Efi

In order to ensure repeatability of colors, it is essential to have numerical specification. This can be done physically, for example by using a formula to mix the colorant components, or psychophysically, i.e., by appearance rather than by physical constitution…

Cachet™

Using Cachet

Contents

Introduction

Cachet provides a simple way to achieve consistent, high-quality color reproduction of photographs from your Macintosh.

Cachet is a color editor. With it, you can correct color problems that result from improper combinations of lighting, exposure, and film in the photographic process—for example, using daylight film under fluorescent light.

You can also change individual colors in an image or enhance the overall color message.

Most important, you can control printed results without expert knowledge of the color reproduction process.

In short, you can do the work that is normally done by a skilled graphic arts technician with a complex color separation scanner. But you can do it on your Macintosh using simple color editing tools.

Cachet—

Five steps to predictable, professional color results

When you work with Cachet, you work visually. You don't need to understand color theory or color math.

Instead, you rely on your own direct perception of color, following five basic steps:

Step 1: Display the images you want to work with on the screen.

Step 2: Correct the overall color, if necessary.

Step 3: Adjust selected colors, if you want.

Step 4: Save your changes.

Step 5: Tell Cachet how you want to print.

Cachet automatically adjusts the image—with your color corrections—to achieve the best printed results using the printer or other reproduction method you choose.

Step 1:

**Display the images you
want to work with**

When you work with Cachet,
you usually work with two
images—a working image and one or more reference images.

• The **working image** is the image you want to correct. You
can use a scanner to digitize the image so you can display it on
the screen.

• **Reference images** are your guide to color correction. They're
digital images that have already been corrected in Cachet and
printed with good results.

When you display a reference image on the same screen as
your working image, you don't need to worry about calibrating
your monitor. With Cachet's Edit by Reference feature, you
simply compare the colors in the working image with those in
the reference image. If they appear similar on the screen, they
will appear similar when printed with Cachet.

Cachet comes with a set of reference images in both digital and
printed form. Once you've used Cachet to print your own
images, you can use them as reference images, too. In fact,
every image you correct and print successfully with Cachet
becomes a reference image.

See Chapter 1 for details about displaying images, including
suggestions for choosing and using reference images.

v
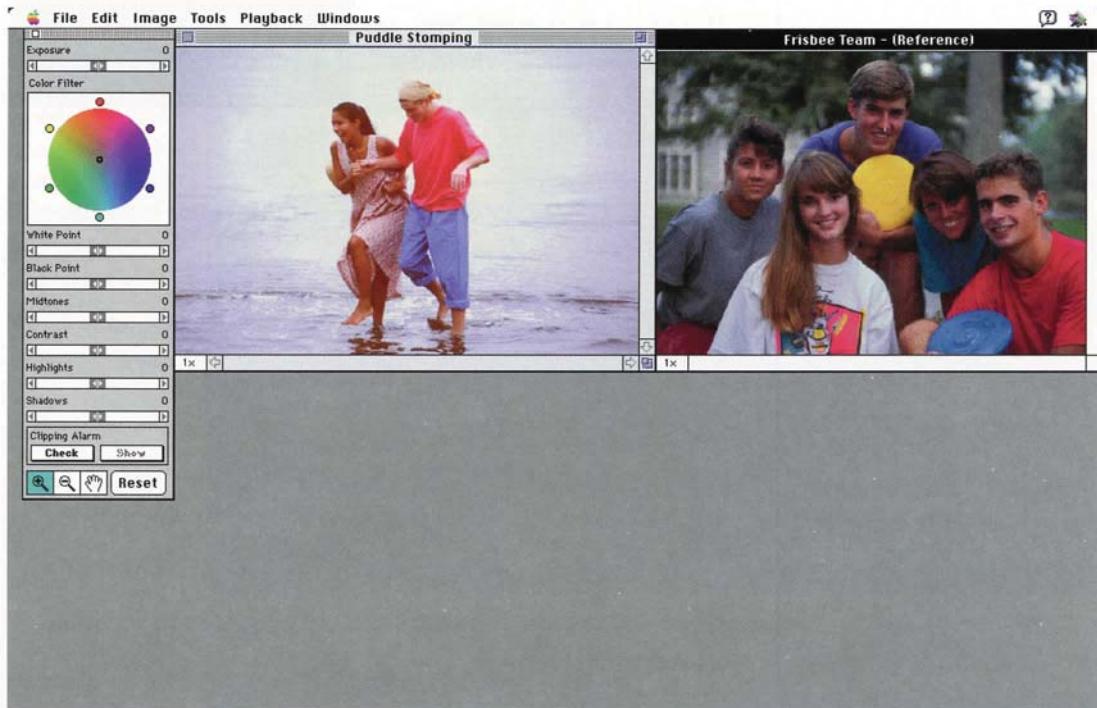
When you work with Cachet you **edit by reference**—you adjust the color of your **working image**, while comparing it to a **reference image**.
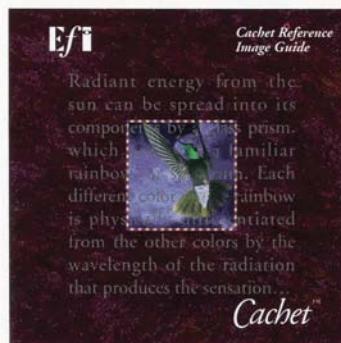
The Cachet Reference Image Guide *shows you what the reference images look like when they're printed.*

If your image has the same color characteristics as the reference image and you know what the reference image looks like when it's printed, you can predict how your image will look when it's printed.

With Cachet, you start your color corrections by changing the color characteristics that affect the entire image.

• First, you correct problems that arise from poor exposure of the original, including color balance.

• Second, you adjust the tone of the image—white point, black point, contrast, and brightness in the midtones, highlights, and shadows.

• Third, you adjust the color appearance of the image by adjusting the saturation, color cast, and overall lightness, if necessary.

Chapter 2 describes the tools and methods for making these overall corrections.

Of course, not every image needs all this work. Often you can correct an image simply by adjusting the exposure, color balance, white point, and black point. Sometimes you don't have to make any changes at all. You can just skip to step 5 and print.

