collection, and click OK.

- To place a saved custom dither pattern in another collection, select the dither pattern in the Collection contents list. Choose Edit > Copy to place a copy of the pattern in another collection, or Edit > Cut to move the pattern to another collection. Then select the collection where you want to place the dither pattern, and choose Edit > Paste.
- To delete a collection and all of its contents, select the collection from the Collection pop-up menu, and then select Delete from the Collection pop-up menu.

## Setting optimization preferences (ImageReady)

You can set preferences in ImageReady to determine the default optimization settings applied in the Optimized, 2-Up and 4-Up views.

**To select the default optimization applied in Optimized view:**

- 1 Choose File > Preferences > Optimization.
- 2 Choose an option in the Default Optimization section:
  - Select Use the Previously Used Settings to automatically apply the last used optimization settings.
  - Select Auto Select GIF/JPEG to automatically optimize the image as a GIF or JPEG. ImageReady selects GIF or JPEG based on an analysis of the image.

- Select Use Named Setting and select an option from the Named Settings pop-up menu to apply that setting.

3 Select other Optimize preferences, or click OK.

**To select the default optimization applied in 2-Up and 4-Up views:**

- 1 Choose File > Preferences > Optimization.
- 2 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):
  - Select Original to display the original image in the specified pane. (This option is available for the first pane only.)
  - Select Current to display the image with current Optimize palette settings in the specified pane. (This option is available for all panes.)
  - Select 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 twelve named settings to display the optimized image with those settings. (This option is available for the second, third, and fourth panes.)
- 3 Click OK.

## 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 onto a slice to apply the optimization settings to the slice.

**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.
- 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 a droplet to an action by dragging the droplet onto the Actions palette, to include the optimization settings as part of the action.*

#### **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.

## **Saving optimized images**

There are several ways to save an optimized image for use on the Web:

**HTML and Images** You can generate all files required to use your image as a Web page. This includes an HTML file and separate image files for the slices in the source image. The HTML file includes code for any Web effects—such as hypertext links, image maps, rollovers, and animations—in the document. The image files have the format and options specified in the optimization setting.

**Images only** You can save your image with the format and options specified in the optimization setting. If the source image contains multiple slices, each slice is saved as a separate file.

**HTML only** You can save the HTML code, but not the image data, for your image. In ImageReady, you can also create an HTML file using the Copy HTML command. This command lets you copy the HTML code for an optimized image to the Clipboard, and paste the HTML code into an HTML file. If you subsequently make changes to the source image, you can use the Update HTML command to update the HTML file.

When saving an optimized image with slices, you can choose to save all slices, or only the selected slices.

#### **To save an optimized image:**

- 1 Do one of the following:

- (Photoshop) Choose File > Save for Web, optimize the image as desired, and click OK.

- (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 Select a Save As Type option:

- HTML and Images to generate an HTML file and save each slice as a separate file.
- Images Only to save each slice in the image 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, click Output Settings. (See “Setting output preferences and file information” on page 369.)

5 (ImageReady) Select Include GoLive Code to reformat HTML and JavaScript code so that rollovers will be fully editable in Adobe GoLive™. Code is reformatted in the style used by GoLive (and may create a larger HTML file).

6 Select an option for slices:

- 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.

*Note:* You must select the desired slices before starting this procedure.

7 Click Save.

**To copy HTML code to the Clipboard (ImageReady):**

Choose Edit > Copy HTML Code, and choose an option for copying code from the submenu:

- Copy All Slices to copy HTML code for all slices in the document.
- Copy Selected Slices to copy HTML code for selected slices only.
- Copy Preloads to copy the JavaScript portion of the HTML code for slices in the document.

ImageReady generates and formats HTML code based on settings in the Output Options dialog box. Be sure to specify HTML options, such as whether to use tables or cascading style sheets, before you copy and paste HTML code. (See “Setting HTML preferences” on page 370.)

To paste the ImageReady HTML code into an HTML document, open the HTML document in the destination application and choose Edit > Paste.

**To update HTML code for an image (ImageReady):**

1 Choose File > Update HTML.

- 2 Select the HTML file into which you pasted HTML code for the image.
- 3 Select Save Images to save the image file when you update the HTML code for the image.
- 4 Click Save.

## Setting output preferences and file information

You can specify preferences for saving image files and HTML files in the Output Settings dialog box. In ImageReady, you can also save and load preferences.

### To display the Output Settings dialog box:

Do one of the following:

- (Photoshop) Click Output Settings in the Save for Web dialog box. Use this method if you want to load and save preferences.
- (ImageReady) Choose the desired preferences set from the File > Output Settings submenu. Use this method if you want to load and save preferences.
- When you save an optimized image, click Output Settings in the Save Optimized As dialog box.

### To switch to a different preference set:

Do one of the following:

- Select 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.

## Setting file saving preferences

You can set the following options in the Saving Files preference set:

**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, slice name, rollover state, trigger slice, 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).

**File Name Compatibility** Select one or multiple options to make the filename compatible with Windows (permits longer filenames), Macintosh, and UNIX operating systems.

**Copy Background Image When Saving** To preserve a background image that has been specified in the Background preferences set. (See “Creating background images” on page 372.)

**Put Images In Subfolder** To specify a folder name where optimized images are saved (available only with documents containing multiple slices).

**Embed Copyright** To include copyright information with the image. You add copyright information for an image in the Image Info dialog box. See “Adding file information” on page 371.

## Setting HTML preferences

You can set the following options in the HTML preference set:

**Tags Case** Select the capitalization to be used for tags: all uppercase, initial cap, or all lowercase. Setting tags and attributes to all uppercase helps the code stand out in the file.

**Attributes Case** Select the capitalization to be used for tag attributes: all uppercase, initial cap, second initial cap, or all lowercase.

**Indent** Select 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** Select a platform for line ending compatibility.

**Always Quote Attributes** To place quotation marks around all tag attributes. Placing quotation marks around attributes is required for compatibility with certain early browsers and for strict HTML compliance. However, always quoting attributes is not recommended. Quotation marks are used when necessary to comply with most browsers, even if this option is deselected.

**Include Comments** To add explanatory comments to the HTML code.

**Include GoLive Code** To reformat HTML and JavaScript code so that rollovers will be fully editable in Adobe GoLive™. Code is reformatted in the style used by GoLive (and may create a larger HTML file).

**Generate CSS** To generate a Cascading Style Sheet.

**Referenced** Select an option for <<>>

- By ID to
- Inline to
- By Class to

<<*Reviewers—Please provide information about CSS options*>>

**Generate Table** To align slices using an HTML table.

**Empty Cells** Select an option for filling empty table data cells (slices set to No Image). Select GIF, IMG W&H to use a one-pixel GIF with width and height values specified on the IMG tag. Select GIF, TD W&H to use a one-pixel GIF with width and height values specified on the TD tag. Select NoWrap, TD W&H to place a non-standard NoWrap attribute on the table data and also place width and height values specified on the TD tags.

**TD W, H** Select an option for including width and height attributes for table data: Always, Never, or Auto (the recommended setting).

**Spacer Cells** Select an option for adding one row and one column of empty spacer cells around the generated table: Always, Never, or Auto (the recommended setting). Adding spacer cells is necessary with table layouts in which slice boundaries do not align, to prevent the table from breaking apart in some browsers.

**Image Map Type** Select an option for generating image map code:

- 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.
- Client & NCSA to create both a client-side and server-side compatible image map, using NCSA specifications.
- Client & CERN 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** Select a placement option:

- Top to
- Body to
- Bottom to

<<*Reviewers—Please provide information about image map placement options*>>

## Setting slice naming preferences

You can specify the default naming pattern for slices in the Slices preference set. Select elements from the pop-up menus or enter text into the fields to be combined into the default names for all slices. Elements include document name, the word “slice,” numbers or letters designating slices or rollover states, slice creation date, punctuation, or “none.”

## Saving and loading preferences

You can save the preferences you set in the Output Settings dialog box as a file and reload them to apply the same settings to a different file.

<<*Reviewers—What is the default location for preference files?*>>

### To save document settings in a file:

- 1 Choose a preference set from the File > Output Settings submenu to open the Output Settings dialog box.
- 2 Set the preferences as desired and click Save.
- 3 Type a filename and choose a location for the saved file.
- 4 Click Save.

### To load document settings:

- 1 Click Load in the Output Settings dialog box.
- 2 Select a \*.irds file and click Open.

## Adding file information

In ImageReady, you can add page title and copyright information to an image using the Image Info dialog box.



*In Photoshop, you can add information to some files using the File Info dialog box.*

You can choose to embed file information in the HTML file for an image. Copyright information is not displayed in a browser, but can be used in a case of copyright infringement to verify copyright.

### To enter information about an image:

- 1 Choose File > Image Info.
- 2 In the Page Title text field, type a title for the HTML file created for the image.

3 In the Copyright text field, enter copyright information for the image.

4 Click OK.

**To embed file information in an HTML file:**

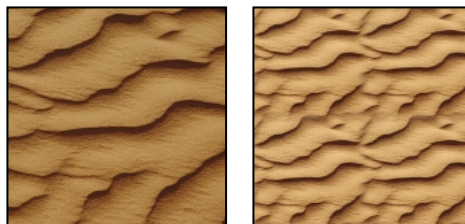
Select the Embed Copyright option in the Output Settings dialog box (as described in “Setting file saving preferences” on page 369).

## Creating background images

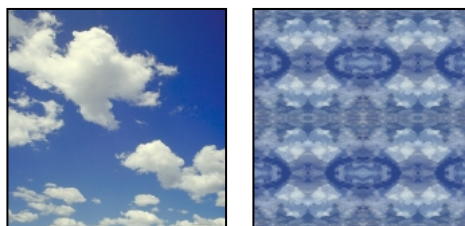
Many Web pages contain tiled background images created from a single graphic repeated as needed to fill the entire page. In ImageReady, you can create an HTML file that will display the current image as a tiled background in a Web browser. You can also create an HTML file that will display another image or a solid color as a background behind the current image. ImageReady includes the `<body background>` tag for the background image and the `<body bgcolor>` tag for the background color in the HTML file.