You use the **Exposure & Tone palette** first to correct problems with the original—problems that arise from improper exposure, film, or lighting.
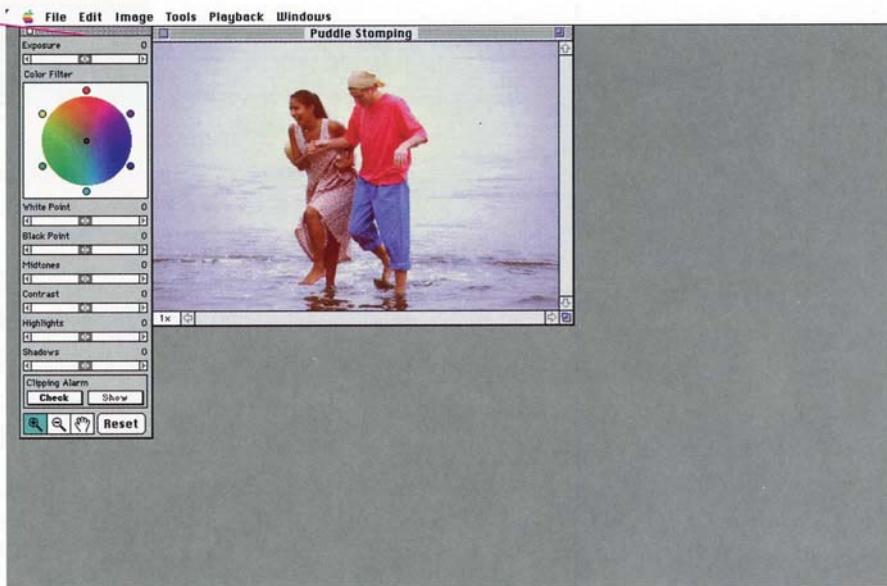
Then, you use the **Color palette** to enhance the color appearance—to improve saturation, for example.

Step 3:
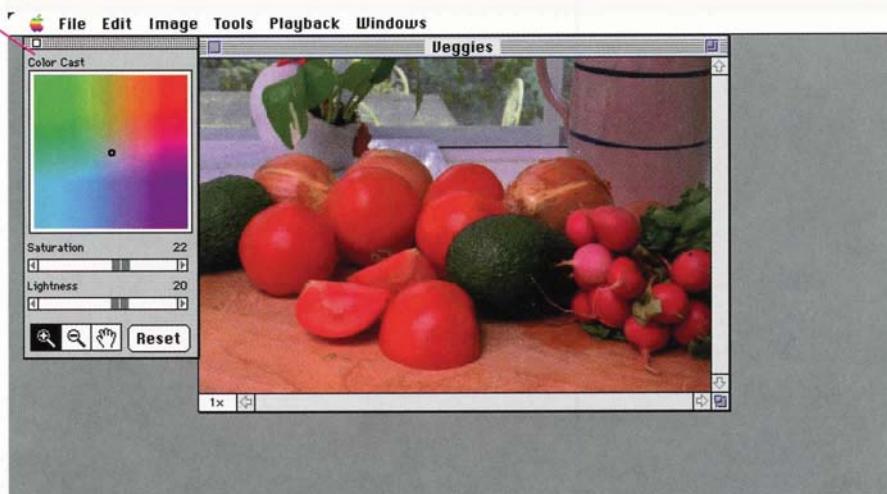
Adjust selected areas of color—to match memory and identity colors

Sometimes you want to adjust specific colors. Maybe it's a flower that you want to change from red to purple or a faded green lawn that you want to make more lush. Maybe it's a color emblem on a baseball jersey that needs to match the team's color exactly.

With Cachet, you can change selected colors in an image without affecting others. You can manually adjust the saturation, color cast, and lightness of selected colors. Or you can let Cachet adjust them automatically to match colors in a reference image or in another part of the working image. You can even specify PANTONE® Colors.

Chapter 3 explains how to make these selective changes.

You use the **wand** to select colors you want to change.

Then, you use the **dropper** to match other colors automatically.

Match another color in the same image or in a reference image. Or specify a PANTONE Color.

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Step 4:

Save your work—in snapshots, scripts, and files

With Cachet, you can save your work in three ways:

• You can take quick **snapshots** as you work to save interim versions of the image until you decide which ones you like best.

• You can save a **script** that permanently records all the changes you've made to an image. Then, you can use the script to apply the same corrections to several similar images.

• When you've got an image the way you want it, you can save the changes in a **file,** either replacing the original file or creating a new one.

These three methods help you save time and disk space, and provide the flexibility to experiment. See Chapter 4 for details.

Snapshots are temporary—
they're great for keeping track of
changes as you work with one
palette or another. Cachet
discards them when you close
the working image.
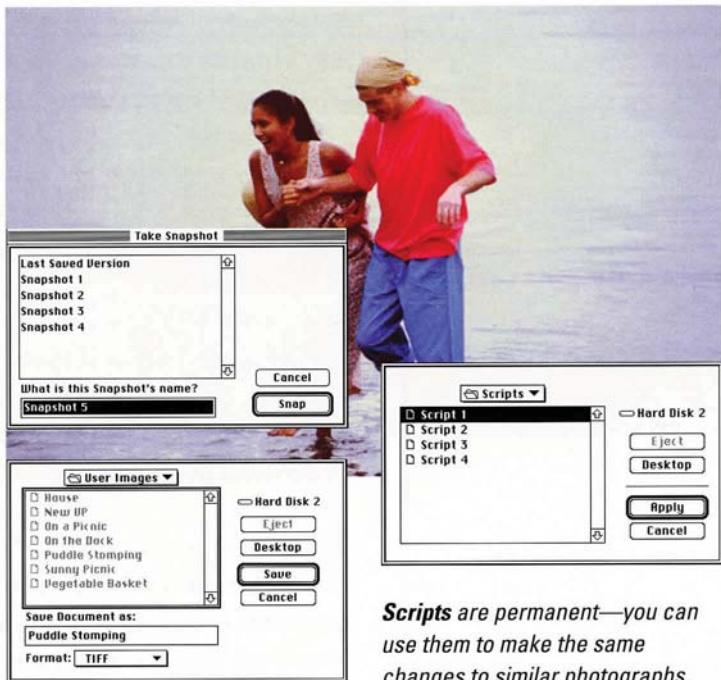
Scripts are permanent—you can
use them to make the same
changes to similar photographs.

Files are the standard way to save
images for the next steps in the
process—page layout, proofing,
and color separation.

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When you're ready to print, EfiColor, the patented color technology behind Cachet, guarantees faithful color reproduction. You can print directly on a color printer. Or you can make color separations, import them into a page layout program, and then print composed pages on a printer or produce color separation films on an imagesetter.

In both cases, Cachet automatically adjusts the colors in your image for the best possible reproduction with the printer or reproduction method you're using. You don't have to understand the details of color reproduction.

But if you want more control of the reproduction process, Cachet also provides tools that display information about the color characteristics of your image as you make adjustments of your own. You can use Cachet's **gamut alarm** to identify colors that your printing method cannot precisely reproduce. You can use Cachet's **color meter** to read the color values that Cachet will use to reproduce your image on the printer you specify.

Chapter 5 explains how to use these tools to make color checks, how to print directly to a printer, and how to make color separations.

Cachet uses a **gamut alarm** to predict which colors will be out of the gamut of your printer or printing method.

Cachet adjusts these colors automatically when you print. Or you can adjust them yourself before you print.

Cachet also manages the decisions that are necessary to translate your corrected color images faithfully into **color separations**.

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Before you start to use Cachet, you should know the basics of working with a Macintosh computer—how to start and quit applications, how to use a mouse, and how to work with menus, commands, and windows.

Then, you need to install Cachet and the reference images on your hard disk. Cachet comes with an Installer that simplifies installation. The *Start Here* guide tells you how to use it.

Once you've installed Cachet, take some time to practice. *Learning Cachet* provides a tutorial guide to Cachet, as well as an introduction to the workaday world of desktop color.

You can use this book, *Using Cachet,* as a how-to reference as you work. The first five chapters explain the five basic steps in correcting and printing a color image. The last chapter is a description of the software and menu commands.

Displaying the Images

1.

In Cachet, you work with two kinds of images—working images that you want to correct and reference images that you use as guides for making color corrections.

Typically, your **working image** is from a slide or photograph that you scanned and saved as a digital image. It may also come from a video frame you captured from a video source.

Reference images are digital images that have been color-corrected with Cachet and then printed, so they produce known results. Cachet comes with a set of reference images—in digital and printed form. You can choose a reference image from this set. As you work with Cachet, you will also accumulate your own library of images you've printed with Cachet. You can use these images as reference images, too. The more you work with Cachet, the larger your collection of reference images will be.

To begin color correction, you open your working image and one or more reference images on the screen. If the working image has been scanned or captured in the wrong orientation, you can flip or rotate it. You can also crop, resize, or resample it before you begin to work. As you work, you can change the view through the window—scrolling, zooming in or out, and changing the amount of detail you see.

This chapter explains these basics.

The Working Image:

The image you want to change—a photograph, a video frame, or artwork that's been digitized

The **working image** is the image you want to adjust—to improve overall color quality, to change individual colors, to make a particular color statement, or just to make sure that it prints well on the printer you're using.

If your working image is already in digital form (available as a Macintosh file), you can open it in Cachet and begin color correction immediately. Cachet can open files that have been saved in any of the following formats: TIFF-RGB, PICT, Adobe Photoshop, and Raw-RGB.

If your image is not in digital form, you must scan it. You can scan a photograph directly as you work in Cachet if you have a scanner and the appropriate **plug-in module**—a mini-program supplied with the scanner. You can also use plug-in modules to capture images directly from a video source or to compress and de-compress image files. For more details, see the sidebar on plug-in modules or refer to "Plug-in Modules" in the section on "The Software" in Chapter 6.

You can open only one working image at a time.

Disk space—how much you need

Before you open an image, make sure you have enough disk space to work with the image.

Typically, you'll need between 3 and 5 times the size of your image file for Cachet's temporary working space. You may need even more space if

• you use more than one reference image (each of the reference images supplied with Cachet requires 500K),

• you use the MultiChoice window with its images shown at the maximum size, or

• you work with File Detail or Zoom Detail selected on the Windows menu.

If you are working with PICT files, you may need more space because PICT files are often compressed and therefore expand when you open them.

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When a TIFF-RGB file doesn't look like a TIFF-RGB file

Sometimes Cachet may not recognize a TIFF-RGB file. For example, if you transfer a TIFF-RGB file from an MS-DOS system to a Macintosh system, Cachet usually doesn't recognize the file as a TIFF-RGB file, even though you know it is.

You can force Cachet to open the file as a TIFF-RGB file. Click "See all files" in the Open dialog box, and then select the file. Cachet shows its format as Raw. You can click the Format pop-up menu to choose TIFF-RGB, and then click Open. Cachet then opens the file in TIFF-RGB format.

Don't try to force Cachet to open a file in an incorrect format. For example, don't try to force Cachet to open a TIFF-RGB file as a PICT file. Cachet can only open files in their correct format.

To open a file in TIFF-RGB, PICT, or Photoshop format as the working image

• *Choose Open from the File menu.*

• *Click Correction to open the file as a working image.*

• *Select the image you want to change from the dialog box.*

• *Click Open.*

You can open any file in TIFF-RGB, PICT, Adobe Photoshop, or Raw-RGB format as a working image. When you choose Open, Cachet lists the available TIFF-RGB, PICT, and Photoshop files in a dialog box:

Make sure this option is selected to open the file as a working image.
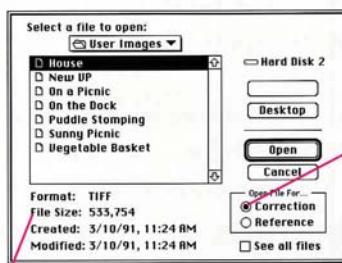
Cachet displays information about the selected file here.

After you click Open, the working image appears in a window with the file name in the title bar. The changes you make affect only this image.

When you open an image file, Cachet generally doesn't display all the image data unless the file is relatively small. Instead, when you open the image, Cachet creates an **internal model** of the image. The internal model is a subsampled (or lower-resolution) version of the original working image. The data in the internal model usually provides adequate resolution for screen display. However, you can use more of the image data to improve the resolution as you work. (See "To increase or decrease the amount of detail" in the section on "The View Through the Window" later in this chapter.)

TIFF-CMYK files If you have any files in TIFF-CMYK format, these files also appear in the dialog box and Cachet shows their file format as TIFF. However, you cannot open TIFF-CMYK files in Cachet.

To open a file in Raw-RGB format as the working image

- *Choose Open from the File menu.*

- *Click "See all files."*

- *Select an image from the list of all files.*

- *Click OK.*

Raw-RGB format is a simple file format for storing images. Since Raw-RGB format is the simplest—and most primitive—image file format, it can sometimes be used to exchange image data between applications and devices that do not support more advanced file formats like TIFF-RGB.

If you have saved a file in Raw-RGB format, or if you have a file that was created in this format, you can open it in Cachet. When you click "See all files" in the Open dialog box, Cachet displays all the files on your disk. When you select a file that is not in TIFF-RGB, PICT, or Photoshop format, Cachet tries to open it in Raw-RGB format. It asks you for additional information that it needs to open the file:

Raw File Reading Options

Color Format
- ● Interleaved
- ○ Planar

Width: 0
Height: 0
Header Size: 0

Cancel　　OK
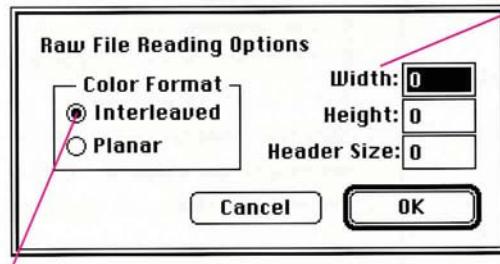
You must provide the dimensions and the header size of the file.