In addition, you can prepare an image to be used as a tiled background using the Tile Maker filter, which blends the edges of an image to create a seamless background. You can also use the Tile Maker filter to create a kaleidoscopic background, in which an image is flipped horizontally and vertically to create an abstract design.

<<Art—Per Dean, reconsider and improve.>>



Original image, and image prepared using Blend Edges displayed as tiled background



Original image, and image prepared using Kaleidoscope Tile displayed as tiled background

**To specify the current image as a background image:**

1 Open the Output Settings dialog box and select the Background preference set. (See “Setting output preferences and file information” on page 369.)

2 For View As, select Background.

3 To select a solid color background to be displayed while the background image is downloading, or to be displayed through any transparent areas in the background image, click the Color box and choose a color using the color picker. Alternatively, click the triangle next to the Color box and select None, Foreground Color, Background Color, or Other (using the color picker), or select a color from the pop-up palette.

4 Click OK.

**To specify a background to be used with the current image:**

1 Open the Output Settings dialog box and select the Background preference set. (See “Setting output preferences and file information” on page 369.)


2 For View As, select Image.

3 Select a background:

- To select a background image, click Choose and select an image to be used as a background behind the current image.
- To select a solid color background, click the Color box and choose a color using the color picker. Alternatively, click the triangle next to the Color box and select None, Foreground Color, Background Color, or Other (using the color picker), or select a color from the pop-up palette.

If you select a background image and a background color, the background color displays while the background image is downloading. It also displays through any transparent areas in the background image.

**To prepare an image for use as a tiled background image (ImageReady):**

1 With an image displayed, use the marquee tool () to select an area in an image to be used as a tiled background.

2 Choose Filter > Other > Tile Maker.

3 Choose one of the following:

- Blend Edges to use the selection as a tiled background. Then enter a percent value in the Width text box to specify how much of the edge to blend, usually between 5% and 15%, with a maximum of 20%.

Select Resize Tile to Fill Image to resize the blended tile to fill the original selection. Deselect this option to create a tile that is smaller than the original selection, reduced by the amount specified in Width.

- Kaleidoscope Tile to flip and duplicate the selection horizontally and vertically and blend the edges, to create an abstract design that will be tiled on a Web page background.

4 Click OK.

5 Choose Image > Crop > Delete to crop the image to the selected area. This is not required if you use the entire image to create a tile.



# Chapter 16: Saving and Exporting Images

**A**dobe Photoshop and Adobe ImageReady support a variety of file formats to suit a wide range of output needs. You can save or export your image to any of these formats. You can also use special Photoshop features to add information to files, set up multiple page layouts, and place images in other applications.

The saving options that are available to you vary between Photoshop and ImageReady. Keep in mind that 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 jump back to Photoshop.

For information about optimizing and saving images for the Web, see “Optimizing images” on page 342 and “Saving optimized images” on page 367.

## 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.

Use these commands to save files:

- The Save command 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.
- The Save As command to save an image to a different location and filename. In ImageReady, the Save As command always saves to PSD format. In Photoshop, the Save As command lets you save an image in a different format and with different options. The available options vary depending on the format you choose. See to “Choosing a file format” on page 381 for more information on available formats.
- (ImageReady) The Export Original command 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.

### To save changes to the current file:

Choose File > Save.

### To save a file to a different name and location:

1 Choose File > Save As.

2 Type a filename, and choose a location for the file.

3 (Photoshop) Select the As a Copy option to save a copy of the file while keeping the current file open on your desktop.

4 Click Save.

**To save a file in a different file format (Photoshop)**

1 Choose File > Save As.

2 Choose a format from the format pop-up menu. Unavailable formats are not visible (Windows) or dimmed (Mac OS).

3 Type a filename, and choose a location for the file.

4 To save a copy of the file while keeping the current file open on your desktop, select the As a Copy option.

5 Optionally, select one or more of the following options:

*Note: The availability of options depends of 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.*

- Embed Color Profile to create a color-managed document. (See “Embedding profiles in saved documents” on page 79.)
- Annotations to save annotations with the image. (See <<XREF>>.)
- Layers to preserve all layers in the image. If this option is disabled or unavailable, all visible layers are flattened. (See “Flattening all layers” on page 249.)

- Channel options—Transparency, Alpha, and Spot—to save channel information with the image. Disabling an option removes the channel information from the saved image.

<<Reviewers—What does the Transparency option affect? All transparency or specific to channel?>>


- Image Previews options (Mac OS) or Thumbnail (Windows) to save thumbnail data for the file. Thumbnails display in the Open dialog box. On Mac OS, you can set the following image preview options: 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; Macintosh Thumbnail to display the preview in the Open dialog box, Windows Thumbnail to save a preview that can display on Windows systems.

To make thumbnail options available when you save an image, select Ask When Saving for the Image Previews option in the Preferences dialog box (see “Setting preferences for saving files (Photoshop)” on page 392).

- File Extension options (Mac OS) or Use Lower Case Extensions (Windows) to specify the format for file extensions. On Mac OS, select Append to add the format's extension to a filename and Use Lower Case to make the extension lower case.


6 Click Save.

With some image formats, a dialog box appears. The formats requiring a dialog box are described in the following sections.

 *To copy an image without saving it to your hard disk, use the Duplicate command (see “Duplicating images” on page 148). To store a temporary version of the image in memory, use the History palette to create a snapshot (see “Making a snapshot of an image (Photoshop)” on page 147).*

**To save a copy of a file in a different file format (ImageReady):**

- 1 Choose File > Export Original.
- 2 Type a filename, and choose a location for the file.
- 3 Select a file format from the format pop-up menu.
- 4 Click Save.

 *To copy an image without saving it to your hard drive, use the Image > Duplicate command.*

**Saving files in Photoshop EPS or DCS format (Photoshop)**

If you have a PostScript printer, you can use the Encapsulated PostScript (EPS) format to share Photoshop files effectively with many graphic, illustration, and page-layout programs. The Desktop Color Separations (DCS) format, a version of the standard EPS format, lets you save color separations of CMYK or multichannel files. You use the DCS 2.0 format to export images containing spot channels and single alpha channels.

To print EPS and DCS files, you must use a PostScript printer. For more information on the types of files supported by the EPS and DCS formats, see “About file formats” on page 382.

**Note:** *If you plan to export an image to Adobe Illustrator or Adobe PageMaker for four-color process printing, convert the image to CMYK mode and save it in Photoshop EPS or TIFF format. Saving a CMYK file as TIFF lets you apply color management features to the placed image in Illustrator 7.0 or PageMaker 6.5.*

**To save a file in Photoshop EPS or DCS format:**

- 1 Choose File > Save As and choose Photoshop EPS, Photoshop DCS 1.0, or Photoshop DCS 2.0 from the format list.
- 2 For Preview, choose a low-resolution preview type. To share an EPS file between Windows and Macintosh systems, use a TIFF preview. An 8-bit preview option results in better display quality but higher file size than does a 1-bit preview option. You must save a preview of an EPS image in order to view the image in the destination application.

**Note:** *To use the JPEG preview option in Mac OS, you must have QuickTime installed.*

- 3 If you are saving to the DCS format, follow these guidelines when choosing a DCS option:

- The DCS 1.0 format creates five files: one for each color channel in the CMYK image and a fifth master file corresponding to the composite channel. You can choose to include a 72-ppi grayscale or color version of the composite image in the master file. By printing the low-resolution composite from the destination application, you can proof the image. If you plan to print directly to film or want to reduce file size, choose No Composite PostScript. To view the composite file, you must keep all five files in the same folder location.

- The DCS 2.0 format retains spot channels and a single alpha channel in the image. You can choose between saving color channel information 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 72-ppi grayscale or color composite with the image.

4 Specify an encoding method when printing to a PostScript output device:

- ASCII to use the most generic encoding method. Use ASCII encoding if you're printing from a Windows system, or if you experience printing errors or other difficulties.

- Binary to use a faster encoding method that produces a smaller output file and leaves the original data intact. Use Binary encoding if you're printing from a Mac OS system. However, some page-layout applications and some commercial print spooling and network printing software may not support binary Photoshop EPS files.

- JPEG to use the fastest encoding method. JPEG encoding compresses the file by discarding some image data, thus reducing the quality of your printed output; for the best printed results, choose maximum quality compression. Files with JPEG encoding can be printed only on Level 2 (or later) PostScript printers and may not separate into individual plates.

5 Select Include Halftone Screen and Include Transfer Function to save the image's halftone information (including the frequencies and angles of the screens) and transfer function information.

The PostScript language interpreter in some applications can use these screen settings when color separations are generated. You can also choose the Override Printer's Default Functions option in the Transfer Functions dialog box. (See "Compensating for dot gain in film using transfer functions" on page 100.) <<**work with Pam to reassign XREF**>>

6 To display white areas in the image as transparent, select Transparent Whites. This option is available only for images in Bitmap mode.


7 If you are printing to a PostScript printer, select PostScript Color Management to instruct the printer to convert the file data to the printer's color. Select this option only if you have not already converted the file to the printer's color space.

*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.*



## Saving files in GIF format (Photoshop)

You can use the Save As command to save RGB, indexed-color, grayscale, or Bitmap-mode image directly in GIF format. When saving an RGB image, Photoshop automatically displays the Indexed Color dialog box, letting you choose indexed-color conversion settings as the image is saved to GIF. For more information on GIF format, see “About file formats” on page 382.

 You can also save an image as one or more GIF files using the Save for Web command. For more information on optimizing images in GIF format, see “About GIF format” on page 341 and “Setting optimization options for GIF and PNG-8 formats” on page 345.


### To save a file in GIF format:

- 1 Choose File > Save As and choose CompuServe GIF from the format list.
- 2 For RGB images, the Index Color dialog box appears. Select a palette, color depth, and dither method as described in “Converting to indexed color (Photoshop)” on page 56 and click OK
- 3 Select a row order for the GIF file and click OK:
  - Normal to create an image that displays in a browser only when it is fully downloaded.
  - Interlaced to create an image that displays as low-resolution versions in a browser while the full image file is downloading. Interlacing can make downloading time seem shorter and assures viewers that downloading is in progress. However, interlacing also increases file size.

<<Reviewers—Should we mention that the GIF89a exporter is included as an optional plug-in? Are there any benefits to using GIF 89a vs. CompuServe GIF? Should we include a text/PDF file containing the old GIF89a export procedures in the Plug-ins folder?>>

## Saving files in JPEG format (Photoshop)

You can use the Save As command to save CMYK, RGB, and grayscale images in JPEG format. Unlike the GIF format, JPEG retains all color information in an RGB image but compresses file size by selectively discarding data. For more information on JPEG format, see “About file formats” on page 382.

 You can also save an image as one or more JPEG files using the Save for Web command. For more information on optimizing images in JPEG format, see “About JPEG format” on page 340 and “Setting optimization options for JPEG format” on page 344.

### To save a file in JPEG format:

- 1 Choose File > Save As and choose JPEG from the format list.
- 2 Do one of the following to specify the image quality:
  - Choose an option from the Quality menu.
  - Drag the Quality pop-up slider.
  - Enter a value between 1 and 12 in the Quality text box.
- 3 Select a format option:
  - Baseline (“Standard”) to use a format recognizable to most Web browsers.

- Baseline Optimized to optimize the color quality of the image and produce a slightly smaller file size. This option is not supported by all Web browsers.
- Progressive to create an image that displays gradually as it is downloaded—in a series of scans (you specify how many) showing increasingly detailed versions of the entire image. Progressive JPEG images files are slightly larger in size, require more RAM for viewing, and are not supported by all applications and Web browsers.

4 If the image contains transparency, select a Matte color to simulate the appearance of background transparency. (See “Making transparent and matted images” on page 358.)

5 To view the estimated download time of the image, select a modem speed from the Size pop-up menu. (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 Photoshop PDF format (Photoshop)

You can use the Save As command to save RGB, indexed-color, CMYK, grayscale, Bitmap, and Lab color images in Photoshop PDF format. For more information on Photoshop PDF format, see “About file formats” on page 382.

#### To save a file in Photoshop PDF format:

- 1 Choose File > Save As and choose Photoshop PDF from the format list.
  - 2 Select an encoding method:
    - JPEG for continuous-tone images. For the best printed results, choose maximum quality compression. Files with JPEG encoding can be printed only on Level 2 (or later) PostScript printers and may not separate into individual plates.
    - ZIP for images that contain large areas of a single color.
- <<**Reviewers—Any additional information about ZIP encoding?**>>
- Note: Bitmap images are automatically encoded using CCITT compression—the PDF Options dialog box does not appear.*
- 3 For CMYK images, select Embed ICC Profiles to create a color-managed document. (See “Embedding profiles in saved documents” on page 79.)
  - 4 If the image contains vector graphics (such as shapes and type), select Include Vector Data to preserve vector data in the PDF file.
  - 5 If the image contains type, select Embed Fonts to preserve font data in the PDF file.
  - 6 Click OK.

## Choosing a file format

The following list describes the file formats available when you open, import, save, or export images. If a file format does not appear in the appropriate dialog box or submenu, you may need to install the format's plug-in module—additional file formats may be available by installing optional plug-in modules. (See “Using plug-in modules” on page 15.) For more information on a specific file format, see “About file formats” on page 382.

File Format	Photoshop Access	ImageReady Access
Photoshop	Open Save As	Open Export Original
Photoshop 2.0 (Mac OS only)	Open Export	
Amiga IFF	Open Save As	Open Export Original
AVI		Open
BMP	Open Save As	Open Export Original
CompuServe GIF	Open Save As	Open
Photoshop EPS	Open Save As	
Photoshop DCS	Open	
EPS TIFF Preview	Open	
EPS PICT Preview (Mac OS only)		
Filmstrip	Open	Open

File Format	Photoshop Access	ImageReady Access
JPEG	Open Save As	Open
Generic PDF	Open	Open
Generic EPS	Open	Open
PCX	Open Save As	Open Export Original
Photoshop PDF	Open Save As	
Acrobat Image TouchUp	Open	Open
PhotoCD	Open	Open
PICT File	Open Save As	Open Export Original
PICT Resource (Mac OS only)	Import	Import
Pixar	Open Save As	Open Export Original
PNG	Open Save As	Open
QuicEPS		Open
Quicktime Movie		Open Export Original
Raw	Open Save As	
Scitex CT	Open Save As	
Script Droplet		Open
Targa	Open Save As	Open Export Original
TIFF	Open Save As	Open Export Original

## About file compression

Many image file formats use compression techniques to reduce the storage space required by bitmap image data. Compression techniques are distinguished by whether they remove detail and color from the image. *Lossless* techniques compress image data without removing detail; *lossy* techniques compress images by removing detail. The following are commonly used compression techniques:

- Run Length Encoding (RLE) is a lossless compression technique supported by the Photoshop and TIFF file formats and some common Windows file formats.
- Lemple-Zif-Welch (LZW) is a lossless compression technique supported by TIFF, PDF, GIF, and PostScript language file formats. This technique is most useful in compressing images that contain large areas of single color, such as screenshots or simple paint images.
- Joint Photographic Experts Group (JPEG) is a lossy compression technique supported by JPEG, PDF, and PostScript language file formats. JPEG compression provides the best results with continuous-tone images, such as photographs.
- CCITT encoding is a family of lossless compression techniques for black-and-white images that is 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 encoding is a lossless compression technique supported by the PDF file format. Like LZW, ZIP compression is most effective for images that contain large areas of single color.

## About file formats

Graphic file formats differ in the way they represent graphic information—either as vector drawings or as bitmap images. Some formats contain only vector drawings or bitmap images, but many include both in the same file. See “Opening files” on page 35 for information on opening files; see the beginning of this chapter for information on saving files.

**Photoshop format** The default file format for newly created images—and the only format supporting all available image modes (Bitmap, Grayscale, Duotone, Indexed Color, RGB, CMYK, Lab, and Multichannel), guides, alpha channels, spot channels, and layers (including adjustment layers, type layers, and layer effects).

You can save an image to a format that doesn’t support all features of the document (such as layers, slices, and optimization settings). However, you will be prompted to save the document in a format that supports all of its data.

New versions of Photoshop provide features that are not supported in previous versions. If you edit or save a file using an earlier version of Photoshop, unsupported features are discarded. The following features are only supported in later versions of Photoshop:

Feature	Supported in version:		
	6.0	5.5	5.0
Color samplers	x	x	x
Editable type layers	x	x	x
Layer effects	x	x	x
Spot channels	x	x	x
Embedded ICC profiles	x	x	x
Adjustment layers using the Hue/Saturation or Channel Mixer type	x	x	x

<<*Reviewers—How far back should we document version-specific features—is it necessary to document 5.0-specific features, or only 6.0-specific features.? Please provide information about version-specific features for 5.5 and 6.0*>>

**Photoshop 2.0 format (Photoshop)** Mac OS only. You can use this format to open a file in version 2.0 or to export to an application supporting only Photoshop 2.0 files. Saving in Photoshop 2.0 format flattens your file and discards layer information.

**AVI format (ImageReady)** /Windows only. The Audio Video Interleave (AVI) format is the standard Windows format for audio/video data.

**BMP format** BMP is the standard Windows image format on DOS and Windows-compatible computers. The BMP format supports RGB, indexed-color, grayscale, and Bitmap color modes, and does not support alpha channels. You can specify either Microsoft® 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.

**Photoshop EPS or DCS format (Photoshop)** The 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. The EPS format is used to transfer PostScript language artwork between applications. When you open an EPS file containing vector graphics created in another application, Photoshop rasterizes the file, converting the vector graphics to pixels (see “Importing Adobe Illustrator, PDF, and EPS files (Photoshop)” on page 37) <<*xref destination?*>>.

The 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.

If you have a PostScript printer, you can use the Encapsulated PostScript (EPS) format to share Photoshop files effectively with many graphic, illustration, and page-layout programs. The Desktop Color Separations (DCS) format, a version of the standard EPS format, lets you save color separations of CMYK or multichannel files. You use the DCS 2.0 format to export images containing spot channels and single alpha channels.

To print EPS and DCS files, you must use a PostScript printer. For more information on the types of files supported by the EPS and DCS formats, see “Choosing a file format” on page 381.

**Note:** *If you plan to export an image to Adobe Illustrator or Adobe PageMaker for four-color process printing, convert the image to CMYK mode and save it in Photoshop EPS or TIFF format. Saving a CMYK file as TIFF lets you apply color management features to the placed image in Illustrator 7.0 or PageMaker 6.5.*

#### **EPS TIFF or EPS PICT Preview format (Photoshop)**

These formats, which appear as options in the Open and Open As dialog boxes, let you open files saved in file formats that create previews but are not supported by Adobe Photoshop (such as QuarkXPress®). An opened preview file can be edited and used like any other low-resolution file. EPS PICT Preview is available only in Mac OS.

**Filmstrip format** The 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 the *Adobe Premiere User Guide*.

**GIF format** The 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 a LZW-compressed format designed to minimize file size and electronic transfer time. The GIF format preserves transparency in indexed-color images; however, it does not support alpha channels.

You can save files in GIF format using one of the following methods:

- The optimization features in Photoshop and ImageReady let you set GIF options for an image and save it as one or more files using the File > Save for Web command (Photoshop) or File > Save Optimized command (ImageReady). For more information on optimizing images and saving optimized files, see “Optimizing Images for the Web” on page 337.
- (Photoshop) The File > Save As command lets you save an RGB, indexed-color, grayscale, or Bitmap-mode image in GIF format. The Save As command does not preserve any Web features—such as links, animations, and rollovers—that you've added to a file. (See “Saving files in GIF format (Photoshop)” on page 379.)

<<Reviewers—Should we mention that the GIF89a exporter as an option?>>

**Amiga IFF format (Photoshop)** The Amiga™ Interchange File Format (IFF) is used for working with Video Toaster and transferring files to and from the Commodore Amiga system. In addition, this format is supported by a number of paint programs on IBM®-compatible computers. IFF is the best export format to use with DeluxePaint from Electronic Arts. The IFF format supports RGB, indexed-color, grayscale, and Bitmap color modes, and does not support alpha channels.