If you don't choose the correct format, Cachet opens the file, but the image is not properly displayed.

If you don't provide the dimensions of the file or if the file is not actually in Raw-RGB format, Cachet cannot open it.

What's in a Raw-RGB file?

Files in Raw-RGB format consist of a **header**, which may be empty, followed by image data.

When you open a file in Raw-RGB format, Cachet must know the size of the header, as well as the height (number of rows) and width (number of pixels in each row) of the image.

Cachet also has to know whether image data is recorded in **interleaved** format (with the red, green, and blue components of each pixel listed together) or **planar** format (with the reds for all pixels appearing first, followed by the greens, and finally the blues).

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To open a compressed image as the working image

• *Choose Import from the File menu.*

• *Select a plug-in module from the "Import using" pop-up menu.*

• *Click Correction to open the file as a working image.*

• *Click Import.*

• *Select options in the dialog box that appears.*

• *Click Open.*

You can compress and de-compress image files with any **plug-in module** that's compatible with Adobe Photoshop. Often, image files are compressed to save space on your disk. (For details, see the sidebar on "Plug-in Modules" or refer to "Plug-in Modules" in the section on "The Software" in Chapter 6.) When you want to work with a file that has been compressed, you must first de-compress it.

When you choose Import from the File menu, Cachet displays a dialog box so you can choose a plug-in module and a file to de-compress.
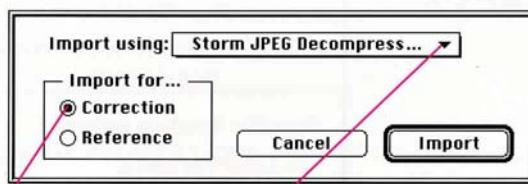
Import using: Storm JPEG Decompress...
Import for...
⦿ Correction
○ Reference   [Cancel]   [**Import**]

*Click Correction to open
the compressed image as
the working image.*

*Choose the plug-in
module you want from
this pop-up menu.*

After you click Import, the plug-in module you selected displays its own dialog box with any options or settings you need to select. For information about these options, refer to the documentation that came with the plug-in module.

To scan a slide or photograph or capture a frame from a video source

• *Choose Import from the File menu.*

• *Choose the plug-in module for your scanner or video source from the Import using pop-up menu.*

• *Click Correction to open the scanned image as the working image.*

• *Select options in the dialog box that appears.*

• *Click OK.*

You can scan an image from within Cachet if you have a scanner and a **plug-in module** for the scanner. You can also capture an image from a video source, such as a VCR, using a plug-in module designed for the video source. (For more information about plug-in modules, see the sidebar on plug-in modules or refer to "Plug-in Modules" in the section on "The Software" in Chapter 6.)

Import using: **MicrotekScanner...**

Import for...
◉ Correction
○ Reference   Cancel   **Import**
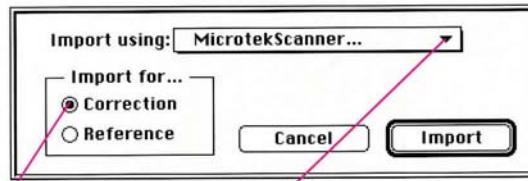
Click Correction to open the compressed image as the working image.

Choose the plug-in module for your scanner or video source.

If you click Reference instead of Correction, Cachet will open your scanned image as a reference image. However, this is strongly discouraged. A newly scanned image cannot be an effective reference image since you have not yet corrected and printed it with Cachet.

• **Export plug-ins** let you save Cachet image data in a file format that Cachet does not support by itself or control printers (like the Kodak XL7700) that are not available through the Macintosh Chooser.

To use plug-in modules, you must install them on your Macintosh. If you install plug-in modules in the same folder as the Cachet application, Cachet will find them automatically. If you install plug-ins in a different location, you need to set the "Program Extensions Folder" option in the Folders section of the Preferences dialog box. (For more information, refer to "Preferences..." in the section on "The Edit Menu" in Chapter 6.)

Scanning— some tips and guidelines

When you scan a photograph or slide, you may see dialog boxes containing options for such settings as resolution, sharpness, gamma, exposure, or color balance. Don't worry if some of these settings are unfamiliar to you. You don't have to change them. The default settings often work well, and if not, you can adjust the image once you open it in Cachet.

However, if you want the best possible printed results, adjusting some of the scanner settings—particularly resolution and gamma—can be very helpful. Follow these guidelines.

Scanning resolution—it depends on the dimensions and output resolution

Most scanners let you control the resolution at which you scan an image. For the best printed results, adjust the scanning resolution to ensure that the scanned image contains enough data for printing at the size and resolution you plan to use.

You need to consider three factors:

• The **width** of the original image and the width at which you plan to print the final image–for example, 35 mm and 3"

• The **resolution** you plan to use for the final output–for example, a 150 lpi halftone screen or a 400 dpi continuous tone printer

• The **scaling**—the ratio between the width of the original image and the width at which you plan to print it—for example, 2.18 for a 35 mm slide you plan to print 3" wide

Note that you must have enough space available on your disk to store the resulting scanned image—a 3,000-dpi scan will require more disk space than a 500-dpi scan.

To calculate the optimal scanning resolution, do the following:

*1. Calculate the **output resolution**.*

This is the resolution you need for your image at the width you plan to use for final printing. For halftone printing, the output resolution is twice the size of the halftone screen you plan to use. For a continuous tone device, the output resolution should equal the device resolution.

For example, assume you want the final, printed image to be 3" wide:

• If you plan to print on an offset press using a 150 lpi halftone screen, the output resolution is 300 dpi (2 x 150).

• If you plan to print on EFI's Fiery ColorLaser, a continuous tone device, the output resolution is 400 dpi (the resolution of the Fiery ColorLaser).

*2. Calculate the **scaling factor**.*

This is the ratio between the width of the eventual printed image and the width of the original image you plan to scan. If the width of the original is identical to the width you want to use for printing, the scaling factor is 100%. On the other hand, for example, if you're scanning a 35 mm slide and you want the printed image to be 3" wide, you can calculate the scaling factor as follows:

$$\frac{Scaling}{factor} = \frac{\text{Width when printed}}{\text{Width of slide}} = \frac{3"}{35mm} = \frac{76.2mm}{35mm} = 2.18$$

3. Calculate the **scanning resolution**.

Using the output resolution and scaling factor that you calculated, you can now determine the optimal scanning resolution, using the following formula:

Scanning resolution = Output resolution × Scaling factor

Example. For example, suppose you want to scan a 35 mm slide. You plan to print the image at 4-1/2" wide on an offset press using a 180 lpi halftone screen. The calculations are as follows:

Output resolution $= 2 \times 180 = 360$ dpi

Scaling factor $= \dfrac{4.5}{35mm} = \dfrac{4.5 \times 25.4}{35} = 3.27$

Scanning resolution $= 360 \times 3.27 = 1177$ dpi

Gamma

If your scanner has a gamma control, set it to 2.2. Cachet's reference images have a gamma of 2.2. Using the same gamma setting makes it easier to compare a scanned image with one of Cachet's reference images.