**JPEG format (Photoshop)** The 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. The JPEG format supports CMYK, RGB, and grayscale color modes, and does not support alpha channels. Unlike the 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.

You can save files in JPEG format using one of the following methods:

- The optimization features in Photoshop and ImageReady let you set JPEG options for an image and save it as one or more files using the File > Save for Web command (Photoshop) or File > Save Optimized command (ImageReady). For more information on optimizing images and saving optimized files, see “Optimizing Images for the Web” on page 337.
- (Photoshop) The File > Save As command lets you save an image as a single JPEG file. The Save As command does not preserve any Web features—such as links, animations, and rollovers—that you’ve added to a file. (See “Saving files in JPEG format (Photoshop)” on page 379.)

**PCX format** The PCX format is commonly used by IBM PC-compatible computers. Most PC software supports version 5 of the PCX format. A standard VGA color palette is used with version 3 files, which do not support custom color palettes.

The PCX format supports RGB, indexed-color, grayscale, and Bitmap 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 format** 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.

There are several versions of the PDF format:

- Photoshop PDF files are created using the Photoshop Save As command. Photoshop PDF files can contain only a single image.

The Photoshop PDF format supports RGB, indexed-color, CMYK, grayscale, Bitmap, and Lab color modes, and does not support alpha channels. The format supports JPEG and ZIP compression, except for Bitmap-mode files, which use CCITT Group 4 compression.

- Acrobat Single Image PDF files are created using the Adobe Acrobat TouchUp command and comprise only a single image.
- Generic PDF files are created using Adobe Acrobat and comprise multiple pages or images. PDF files created using Adobe Illustrator also fall into this category. When you open a generic PDF file, Photoshop rasterizes the image. For multiple-page PDF files, you can open a single page or each page as a separate file.

You all types of PDF files in Photoshop (see “Opening PDF files” on page 36). However, you can only save images to Photoshop PDF format.

**PICT File format** The PICT format is widely used among Macintosh graphics and page-layout applications as an intermediary file format for transferring files between applications. The PICT format supports RGB files with a single alpha channel, and indexed-color, grayscale, and Bitmap files without alpha channels. The 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 a grayscale image, you can choose from 2, 4, or 8 bits per pixel. In Mac OS with QuickTime installed, four JPEG compression options are available.

**PICT Resource format (Photoshop)** Mac OS only. A PICT resource is a PICT file contained in a Mac OS file’s resource fork—for example, an applications’ splash screen or the contents of the Scrapbook. The PICT Resource format supports RGB files with a single alpha channel, and indexed-color, grayscale, and Bitmap files without alpha channels.

Open a PICT resource by choosing File > Import > 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 format** The PIXAR format is designed specifically for exchanging files with PIXAR image computers. PIXAR workstations are designed for high-end graphics applications, such as those used for three-dimensional images and animation. The PIXAR format supports RGB and grayscale files with a single alpha channel.



**PNG format (Photoshop)** Developed as a patent-free alternative to GIF, the Portable Network Graphics (PNG) format is used for losslessly compressing and displaying images on the World Wide Web. Unlike GIF, PNG supports 24-bit images and produces background transparency without jagged edges; however, some older versions of Web browsers may not support PNG images. The PNG format supports grayscale and RGB color modes with a single alpha channel, and indexed-color mode without alpha channels. In Mac OS, PNG also supports Bitmap mode. PNG uses the saved alpha channel to define transparency in the file; be sure to delete all but the desired alpha channel from your image before saving as PNG. The PNG format preserves transparency in indexed-color and RGB images.

When saving in PNG format, you can select Adam7 to display the image in increasing detail as it is downloaded. You can also run the image through a filtering algorithm that prepares the image data for optimal compression:

- None compresses the image without a filter, and is recommended for indexed-color and Bitmap-mode images.
- Sub optimizes the compression of images with even horizontal patterns or blends.
- Up optimizes the compression of images with even vertical patterns.
- Average optimizes the compression of low-level noise by averaging the color values of adjacent pixels.
- Paeth optimizes the compression of low-level noise by reassigning adjacent color values.

- Adaptive applies the filter—Sub, Up, Average, or Paeth—best-suited for the image. Select Adaptive if you are unsure of which filter to use.

**Quicktime Movie format (ImageReady)** The 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 (see “Saving animations as QuickTime movies” on page 335). You can also open existing Quicktime movies as animations in order to optimize them for the Web (see “Opening QuickTime movies as animations” on page 336).

**Raw format (Photoshop)** The Raw format is a flexible file format for transferring files between applications and computer platforms. This format supports CMYK, RGB, and grayscale files with alpha channels, and multichannel, Lab, indexed-color, and duotone files without alpha channels.

Raw format consists of a stream of bytes describing the color information in the file. Each pixel is described in binary format, with 0 equaling black and 255 white (for images with 16-bit channels, the white value is 65535). Adobe Photoshop designates the number of channels needed to describe the image, plus any additional channels in the file. 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 Macintosh 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 the 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 zeros 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.

**Scitex CT format (Photoshop)** The Scitex Continuous Tone (CT) format is used for high-end image processing on Scitex computers. Contact Scitex to obtain utilities for transferring files saved in the Scitex CT format to a Scitex system. The Scitex CT format supports CMYK, RGB, and grayscale files, 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. Files 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.

**Targa format** The TGA (Targa\*) format is designed for systems using the Truevision\* video board and is commonly supported by MS-DOS color applications. The Targa format supports 32-bit RGB files with a single alpha channel, and indexed-color, grayscale, and 16-bit and 24-bit RGB files without alpha channels. When saving an RGB image in this format, you can choose a pixel depth.

**TIFF format** The 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.

The TIFF format supports CMYK, RGB, and grayscale files with alpha channels, and Lab, indexed-color, and Bitmap files without alpha channels. TIFF also supports LZW compression.

When you save an Adobe Photoshop image in TIFF, you can choose to save in a format that can be read either by IBM PC-compatible or Macintosh computers. To compress the file automatically, click the LZW Compression check box; compressing a TIFF file decreases its file size but increases the time required to open and save the file. Adobe Photoshop also reads and saves captions in TIFF files. For information on using captions, see “Adding file information (Photoshop)” on page 389.

## Adding file information (Photoshop)

Adobe 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 captions, keywords, categories, credits, and origins. The captions and keyword entries can also be searched by some third-party image browsers.

In Windows, you can add file information to files saved in the Photoshop, TIFF, JPEG, EPS, and PDF formats. In Mac OS, you can add file information to files in any format.

### To enter information about a file:

- 1 Choose File > File Info.
- 2 For Section, choose an attribute. You can choose the following sections:

- Caption provides headline text and special instructions for the image.

**Note:** To print the caption under an Adobe Photoshop image, choose File > Page Setup, and select Caption. Then print as usual. (See “Printing (Photoshop)” on page 399 for more information.)

- Keywords provides a way for some image browsers to categorize and search for an image. Type in the text box, and click Add to see your text in the keyword list. To replace a keyword, select the word in the list, type its replacement, and click Replace. To delete a keyword, select the word, and click Delete.

- Categories lets you enter an alphabetic category code of three characters. Where available, the local Associated Press regional registry maintains a list of categories. To include the image in supplemental categories, type the code and click Add. To replace a category, select the code, type its replacement, and click Replace. To delete a category, select the code, and click Delete.

For Urgency, specify the editorial urgency of the image—not its handling priority.

- Credits provides the correct credit for a copyrighted image. Type byline, credit, and source information.

- Origin provides information on the history of the image. The Object Name field contains a short identification (for example, “Montgomery Street”). The date entry can be in any format. To enter the current date in a short text format (for example, Oct. 25, 1998), click Today.

- Copyright & URL provides copyright information not included as part of the IPTC specification. To display a copyright symbol in the image window’s title bar, select Mark as Copyrighted. Enter a copyright notice, and specify the URL if information about an image can be found on a Web site. If Photoshop detects a Digimarc watermark in the image, the Copyright & URL section is automatically updated.

- 3 Choose and fill in any additional sections. To move forward through the sections, click Next; to move backward, click Previous.

- 4 When you’ve finished, click OK.

**To load, save, or append file information:**

In the File Info dialog box, do one of the following:

- Click Load to replace the current information with information stored in a File Info file.
- Click Save to save the current file information in a File Info file for later use.
- Click Append to add information stored in a File Info file to the current file information.

## 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 PictureMarc technology. The watermark—a digital code added as noise to the image—is generally imperceptible to the human eye. The watermark is durable in both digital and printed forms, surviving typical image edits and file format conversions—and is still detectable when the image is printed and then scanned back into a computer.

Embedding a digital watermark in an image lets viewers obtain complete contact 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 watermarks, refer to the Digimarc Watermarking Guide, downloadable for free from the Digimarc Web site at [www.digimarc.com](http://www.digimarc.com).

## Before adding a 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 watermark effectively and imperceptively. The image cannot consist mostly or entirely of a single flat color.

**Pixel dimensions** The Digimarc technology requires a minimum number of pixels (but no maximum) 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, or 2.5 inches by 2.5 inches, 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 392), the better the chances that the watermark will survive compression.

**Workflow** Watermarking should be one of the very last tasks you perform, 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, color correction, etc.).
- Embed the 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 watermarked image.

## Embedding digital watermarks

To embed a 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 creator ID. You can then embed the creator 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 watermark per image. The Embed Watermark filter won't work on an image that has been previously marked.

If you're working with a layered image, you should flatten the image before marking it; otherwise, the watermark will affect the active layer only.

**Note:** You can add a 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 (see “Viewing copyright and file information” on page 41). <<xref destination?>>

**2** Choose Filter > Digimarc > Embed Watermark.

**3** If you are using the filter for the first time, click the Personalize button. Get a Creator ID by clicking Register to launch your Web browser and visit the Digimarc Web site at [www.digimarc.com](http://www.digimarc.com), or by contacting Digimarc at the telephone number listed in the dialog box. Enter your PIN and ID number in the Creator ID text box, and click OK.

(Once you have entered a Creator ID, the Personalize button becomes a Change button, allowing you to enter a new Creator ID.)

**4** Enter a copyright year for the image.

**5** Select any of the following image attributes:

- Restricted Use to limit the use of the image.
- 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 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 (see “Using the signal strength meter” on page 392).
- 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 operations, 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 assure 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 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 391).

### Setting preferences for saving files (Photoshop)

In Photoshop, the Saving Files Preferences dialog box lets you specify whether to include the following features when saving files:

- Thumbnail image previews appear in the Open dialog box. In Mac OS you can also save desktop icon and low-resolution previews.

- Three-character file extensions append to the names of files and indicate a file's format (for example, .JPG or .jpg for a JPEG file). File extensions are necessary for files that you want to use on or transfer to a Windows system.

- Compositing image data refers to a flattened image version that is saved with a layered file. Including flattened data adds to the file size, but lets you open the file in applications that do not support Photoshop layers, such as Adobe Illustrator.

**To set saving preferences in Windows:**

1 Choose Edit > Preferences > Saving Files.

2 For Image Previews, choose an option:

- Never Save to save files without previews.
- Always Save to save files with specified previews.
- Ask When Saving to assign previews on a file-by-file basis.

3 For File Extension, choose an option:

- Use Upper Case to append file extensions using uppercase characters.
- Use Lower Case to append file extensions using lowercase characters.

4 To include a flattened version of the file, select Include Compositing Image With Layered Files.

Selecting this option makes the file available to applications that can support only the Adobe Photoshop 2.5 file format.

5 Click OK.

**To set saving preferences in Mac OS:**

1 Choose Edit > Preferences > Saving Files.

2 For Image Previews, choose an option:

- Never Save to save files without previews.
- Always Save to save files with specified previews.
- Ask When Saving to assign previews on a file-by-file basis.

3 Select one or more of the following preview types:

- Icon to use the preview as a file icon on the desktop.
- Macintosh Thumbnail to display the preview in the Open dialog box.
- Windows Thumbnail to save a preview that can display on Windows systems.
- 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.

To speed the saving of files and minimize file size, select only the previews you need.

4 For Append File Extension, choose one of the following options:


- Never to save files without file extensions.
- Always to append file extensions to filenames.
- Ask When Saving to append file extensions on a file-by-file basis.

5 To append file extensions using lowercase characters, select Use Lower Case.

6 To include a flattened version of the file, select Include Compositing Image With Layered Files.

Selecting this option makes the file available to applications that support only the Adobe Photoshop 2.5 (or earlier) file format.

7 Click OK.

 *In Mac OS, to append a file extension to the current file only, hold down Option as you choose a file format from the Save As or Save a Copy dialog box.*

**To display a preview file icon (Windows only):**

- 1 Save the file in Photoshop format with a thumbnail preview.
- 2 Position the pointer on the filename in the file list, click the right mouse button, and choose Properties from the context menu that appears.
- 3 Click the Photoshop Image tab.
- 4 For Icon Thumbnails, select a preview icon, and click OK.

Preview icons appear on the desktop and in file lists (when the view is set to Large Icons).

## Creating multiple-image layouts (Photoshop)

You can exporting multiple images automatically as contact sheets and picture packages using Automate commands.

## Creating contact sheets

By displaying a series of thumbnail previews on a single page, contact sheets let you easily preview and catalog groups of images. You can automatically create and place thumbnails on a page using the Contact Sheet II command.

*Note: Make sure that the images are closed before applying this command.*

**To create a contact sheet:**

- 1 Choose File > Automate > Contact Sheet II.
- 2 Click Choose to specify the folder containing the images you want to use. Select Include All Subdirectories to include images inside any subfolders of the chosen folder.
- 3 Under Document, specify the dimensions, resolution, and color mode for the contact sheet, using the menus to specify measurement units.
- 4 Under Thumbnails, specify layout options for the thumbnail previews:
  - For Place, choose whether to arrange thumbnails horizontally (from left to right, then top to bottom) or vertically (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 Filename As Caption to label the thumbnails using their source image filenames. Use the menu to specify a caption font.
- 5 Click OK to create the contact sheet.



## 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 can choose from a variety of size and placement options to customize your package layout.

### To create a photo package from a single image:

- 1 Choose File > Automate > Picture Package.
- 2 Specify the source image you want to use:
  - Click Choose to specify a saved image file as the source.
  - Select Use Frontmost Document to use the image currently active in Photoshop as the source.
- 3 For Layout, choose a preset layout option. Layout dimensions are measured in inches, and a preview of the chosen layout appears in the dialog box.
- 4 Enter a resolution value for the package layout, using the menu to specify resolution units.
- 5 Choose a color mode appropriate to the package layout.
- 6 Click OK to create the package layout.

## Placing Photoshop images in other applications (Photoshop)

Photoshop provides a number of features to help you use images in other applications. You can use 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 clipping paths, choose Help > Export Transparent Image. This interactive wizard helps you prepare images with transparency for export to a page-layout application.

### Using clipping paths

When printing a Photoshop image or placing it in another application, you may want only part of the image to appear. For example, you may want to print or show a foreground object and exclude its rectangular background. A *clipping path* lets you isolate the foreground object and make everything outside the object transparent when the image is printed or placed in another application. This lets you place an image into another file without obscuring the other file's background.



*Image imported into Illustrator without clipping path, and with clipping path*

**To save a path as a clipping path:**

- 1 Draw and save a path or convert an existing selection into a path. For information on creating selections and paths, see “Selecting” on page 115.
- 2 Choose Clipping Path from the Paths palette menu.
- 3 For Path, choose the path you want to save.
- 4 For good results with most images, leave the flatness value blank to print the image using the printer’s default value. If you experience printing errors, enter a new flatness value.

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), a setting from 1 to 3 for low-resolution printing (300 dpi to 600 dpi).

The PostScript interpreter creates curved segments by linking a series of straight line segments. The *flatness* setting for a clipping path determines how closely the straight line segments approximate the curve. The lower the flatness value, the greater is the number of straight lines used to draw the curve and the more accurate the curve.

- 5 Click OK.

If you plan to print the file using process colors, convert the file to CMYK mode. (See “Converting to CMYK” on page 102.) <<*xref destination?*>>

- 6 Save the file:

- To print the file using a PostScript printer, save in Photoshop EPS, DCS, or PDF format (see “Saving files in Photoshop EPS or DCS format (Photoshop)” on page 377; “Saving files in Photoshop PDF format (Photoshop)” on page 380).
- To print the file using a non-PostScript printer, save in TIFF format and export to Adobe PageMaker 5.0 or higher.

*Note:* If you import an EPS or DCS file with a TIFF preview into applications such as Adobe Illustrator, the clipping path transparency will not display properly. This display affects the on-screen preview only; it does not affect the printing behavior of the clipping path on a PostScript printer.

### Printing clipping paths

Sometimes an imagesetter has difficulty interpreting clipping paths, or a printer finds the 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 a clipping path in the following ways:

- By manually reducing the number of anchor points on the path (see “Adding, deleting, and converting anchor points” on page 138).

- By increasing the tolerance setting used to create the path (see the following procedure).

**To simplify a clipping path with the tolerance setting:**

- 1 Select the path in the Paths palette, and click the Make Selection button at the bottom of the palette to convert the path to a selection.
- 2 Click the Trash button at the bottom of the palette to delete the original path.
- 3 Choose Make Work Path from the Paths palette menu, and increase the tolerance setting (4 to 6 pixels is a good starting point).
- 4 Name and save the work path. Then choose Clipping Path from the Paths palette menu.

**Exporting paths to Adobe Illustrator**

The Paths to Illustrator command lets you export Photoshop paths as Adobe Illustrator files. This feature 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 a 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 module:**

- 1 In Adobe Photoshop, draw a path or convert an existing selection into a path; then save the path. (See “Drawing with the freeform pen tool” on page 130, “Drawing straight paths with the pen tool” on page 132, and “Converting between paths and selection borders” on page 140.)

- 2 Choose File > Export > Paths to Illustrator.

- 3 Choose a location for the exported path. In Mac OS, for Write, choose the path you want to export.

- 4 Click Save.

- 5 Open the path in Adobe Illustrator as a new file. You can now manipulate the path or use the path to align Adobe Illustrator objects.

Note that the crop marks in Adobe Illustrator reflect the dimensions of the Adobe Photoshop image. The position of the path within the Adobe Photoshop image is maintained, provided you don't change the crop marks or move the path.

**Object linking and embedding (OLE)  
(Windows 95 and Windows NT 4.0 only)**

<<Reviewers—Please provide updated compatibility information if applicable.>>

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 Adobe Photoshop files and selections into other OLE applications such as Adobe PageMaker 6.5 and Microsoft Word 7.0 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 (↻), use the left-mouse button to 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 Adobe 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.

## Embedding Photoshop images in word-processor applications (Mac OS only)

Adobe Photoshop supports the Edit Graphic Object (EGO) AppleEvent, which allows the embedding of Adobe Photoshop images in word-processor files. EGO is a simple solution when a word-processor file has many small images that need updating.

Word-processor applications that work with EGO include Full Write Professional™, Nisus, MacWrite Pro®, WordPerfect®, and Claris® Works™.

**To use the Edit Graphic Object (EGO) AppleEvent to update images in word-processor files:**

- 1 Paste the Photoshop image into your word-processor file.
- 2 Double-click the image in your word-processor application to launch Adobe Photoshop (if it is not already running), and open the image for editing.
- 3 When you have finished making changes, close the Photoshop file to update the image in your word-processor application.

# Chapter 17: Printing (Photoshop)

**P**rinting is the process of sending your image to an output device. You can print on paper or film (positive or negative), to a printing plate, or directly to a digital printing press.