Exposure and color balance

In most cases, you should avoid adjusting the exposure and color balance controls of the scanner. Use the Cachet tools instead. If the original slide or negative is extremely bright or dark, you may lose some detail in the scanned image. In this case, you may want to use the scanner controls to preserve the details.

Sharpness

Some scanners have a sharpness setting. You may find that you get better results if you increase the sharpness slightly—usually one or two steps up from the default setting.

Scanning negative images

Cachet expects positive digital images. The plug-in modules supplied with most scanners can convert from negative to positive images.

Use scripts to compensate for scanner "habits"

If you notice that you always have to make the same kinds of adjustments when you begin working on an image you've scanned, your scanner may have some "habits" that are causing the problems. You can create a script to correct these problems automatically when you first open your images in Cachet. See the section on "Scripts" in Chapter 4.

Reference Images:

Use them as guides to color correction, or to match specific colors

Edit by Reference: A new way to correct color images

When you work with Cachet, you **edit by reference**. You use one or more reference images as guides while you make corrections to the working image.

You start by displaying the working image and reference image side-by-side on the same monitor. Then, you adjust the working image until it looks similar to the reference image. As you make corrections, you compare the overall color and individual colors in the working image to those in the reference image. If they match on screen, they'll match when you print them.

Reference images are digital images that have been color corrected in Cachet and then printed with good results using color separations created in Cachet. You can use such images as guides to adjust your working image. Because you know how the reference image appears when printed, you can predict how your working image will appear when it is printed.

Cachet comes with a set of reference images in digital and printed form. The printed images are in the *Cachet Reference Image Guide.* You can use this book to find images—or parts of an image—that look the way you want your working image to look when it's printed.

You may want to use more than one reference image, and you can open multiple reference images at the same time. For example, the overall lighting in one image may be right, but you want to match a specific tone in another. As another example, when correcting an image that will appear with others on a single spread, you might open the other images as reference images so as to get an idea of the overall color message of the spread.

When you open an image as a reference image, you cannot change it. To change an image, you must open it as a working image. (However, if you change a reference image, the file will no longer match the printed version, and you will no longer be able to rely on that image as a reference image.)

To choose reference images

- **Look through the Cachet Reference Image Guide *or your own folder of Cachet prints*.**

- **Check the lighting of the image.**

- **Check overall color balance.**

- **Check key foreground colors.**

- **Check background colors.**

When you choose reference images to work with, your goal should be to create a visual environment on your screen that will help you make good decisions about the color and tone of your working image. Open as many reference images as you need. If necessary, you can adjust the window size and view to isolate parts of the image that are relevant to your task, but be aware that this may change your perception of specific colors in the image.

Although there are no simple rules for selecting reference images, perhaps the most important criterion for choosing a reference image is the lighting. The lighting in the reference image should match the lighting in the image you want to correct. Is it indoor or outdoor lighting? Is the subject lit from the front, from behind, from overhead, or from below? Is the lighting diffuse or highly directional?

The image on the right is a good reference image for the one on the left—both are outdoor photographs, lit from above, with diffuse lighting.

When you edit by reference, you adjust the working image until it looks similar to a reference image *instead of adjusting it until it looks right on your monitor.* A good technique is to adjust your monitor (using the knobs for brightness, contrast, and tint (or using the tools available in a monitor calibration package) so that the reference image looks good on your monitor. If possible, set your monitor's gamma to 2.2 and its white point to D50 or 5000K.

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Building your own library of reference images

Once you correct and print an image with Cachet, you can use that image as a reference image. Therefore, the more images you print with Cachet, the larger your collection of reference images.

It's a good idea to keep both digital and printed versions of each Cachet image you print successfully. That way, you can use them later as reference images. If you produce color publications on a regular basis, you may well end up with reference images that match even in subject matter the working images you need to correct. This makes it even easier to edit by reference.

Once you have a good match for lighting, you can consider other comparisons. Check the overall color balance of the reference image. Does it have white whites? Neutral grays? Black blacks? Is it pleasing? Does it "feel right"?

Compare the foreground subjects. They don't have to be the same, but look for a similar range of foreground colors. Also, if people are the main subject, you usually choose a reference image with people so you can compare skin tones. In fact, you can look for specific skin tones you want to match.

Background color is important, too. You obviously don't want to match a photograph with white walls in the background to one with dark wood paneling. But you may want to use a reference image that has an overall color cast to give your white walls a particular mood.

Of course, you may also want to match a color exactly. In that case, use a reference photograph that has that color, but still watch for lighting, color balance, and background colors because all of these factors affect the appearance of any given color in the photograph.

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To open a reference image

• *Choose Open from the File menu.*

• *Click Reference to open the file as a reference image.*

• *Select the image you want to open from the dialog box.*

• *Click Open.*

Cachet comes with an extensive set of reference images. Normally, the reference images are copied to your hard disk when you install Cachet. If you need to re-install them, refer to the *Start Here* guide for information about using the Cachet Installer.

You can also use any file that you have corrected in Cachet and printed using color separations generated by Cachet. When you choose the Open command, Cachet displays a dialog box that you can use to select the image you want to open:

```
Select a file to open:
  ☐ User Images ▼
 ┌──────────────────────┐
 │ ☐ After a Ride    ⇧  │      ☐ Hard Disk
 │ ☐ House              │
 │ ☐ New UP             │      [  Eject   ]
 │ ☐ On a Picnic        │
 │ ☐ On the Dock        │      [ Desktop  ]
 │ ☐ Puddle Stomping    │
 │ ☐ Sunny Picnic       │      [  Open   ]
 │ ☐ Vegetable Basket ⇩ │      [ Cancel  ]
 └──────────────────────┘
 Format:  TIFF                ┌ Open File For... ┐
 File Size: 1,300,240          ○ Correction
 Created: 3/28/92, 11:00 AM    ● Reference
 Modified: 3/28/92, 11:00 AM   ☐ See all files
```
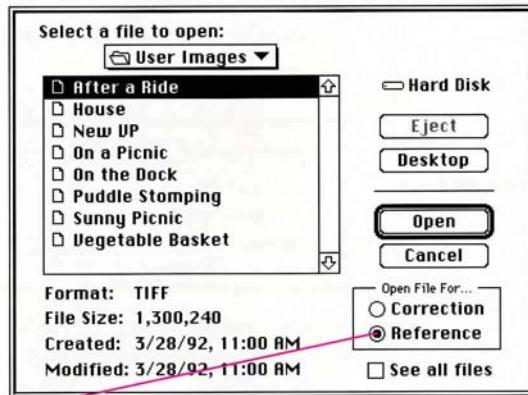
Make sure this option is selected to open the image as a reference image. It is automatically checked if a working image is already open on the screen.