***Note:** You cannot print images directly from ImageReady. If you have an image open in ImageReady and need to print it, use the Jump To command to open the image in Photoshop.*

## About printing

<<*Online help only*>>

Whether you are providing an image to an outside service bureau or just sending a quick proof to a desktop printer, 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** When you print a file, the Adobe Photoshop application sends your image to a printing device, either to be printed directly onto paper, to a digital printing press, 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 is one whose color tones vary within the image. This type of image is known as a *continuous-tone image*.

**Halftoning** To create the illusion of continuous tone when printed, images are broken down into a series of dots. This process is called *halftoning*. Varying the sizes and densities of the dots in a halftone screen creates the optical illusion of variations of gray or continuous color in the image. In addition, you can use *duotoning* to increase the tonal range of grayscale images.

**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*. In Photoshop, you can adjust how the various plates are generated and create traps.

**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.

A valuable resource for all aspects of print publishing, from early planning through prepress, is the *Print Publishing Guide*, an Adobe Press book. For information on purchasing Adobe Press books, visit the Adobe Web site at [www.adobe.com](http://www.adobe.com) or contact your local book distributor.

## Printing images

To print any type of image, you first select general printing options and then specify settings for a particular image type. You can preview how the image and selected options will appear on the printed page and adjust the position and scale of the image.

Photoshop provides three printing-related dialog boxes: Print Options, Page Setup, and Print. Some printing options may appear in multiple dialog boxes depending on your printer, print drivers, and operating system. For example, you may be able to access output options in both the Print Options and Page Setup dialog boxes.

### To print an image with its current print options:

Do one of the following:

- Choose File > Print, and click Print or OK.
- Hold down Alt (Windows) or Options (Mac OS) and choose File > Print One.

**Note:** By default, Adobe 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 select print options:

1 Choose File > Page Setup, and select an installed printer from the pop-up at the top of the dialog box. (You can also select a printer in the Print dialog box, or using the Chooser in Mac OS.)

2 Select a paper size and orientation in the Page Attributes section of the Page Setup dialog box. (You can also select a paper orientation in the Print Options dialog box.)

3 Choose File > Print Options to do 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 401.)
- Set output options. (See “Setting output options” on page 401.)
- Select halftone screen attributes. (See “Selecting halftone screen attributes” on page 403.)
- Set other printing options. (See “Selecting other options” on page 7.) <<xref destination?>>
- Set color management options. (See “Using color management when printing” on page 406.)

4 Click OK to save the print options for the image, or click Print to print the image. Hold down Alt (Windows) or Options (Mac OS) and click Print to print the image without displaying the Print dialog box.

### To preview the current image position and options:

Position the pointer over the file information box at the bottom of the document window and hold down the mouse button.

## Positioning and scaling images

You can adjust the position and scale of an image in the Print Options dialog box and preview how the image will be printed on the selected paper. The shaded border at the edge of the paper represents the margins of the selected paper; the printable area is white.

Scaling an image in the Print Options dialog box changes the size and resolution of the printed image, but not the size and resolution of the image file. For example, if you scale a 72 ppi image to 50%, the image will print at 144 ppi. (See “About image size and resolution” on page 21.)

**Note:** Some printer drivers, such as AdobePS and LaserWriter, provide a Scale option in the Page Setup dialog box. The Print Options dialog box may not reflect accurate values for Scale, Height, and Width if you set a scaling percentage in the Page Setup dialog box.

### To reposition an image on the paper:

Do one of the following:

- Click Center Image to center the image in the printable area.
- Enter values for Top and Left to position the image numerically.
- Drag the image in the preview area.

### To scale the print size of an image:

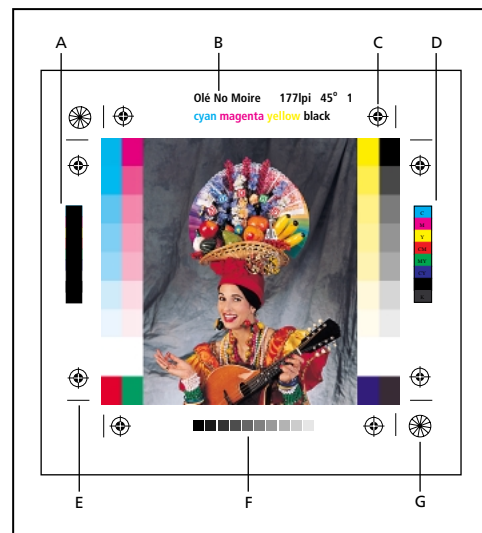
Do one of the following:

- 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.

## Setting output options

You can select a variety of page marks and other output options in the Output section of the Print Options dialog box. Depending on your printer and print drivers, these options may also appear in the Page Setup dialog box. The advantage of using the Print Options dialog box is that you can preview the selected options prior to printing.



A. Black overprint color bar B. Label C. Registration marks  
D. Progressive color bar E. Crop mark F. Gradient tint bar  
G. Star target

**To view output options in the Print Options dialog box:**

Select Show More Options, and choose Output from the pop-up menu.

*Note: Options not supported by the designated printer are dimmed.*

Photoshop provides the following output 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 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 in a number and a unit value to specify the width of the border.

**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 403.)

**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 as EPS 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, for compensating for a poorly calibrated output device. (See “Compensating for dot gain in film using transfer functions” on page 100.) <<xref destination?>>

**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 28.) 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 and duotones.



**Crop Marks** Prints crop marks where the page is to be trimmed. You can print crop marks at the corners, at the center of each edge, or both.

**Labels** Prints the filename on the image.

**Caption** Lets you print any caption text entered in the File Info dialog box. (See “Adding file information (Photoshop)” on page 389.) Caption text always prints as 9-point Helvetica plain type.

**Negative** Prints an inverted version of the image. 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. If printing to paper, print a positive.

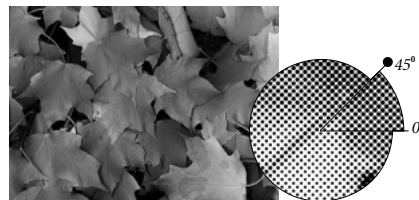
**Emulsion Down** Makes type readable when the emulsion is down—that is, when the photosensitive layer on a piece of film or photographic paper is facing away from you. Normally, images printed on paper are printed with emulsion up, with type readable when the photosensitive layer faces you. Images printed on film are often printed down.

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.

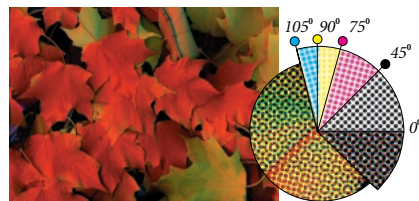
## Selecting halftone screen attributes

Halftone screen attributes include the screen frequency and dot shape for each screen used in the printing process. For color separations, you 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.)

*Note: Halftone screen attributes are recognized only when you print directly from Photoshop, or when you save the file as EPS and print to a PostScript printer.*

**<<Currently, you can only print halftone screens on Postscript 3 printers. This is documented in bug #91. Verify status of bug at final draft. Update information if not fixed.>>**

**To define the screen attributes:**

- 1 Choose File > Print Options.
- 2 Select Show More Options, choose Output from the pop-up menu, and click Screen.
- 3 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 for Frequency, and choose a unit of measurement. For Angle, 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 Adobe 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; 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 Screen 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 “About image size and resolution” on page 21.) 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** To save your halftone screen settings for use with other Adobe Photoshop files, choose from the following options:

- To save the settings, click Save in the Halftone Screens dialog box. Name and save the settings.
- To save the new settings as the default, hold down Alt (Windows) or Option (Mac OS), and click the —> Default button. To return to the original default settings, hold down Alt (Windows) or Option (Mac OS), and click <— Default.

**8** To load settings for use with another Photoshop file, click Load. Locate and select the settings.

## 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 Options, and select Print Selected Area.

## Choosing a print encoding method

By default, the printer driver transfers binary information to printers; however, you can choose to transfer image data using JPEG or ASCII encoding.

JPEG-encoded files are smaller than binary files, and therefore require less time to print. 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 ASCII encoding method. However, ASCII files contain about twice as many characters and require about twice as much time to transfer as binary files.

**To change the encoding method:**

Choose File > Print Options, and select an option from the Encoding pop-up menu.

**Printing vector graphics**

If an image includes vector graphics, such as shapes and type, Photoshop can send the vector data to a Postscript printer. Because vector graphics are resolution-independent, you can print them at any resolution without losing detail or clarity. Keep in mind that including vector data can greatly increase the size of the printed file, especially if the vector objects overlap and use transparency.

**To print vector data:**

Choose File > Print Options, and select Include Vector Data.

## Using color management when printing

Different devices operate within different color spaces—for example, your monitor operates in a different color space than your printer. To ensure that your color images on-screen match your printed color images, it's important to make sure that your monitor is correctly calibrated. (See “Creating an ICC monitor profile” on page 81.) For more information about setting up a color-managed workflow, see “Setting up color management” on page 65.



*In a color-managed workflow, you can use soft-proofing to preview of how colors will look when reproduced on a particular output device. (See “Soft-proofing colors” on page 76.)*

The color management options in the Print Options dialog let you convert the color space of an image while printing. (Depending on the designated printer and print drivers on your computer, these options may also appear in the Print dialog box.) For example, suppose that your document currently uses a profile tailored for prepress output, but you want to proof the document colors on a desktop printer. You can convert the document's colors to the color space of the desktop printer—the printer profile will be used instead of the current document profile when printing.

When printing to a PostScript printer, you also have the option of using PostScript color management. In this workflow, Photoshop sends the document's color data along with the document profile directly to the PostScript printer and lets the printer convert the document to the printer color space. The exact results of the color conversion can vary among printers. To use PostScript color management, you must have a PostScript Level 2 or higher printer; it is not necessary to install an ICC profile for the printer on your system.

**To color-manage a document while printing:**

- 1 Choose File > Print Options.
- 2 Select Show More Options and choose Color Management from the pop-up menu.
- 3 Select an option for Source Space:
  - Select Document to use the profile currently assigned to the document.
  - Select Proof to use the current proof profile. (See “Soft-proofing colors” on page 76.)
- 4 Choose an option for Profile:
  - Choose Same As Source to print using the source space profile. No conversions will be performed on the colors of the document when it is printed.
  - To print using a different destination profile, choose that profile from the list.