If you have a large collection of reference images, you may want to conserve disk space by storing your reference images in compressed format. If you have a plug-in module that compresses image files, you can save your reference image in compressed format using the Export command on the File menu, then de-compress it later with the Import command on the File menu.

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To open a compressed image as the reference image

• *Choose Import from the File menu.*

• *Select a plug-in module from the dialog box.*

• *Click Reference to open the file as a reference image.*

• *Click Import.*

• *Select options in the dialog box that appears.*

• *Click Open.*

If you have a large number of your own reference images or if you have a limited amount of disk space, you may find it helpful to store reference images in compressed format. You can do so as long as you have a **plug-in module** to compress and de-compress the files, such as the Storm Technology PicturePress plug-in that is included with Cachet. (For details, see the sidebar on plug-in modules earlier in this chapter or refer to "Plug-in Modules" in the section on "The Software" in Chapter 6.)

When you choose Import from the File menu, Cachet displays a dialog box so you can choose a plug-in module and reference image to de-compress.

> **Import using:** **Storm JPEG Decompress...** ▾
>
> ┌ **Import for...** ┐
> ○ **Correction**
> ◉ **Reference**   **Cancel**   **Import**
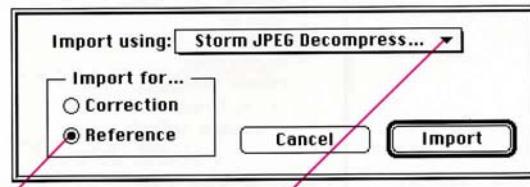
Click Reference to open the compressed image as a reference image.   *Choose the plug-in module you want from this pop-up menu.*

After you click Import, the plug-in module you selected displays its own dialog box with any options or settings you need to select. For information about these options, refer to the documentation that came with the plug-in module.

Orientation:

If your image is upside down, backwards, or too big, you can rotate it, flip it, or crop it

You can rotate, flip, or crop a working image in Cachet. For example, if an image is scanned upside down, you can flip it so it appears right side up on the screen as you work. Or you may want to crop an image before you make color corrections and work only with the part of the image you actually plan to use.

You use the Orientation palette to make these changes.

Flip tools

Rotate tools

Crop tools
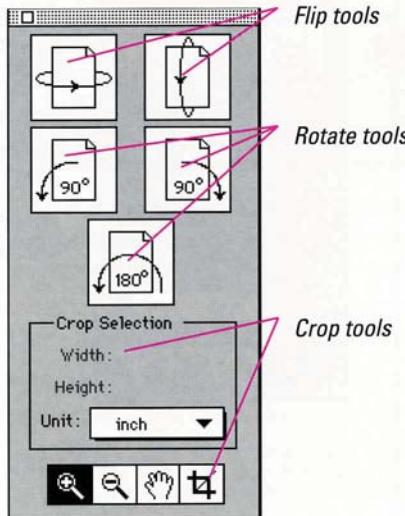
To flip or rotate an image

• *Choose Orientation from the Image menu.*

• *Click one of the tools to rotate or flip the image.*

You can flip the working image from left to right or top to bottom. You can rotate an image to change its orientation from horizontal to vertical or vice versa. You can also turn it upside down.

Flips the image from left to right.
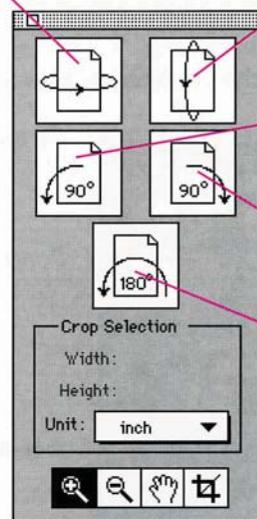
Flips the image from top to bottom.

Rotates the image 90 degrees to the left.

Rotates the image 90 degrees to the right.

Rotates the image 180 degrees.

90°　　90°

180°

Crop Selection
Width:
Height:
Unit: inch ▼

When you save the image, the new orientation is saved.

To crop an image

• *Choose Orientation from the Image menu.*

• *Click the crop tool.*

• *Click and drag in the working image to outline the area you want to keep.*

• *Click inside the outlined area to crop the image.*

You can crop your working image to remove unwanted parts of the image. After you click the crop tool, you can use it to outline the area of the image that you want to keep.

Click inside the frame to complete cropping.
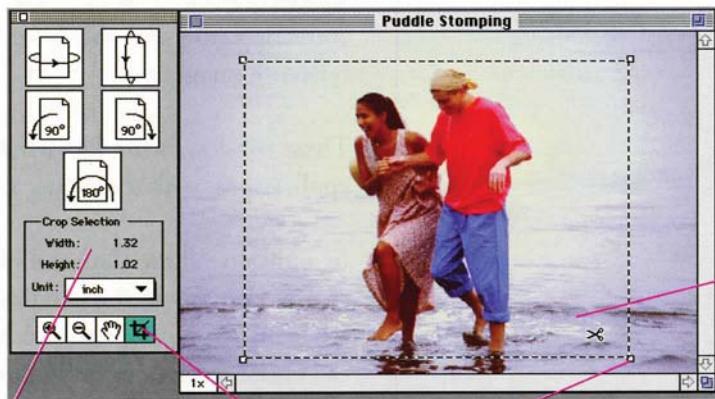
Refer to the size display for precise measurements.

Use the crop tool to outline the area of the image you want to keep.

Drag the handles to change the size of the outlined area.

You can drag the handles to change the size of the outlined area. When you move the pointer inside the outlined area, the pointer changes from the crop tool to a pair of scissors. When you click inside the frame with the scissors, the image is cropped and the window is adjusted to the new image size.

CAUTION:
When you save an image that you have cropped, all the image data outside the crop marks is permanently removed from the image file and cannot be restored. You can use the Undo command immediately after you crop the image to restore the original image. You can also use the Revert command to restore the original image if you have not saved the image since you cropped it. You may want to save a copy of the image before you crop it.

The View Through the Window:

Scroll, grab, zoom, and get as much detail as you need

You almost always have several windows open when you work in Cachet. In addition to a window for the image you are correcting, you probably have one or more windows for reference images.

These windows work like windows in other Macintosh applications, with scroll bars and boxes for closing and sizing.

In addition, all the Cachet tool palettes have three tools that change the view in the window to help you work more efficiently. You use these tools to zoom in and out and to move the image around in the window. You can also use the commands in the Windows menu to change the view through the window.

If you want to change the view permanently, you can rotate, flip, and crop the image. See the preceding section on "Orientation" for details.
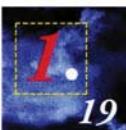
To select a window

• *Choose the window you want from the Windows menu.*

OR

• *Click anywhere in the window.*

As in other Macintosh applications, you can click in a window to bring it to the front and make it active. But if you have many windows open and you can't find the window you want, you can choose it from a list in the Windows menu.

The Windows menu lists all the image windows that are currently open.

To move the image around in the window

- *Open a tool palette.*

- *Click the hand tool.*

- *Click in the window and drag to move the image around.*

As in any Macintosh application, you use the scroll bars, scroll boxes, and scroll arrows to change the view of the image in the window. The scroll bars move the image horizontally and vertically within a window.

If you want to move the image quickly in any direction, you can use the **hand tool.** This tool grabs the image and moves it as you move the mouse.

To zoom in or out

- *Open a tool palette.*

- *To magnify the image, click the zoom-in tool and click the image. Or choose Zoom In from the Windows menu.*

- *To reduce the image, click the zoom-out tool and click the image. Or choose Zoom Out from the Windows menu.*

- *To select a specific reduction or magnification, choose Zoom from the Windows menu and choose the amount of zoom from the submenu.*

You can magnify the working image to get a close-up view or reduce it to see more of the image.

You use the **zoom-in** and **zoom-out** tools that appear in all the tool palettes. When you click the zoom-in tool and move the cursor into a window, it becomes a magnifying glass with a plus sign. When you click, it magnifies the image. The zoom-out tool changes the cursor to a magnifying glass with a minus sign and reduces the image. You can temporarily switch back and forth between the two tools by holding down the Option key when either one of them is selected.
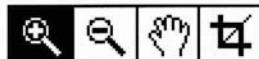
The zoom-in tool magnifies the image.

The zoom-out tool reduces the image.

You can also use the Zoom In and Zoom Out commands in the Windows menu. These have the same effect as clicking the image once with the zoom-in and zoom-out tools. If you want to choose a specific magnification, you can use the Zoom command in the Windows menu. It displays a submenu with several possible magnification and reduction factors. You choose the one you want.

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To change the amount of zoom

• *Choose Preferences from the Edit menu.*

• *Click Main to display the Main Preferences.*

• *Click the zoom step you want.*

• *Click OK.*

You can change the magnification and reduction increments with the Main Preferences dialog box. This change affects both the zoom tools and all the zoom commands.

```
┌─ Edit Preference: ─┐ ┌──────────────────────────────────────┐
│ ◉ Main             │ │ Main Preferences:                    │
│ ○ Folders          │ │ ☒ Ask for a file when Cachet starts  │
│ ○ Performance      │ │ ☒ Lock MultiChoice to image window   │
│                    │ │ ┌─ Zoom Clicks ──────────────────┐   │
│                    │ │ │ ◉ Keep click under mouse       │   │
│                    │ │ │ ○ Center click in window       │   │
│                    │ │ └────────────────────────────────┘   │
│                    │ │ ┌─ Zoom Step ────────────────────┐   │
│                    │ │ │ ◉ Additive (×1, ×2, ×3, ×4...)  │   │
│                    │ │ │ ○ Doubling (×1, ×2, ×4, ×8...)  │   │
│                    │ │ └────────────────────────────────┘   │
└────────────────────┘ │              [ Cancel ]  [  OK  ]    │
                       └──────────────────────────────────────┘
```
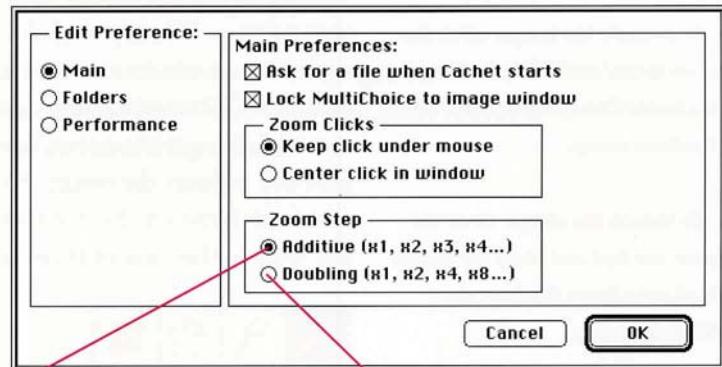
With this option, you zoom in or out slowly.   *With this option, you zoom in or out quickly.*

To control the view when you zoom

• *Choose Preferences from the Edit menu.*

• *Click Main to display the Main Preferences.*

• *Click the zoom type you want.*

• *Click OK.*

When you use the zoom tools to zoom in or out, Cachet normally keeps the spot you click in the same relative position within the window. However, you can tell Cachet to center the spot you click in the window each time you zoom in or out if you prefer to work this way.

You use the Main Preferences dialog box to set these options:

```
┌─ Edit Preference: ─┐ ┌─────────────────────────────────────────┐
│                    │ │ Main Preferences:                       │
│  ● Main            │ │  ⊠ Ask for a file when Cachet starts     │
│  ○ Folders         │ │  ⊠ Lock MultiChoice to image window      │
│  ○ Performance     │ │  ┌─ Zoom Clicks ─────────────────────┐   │
│                    │ │  │  ● Keep click under mouse         │   │
│                    │ │  │  ○ Center click in window         │   │
│                    │ │  └───────────────────────────────────┘   │
│                    │ │  ┌─ Zoom Step ───────────────────────┐   │
│                    │ │  │  ● Additive (×1, ×2, ×3, ×4...)    │   │
│                    │ │  │  ○ Doubling (×1, ×2, ×4, ×8...)    │   │
│                    │ │  └───────────────────────────────────┘   │
│                    │ │                                          │
│                    │ │              [ Cancel ]    [   OK   ]    │
└────────────────────┘ └─────────────────────────────────────────┘
```
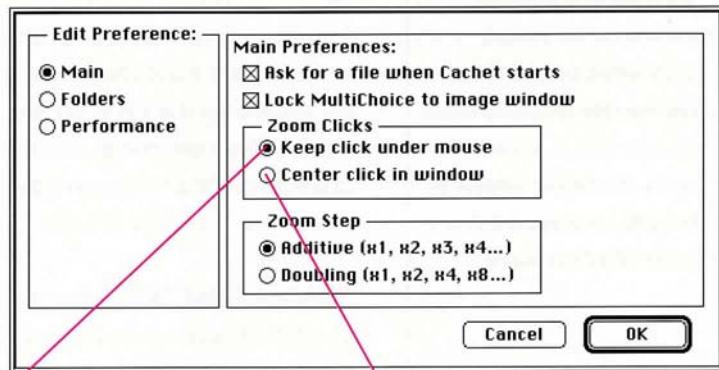
Use this option to keep the spot you click in the same position as you enlarge or reduce the image.