<<*Reviewers—Does Photoshop provide Printer Color Management for non-postscript printers? Need to reconcile following two bullets.*>>

- Choose PostScript Color Management to print to a PostScript printer and have colors managed at the level of the printer.
- Select Printer Color Management to instruct the printer to convert the file data to the printer's color space; for PostScript printers, the option changes to PostScript Color Management. Select this option only if you are printing to an RGB-based printer or if you have not already converted the file to the printer's color space.

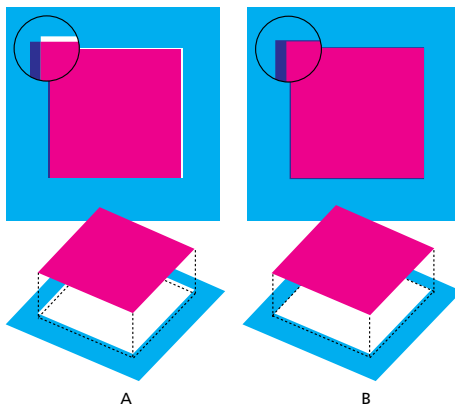
Only PostScript 3 printers support PostScript Color Management for images using CMYK color space. To print a CMYK image using PostScript Color Management on a PostScript Level 2 printer, go back to step 2 and choose Lab Color.

- 5 For Intent, select a rendering intent to use when converting colors to the destination profile space. (See “Specifying a rendering intent” on page 74.)

## Creating color traps

After you have converted an image to CMYK, you can adjust the color trap. Trap is the overlap needed to ensure that a slight misalignment or movement of the plates while printing does not affect the final appearance of the print job. If any distinctly different colors in your image touch, you may need to overprint them slightly to prevent tiny gaps from appearing when the image is printed. This technique is known as *trapping*. In most cases, your print shop will determine if trapping is needed and tell you what values to enter in the Trap dialog box.

**Note:** *Trapping does not affect existing spot channels in the image.*



Misregistration with no trap; misregistration with trap.

Keep in mind that trapping is intended to correct the misalignment of solid tints in CMYK images. In general, you should not create traps for continuous-tone images such as photographs. Excessive trapping may generate a keyline effect (or even cross-hair lines) in the C, M, and Y plates. These problems may not be visible in the composite channel and might show up only when you output to film.

Trapping values determine how far overlapping colors are spread outward (not choked) to compensate for misregistration on the press. Adobe 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 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 ink) 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 a grayscale image by choosing Image > Mode > Grayscale. Only 8-bit grayscale images can be converted to duotones.
- 2 Choose Image > Mode > Duotone.
- 3 Select Preview to view the effects of the duotone settings on the image.
- 4 Specify the type of image, the ink colors, the duotone curves, and the overprint colors for the duotone image.
- 5 Click OK.

 *To apply a duotone effect to only part of an image, convert the duotone image to Multi-channel 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” on page 211.)*

### Specifying the duotone type and ink colors

The duotone type—monotone, duotone, tritone, or quadtone—determines how many ink controls are active.

To produce fully saturated colors, print darker inks before lighter inks. The order of inks in the duotone dialog boxes affects how Photoshop applies screens, so make sure that inks are specified in descending order—darkest at the top, lightest at the bottom.

**To specify the duotone type and its ink color:**

- 1 In the Duotone Options dialog box, for Type specify monotone, duotone, tritone, or quadtone.
- 2 Click the color box (the solid square) for an ink.
- 3 Use the color picker or the Custom Colors dialog box to select the ink you want. When you close the dialog box, the ink color appears in the color box and the color name in the text box. (See “Using the Adobe Color Picker” on page 198.)
- 4 If the ink is to be separated on a process color plate, name it “cyan,” “magenta,” “yellow,” or “black.”

**Modifying the duotone curve**

A separate duotone curve specifies how each ink is distributed across the shadow and highlight areas of the image. This curve maps each grayscale value on the original image to the actual ink percentage that will be used when the image is printed. A diagonal curve indicates equal values and even distribution of ink.

**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 across the grid, indicates that you are mapping the current grayscale value of every pixel to the same percentage value of the printing ink. At this setting, a 50% midtone pixel prints with a 50% dot of the ink, a 100% shadow with a 100% dot of the ink, 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.

The horizontal axis of the curve graph moves from highlights (at the left) to shadows (at the right). The density of the ink 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, Adobe Photoshop calculates intermediate values. As you adjust the curve, values are automatically entered in the percentage text boxes.

The value you type in a text box indicates the percentage of the ink color that will be used to print that percentage of the image. For example, if you enter 70 in the 100% text box, a 70% dot of that ink color will be used to print the 100% shadow areas of the image.

(See “Using the Curves command to adjust tonal range (Photoshop)” on page 95 <<xref destination?>> or “Using the Curves command to adjust color (Photoshop)” on page 105 <<xref destination?>> for more information on adjusting curves.)

- 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 411.)

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 “Creating an ICC monitor profile” on page 81.

#### **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 and Load buttons in the Duotone Options dialog box to save a set of duotone curves, ink settings, and overprint colors. You can then apply these settings to other grayscale images.

In addition, the Adobe Photoshop program 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 that can be edited independently. 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. 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 403.) 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.*

To print separations of a duotone image, choose File > Print. You do not have to convert duotone images to CMYK to create separations. 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 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.

## Printing color separations

Once you've applied spot colors to a duotone or CMYK image, you can print separations for color in the image. When you print an image containing spot channels on a composite printer, the spot channels are printed as separate pages. (See "Adding spot colors" on page 211 for more information.)

***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 PageMaker and QuarkXPress. (See "Saving files in Photoshop EPS or DCS format (Photoshop)" on page 377.)*

### To print separations from Photoshop:

- 1 Choose File > Print Options.
- 2 Select Show More Options, and choose Color Management from the pop-up menu.
- 3 Select Separations from the Profile pop-up menu.

***Note:** Depending on the designated printer and print drivers on your computer, these option may also appear in the Print dialog box.*

- 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 In the General Preferences dialog box, select Short Pantone Names. (This step is not necessary if you are exporting to Adobe Illustrator 7.0 or Adobe PageMaker 6.5.)

- 2 If the image is a duotone, convert to Multi-channel color mode.

- 3 Save the image in DCS 2.0 format. Be sure to deselect the Include Halftone Screen and the Include Transfer Function options. (See "Saving files in Photoshop EPS or DCS format (Photoshop)" on page 377.)

- 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.



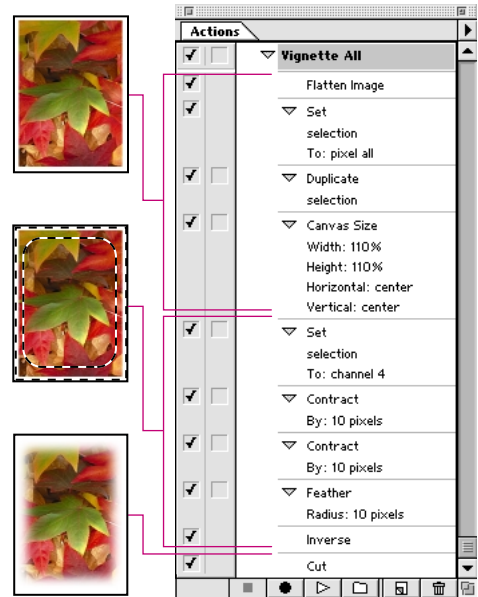
# Chapter 18: Automating Tasks

**A**utomating tasks can save you time and ensure consistent results for many types of operations. Adobe Photoshop and Adobe ImageReady provide a variety of ways to automate tasks—using actions, droplets, the Batch command, and task-specific Automate commands.

## 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 also form the basis for droplets, small applications that automatically process all files dragged onto their icon.



*Action applied*

Both Photoshop and ImageReady ship with a number of predefined actions, although Photoshop has significantly more actions than ImageReady. You can use these actions as is, customize them to meet your needs, or create new actions.

## Using the Actions palette

Before you apply an action, you must first create it. 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 425.) In ImageReady, actions are at the same level in the Actions palette—you cannot group ImageReady actions into sets.

### To display the Actions palette:

Choose Window > Show Actions, or click the Actions palette tab.

By default, the Actions palette displays actions in list mode—in Photoshop, 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). However, you cannot view individual commands or sets in button mode.

### To expand and collapse sets, actions, and commands:

Click the triangle (<<ICON>>) to the left of the set, action, or command in the Actions palette. Alt-click (Windows) or Option-click (Mac OS) 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.
- Shift-click action names to select multiple, discontinuous actions.
- Ctrl-click (Windows) or Command-click (Mac OS) action names to select multiple, contiguous actions.

### To display actions as buttons (Photoshop):

Choose Button Mode from the Actions palette menu. Choose Button Mode again to return to list mode.

## Creating actions

You create an action to record the commands and tools you use, in the order you use them. Keep in mind the following guidelines when creating 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, line, notes, eyedropper, and color sampler tools—as well those that you perform in the Paths, Channels, Layers, and Styles palettes.

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. You cannot drag italicized commands from the History palette to the Actions palette. (Commands in italics are nonactionable.)

- 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.
- 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 commands. Tools that record position include the marquee, slice, gradient, magic wand, lasso, path, and notes tools.
- You can record the Play command listed on the Actions palette menu to cause one action to play another.

#### **To create and record an action:**

- 1 Open a file.

- 2 In the Actions palette, click the New Action button () or choose New Action from the 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).
- (Photoshop) Assign a color for display in Button Mode.


- 6 Click Record. The Record button in the Actions palette turns red (<<ICON>>).

 *To guard against mistakes, record the Save As command at the beginning of the action.*

*However, 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.

If a command you choose opens a dialog box, click OK to record the command; click Cancel to cancel recording.

 *When recording a command that includes setting options in the Save for Web dialog box, always click Close as part of the action. Otherwise, the action will save two copies of the file.*

8 To stop recording, 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.

9 To keep the action for use in future work sessions, save the action. (See “Managing actions in the Actions palette” on page 424.)

### Recording paths (Photoshop)

The Insert Path command lets you include a path as part of an action. When the action is played back, the entire path is reproduced as part of the action. 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 Draw a path using any of the path tools, or 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. A Continue button can be included 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.

#### To insert a stop:

- 1 Choose where to insert the stop:
  - 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.
- 3 Type the message you want to appear.
- 4 If you want the option to continue the action without stopping, select Allow Continue.



5 Click OK.

## 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 (<<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 (<<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 be part of a recorded action or that you don't want to play. 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)

The painting and toning tools, tool options, view commands, and window commands cannot be recorded. However, many commands that cannot be recorded can be inserted into an action using the Insert Menu Item command.

An inserted command is not executed until the action is played. No values for the command are recorded in the action, so the file remains unchanged when the command is inserted. If the command has a dialog box, the dialog box appears during playback, and the action pauses until you click OK or Cancel. You can insert a command when recording an action or after it has been recorded.

***Note:** When you use the Insert Menu Item command to insert a command that launches 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 Choose a command from its menu.
- 4 Click OK.

**Specifying an output folder (ImageReady)**

You can specify the folder in which images are placed after actions are performed.

**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.

- 3 Select a folder, and click OK.

**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 304.)
- 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.

## 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 reapply a modal tool when the action pauses.

***Note:** In button mode, clicking a button executes the entire action—though commands previously excluded are not executed.*

### To play an action or set 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 (<<ICON>>) 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.
  - Hold down Ctrl or Command, and double-click the command.

- Choose Play from the Actions palette menu.

***Note:** Because an action is a series of commands, you can use the File > Undo command to can undo only the last command in an action. To undo an entire action, take a snapshot in the History palette before you play an action, and then select the snapshot to undo the action.*

## Slowing actions during playback (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.

### To specify how fast actions should play:

- 1 Choose Playback Options from the pop-up 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 and enter the amount of time Photoshop should pause between carrying out each command in the action.
- 3 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.

#### 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 additional 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 a command from the History palette to the area in which you want the command recorded in the Actions palette; you do not use the Record button.*

### Re-recording and duplicating actions and commands

Re-recording 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:

- 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.
- (Photoshop) Choose Clear All Actions from the Actions palette menu.

**Changing action options**

You can change the name, keyboard shortcut, and button color (Photoshop only) for an action in the Action Options dialog box.

**To change action options:**

- 1 Do one of the following:
  - Double-click the action name.
  - 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 “Creating actions” on page 416.
- 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 (Photoshop)

Actions are automatically saved to the following temporary file:

**Mac OS** Action Palette in the System Folder/Preferences/Adobe Photoshop 6 Settings folder

**Windows** Actions Palette.psp in the Windows/Application Data/Adobe/Photoshop/6.0/Adobe Photoshop 6 Settings folder

If this temporary 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.

*Note: In Photoshop, all actions must reside in a set. You can only save the entire contents of a set, not individual actions. (See “Organizing sets of actions (Photoshop)” on page 425.)*

#### 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.

#### To load a set of actions:

- 1 Choose Load Actions from the Actions palette menu.
- 2 Locate and select the action set file. (In Windows, Photoshop action set files have the extension .atn.)
- 3 Click Open.

#### To load a preset action set:

Select an action set from the bottom section of the Actions palette menu. The name of the set indicates the type of actions it contains (for example, Buttons contains actions for creating buttons).

For more information about the contents of preset action sets, see the PDF file in the following location:

**Mac OS** Adobe Photoshop 6.0/Presets/Photoshop Actions

**Windows** Program Files/Adobe/Photoshop 6.0/Presets/Actions

#### To restore actions to the default set:

- 1 Choose Reset from the Actions palette menu.
- 2 Click Append to add the set of default actions to the current actions in the Actions palette, or click OK to replace the current actions in the Actions palette with the default set.

## Saving actions (ImageReady)

All actions you create are saved with the extension .isa in the following location:

**Mac OS** System Folder/Preferences/Adobe Photoshop 6 Settings/ImageReady Actions

**Windows** Windows/Application Data/Adobe/Photoshop/6.0/Adobe Photoshop 6 Settings/ImageReady Actions

ImageReady can only access actions that reside in the ImageReady Actions folder. You add actions to ImageReady by dragging actions into the ImageReady Actions folder on your computer. Because ImageReady does not include a Load Actions command, you must add files to the ImageReady Actions file manually.

You can remove actions from ImageReady by dragging the actions out of the ImageReady Actions folder or by using the Delete Action command in the Actions palette menu. Actions you remove by dragging can be saved in another folder. Actions you remove by deleting are removed permanently.

If you add or remove files from the ImageReady Actions palette, you can direct ImageReady to scan the Actions folder for changes and update the Actions palette. (ImageReady scans the Actions folder and updates the Actions palette whenever you launch the application.)

### To update the Actions folder:

- 1 Drag an action file into or out of the ImageReady Actions folder, located in the Settings folder inside the Adobe Photoshop folder on your hard drive.

- 2 Choose Rescan Actions Folder from the Actions palette menu.

## 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 (<<ICON>>), 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.)

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 batch-processing a folder of files, copy all the desired files to the same level of a folder before starting the batch. 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 Select the desired set and action from the Set and Action pop-up menus.
- 3 Select a source from the Source pop-up menu:

- Folder to play the action on files already stored on your computer. Click Choose to locate and select the folder. Select Override Action “Open” Commands to ensure that the files are opened from the specified folder and to ignore any Open commands that were recorded as part of the original action. Select Include All Subfolders to process files in subfolders. Select Suppress Color Profile Warnings to turn off display of color policy messages.

- Import to import and play the action on images from a digital camera or scanner

- Opened Files to play the action on all open files.

4 Select a destination for the processed files from the Destination pop-up 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.

- Folder to save the processed files to another location. Click Choose to specify the destination folder. Select Override Action “Save In” Commands to ensure that the processed files are saved to the specified destination folder and not to a location recorded with the Save As or Save a Copy commands.


5 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.

The fields let you change the order and formatting of the filename parts.


- For File Name Compatibility, choose Windows to make filenames compatible with Windows operating systems, Mac OS to make filenames compatible with Macintosh operating systems, and UNIX to make filenames compatible with UNIX operating systems.

 *Saving files using the Batch command options always 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 or Save a Copy command followed by the Close command as part of your original action. Then choose None for the Destination when setting up the batch process.*

**6** Select an option for error processing from the Errors pop-up menu:

- Stop for Errors to suspend the batch process until you confirm the error message.

- Log Errors to File to record each error in the file without stopping the batch process. If errors are logged to this file, a message appears after processing the files alerting you to review the error file. If you select this option, click Save As and name the error file.

 *To batch-process using multiple actions, create a new action and record the Batch command for each action you want to use. This technique also lets you process multiple folders in a single batch. To batch-process multiple folders, create aliases within a folder to the other folders you want to process.*

## Using droplets

A *droplet* is a small application that applies an action to an image or batch of images that you drag onto the droplet icon. You can save a droplet on the desktop or to a 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 “Creating actions” on page 416.)

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 pop-up menus.

4 Set Play options for the droplet:

- Select Override Action “Open” Commands to ensure that the files are opened from the specified folder and to ignore any Open commands that were recorded as part of the original action.

- Select Include All Subdirectories to process files in subdirectories.

- Select Suppress Color Profile Warnings to turn off display of color policy messages.

5 Select a destination for the processed files from the Destination pop-up 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.

- Folder to save the processed files to another location. Click Choose to specify the destination folder. Select Override Action “Save In” Commands to ensure that the processed files are saved to the specified destination folder and not to a location recorded with the Save As or Save a Copy commands.

6 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.

- For File Name Compatibility, choose Windows to make filenames compatible with Windows operating systems, Mac OS to make filenames compatible with Macintosh operating systems, and UNIX to make filenames compatible with UNIX operating systems.

7 Select an option for error processing from the Errors pop-up menu:

- Stop for Errors to suspend the batch process until you confirm the error message.

- Log Errors to File to record each error in the file without stopping the batch process. If errors are logged to this file, a message appears after processing the files alerting you to review the error file. If you select this option, click Save As and name the error file.

**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.

If you do not add a Set Optimization command to the droplet, ImageReady will batch-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.

## Using droplets to process files

To use a droplet, simply drag a file or folder onto the droplet icon (<<ICON>>).

<<*Reviewers—Will Photoshop icon be the same as 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 to open the droplet window in ImageReady. The droplet window looks like a simplified version of the Actions palette.

2 Edit the droplet in the same way as 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 Actions palette.

### 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, 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.

*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.

*Note: You can also adjust batch options before creating the droplet by choosing Batch Options from the Actions palette menu.*

## 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 as described in “Optimizing images” on page 342

#### 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 a droplet to an action by dragging the droplet icon in the Optimize palette to the Actions palette; this includes the optimization settings as part of the action.

## Using the Automate commands (Photoshop)

The Automate commands simplify complex tasks by combining them into one or more dialog boxes. Photoshop includes the following commands (third-party companies may provide additional commands):

- Conditional Mode Change changes the color mode of a document to the mode you specify, based on the original mode of the document.

<<*Documentation—Is this doced with color modes? Verify and add XREF.>>*



*By recording this command in an action, you can ensure that any actions that require an image to be in a specific color mode do not generate unwanted error messages.*

- Contact Sheet produces a series of thumbnail previews on a single sheet from the files in the selected folder. (See “Creating contact sheets” on page 394.)
- Fit Image fits the current image to the width and height you specify, without changing its aspect ratio. (See <<XREF>>.)

*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 PDF files” on page 36.)
- 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 395.)

- Web Photo Gallery generates a Web site from a set of images —complete with a thumbnails index page, individual JPEG image pages, and navigable links. (See “Creating Web galleries (Photoshop)” on page 322.)

### To use an automated command:

Choose File > Automate, and then choose any of the commands listed under it.

## 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.

<<*Documentation—Verify that the following source of information is still correct.>>*

If you have further questions about OLE, contact Microsoft Corporation. For questions about AppleScript, see your Macintosh documentation or contact Apple Computer.