Use this option to center the spot you click in the window each time you zoom in or out.

To increase or decrease the amount of detail

• *To get maximum detail, choose File Detail from the Windows menu.*

• *To get the best possible resolution for the current magnification, choose Zoom Detail from the Windows menu.*

• *To use the default amount of detail, choose Standard Detail from the Windows menu.*

When you open an image file, Cachet builds a subsampled version of the image, called the **internal model**. Cachet displays the internal model as you adjust the image interactively using the tool palettes. Initially, the internal model is quite compact, but it usually provides adequate resolution on the screen for you to make most color corrections.

However, if you are working with very fine details or if you are working in a magnified view, you may need better resolution on the screen than you get with the default size of the internal model. You can change the size of the internal model to get the amount of detail you want by choosing the appropriate command from the Windows menu.

Standard Detail When Standard Detail is checked, Cachet uses the default size of the internal model.

File Detail When you choose File Detail, Cachet re-builds the internal model using all the data in your image file. This provides the maximum possible resolution. (If your image file is relatively small, Cachet automatically uses all the image data, regardless of whether you select Standard Detail or File Detail.)

Zoom Detail When you choose Zoom Detail, Cachet re-samples the image file and re-builds the internal model to provide the best resolution possible at the current magnification. If you have zoomed out, this generally reduces the number of pixels in the internal model and therefore improves performance. If you have zoomed in, this generally increases the number of pixels in the internal model, thereby improving resolution.

If you zoom in or out after you choose Zoom Detail, the internal model will still be optimized for the previous magnification level. Therefore, to maintain optimum detail, you may want to choose Zoom Detail again after you zoom in or out.

Each time you change the amount of detail, Cachet re-displays the image at 1X magnification of the new internal model. If the image file does not contain sufficient data for the current zoom level, Cachet switches automatically to File Detail. In this case, the image is displayed at 1X magnification for File Detail, which may differ from the zoom level you were using when you chose Zoom Detail.

To get information about an image

• *Click the window with the image to make it active.*

• *Choose Get Info from the File menu.*

You can get some basic information about the image in the active window with the Get Info command. This information is useful for managing your disk space.

File Information

File Name:	Puddle Stomping
File Folder:	Hard Disk 2:User Images:
File Size in Bytes:	1,297,065
File Dimensions:	805x537
File Type:	TIFF

OK
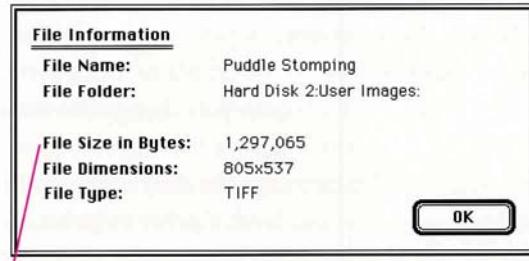
The file dimensions are shown in pixels.

Getting the Overall Color Right

2.

With Cachet, you begin color correction by adjusting the overall appearance of the image.

You can correct for problems in the original photographic process—for example, underexposure or overexposure or a mismatch between the type of film and the lighting. You can also change the color properties to achieve a particular effect.

*To make these changes, you use the tools in two palettes. Start with the **Exposure & Tone palette** to correct exposure problems and adjust the overall tone of the image. Then, if necessary, go on to the **Color palette** to change color properties to meet your artistic goals.*

*With both of these palettes, you can also use a special tool called **MultiChoice.** It turns color correction into a multiple-choice exercise, displaying six variations of an image for you to choose among. It's a fast, visual way to work.*

This chapter explains how you work with the tool palettes—including the suggested order for making corrections. Then it shows you when and how to use each of the individual tools.

The Tools:

Cachet has tools for correcting exposure problems, adjusting tone, and enhancing the overall color

When you work with Cachet, you adjust the overall color appearance of your working image by first correcting for any problems due to improper exposure of the original. Then, you adjust the overall tone of the image. Finally, you can adjust overall color properties such as saturation and color cast.

The tools for making all these overall corrections are organized in two palettes—the Exposure & Tone palette and the Color palette. These palettes use two different color systems, or **color spaces**, for representing color. By using different color spaces to represent color corrections, Cachet gives you more flexibility and control for getting the color exactly the way you want it. Here's how you use these palettes.

First, correct for exposure problems

Today's films are designed to give excellent color reproduction when they are properly exposed. The most common problems in color photography, though, are exposure problems. The first task of color correction, then, is to adjust the image to compensate for errors in exposure—including an incorrect F-stop, shutter speed, or color filter, or a mismatch between the type of film and the lighting conditions. You use the **Exposure & Tone palette** to correct exposure problems.

Second, adjust tone

Tone adjustments are those that affect the brightness of the image. Tone problems usually show up as a loss of detail in the highlights or shadows of your image. You also use the Exposure & Tone palette to adjust the overall tone of an image.

Third, adjust color properties, if necessary

Color correction is ultimately a subjective process. It has to do with taste and preference. So Cachet also provides the **Color palette**, a group of tools you can use to adjust three color properties—saturation, color cast, and lightness—to achieve artistic goals. These tools also work well for adjusting the **gamut** of the image to match the gamut of your printer or reproduction method (see "Color Checks" in Chapter 5). You should use the color tools only after you have made the basic corrections for exposure and tone problems.

To correct exposure problems and adjust the tone of the image

• Choose Exposure & Tone from the Image menu.

• Use the exposure slider and color filter to correct exposure problems.

• Use the remaining sliders to adjust the tone of the image.

• Use the Check and Show buttons to check for tone clipping as you make corrections.

The Exposure & Tone palette has eight tools for correcting problems that result from poor exposure and improper lighting conditions and for adjusting the overall tone of the image.

Because this palette is the starting place for making color corrections, it opens automatically when you first open a working image. You can also choose it from the Image menu.

First, use these tools to correct for improper exposure in the original photograph.

Then use these tools to adjust the tone of the image.

The numbers suggest the degree of change

Click here to change one step at a time.

Drag this bar to change settings quickly.

These buttons check for tone clipping.
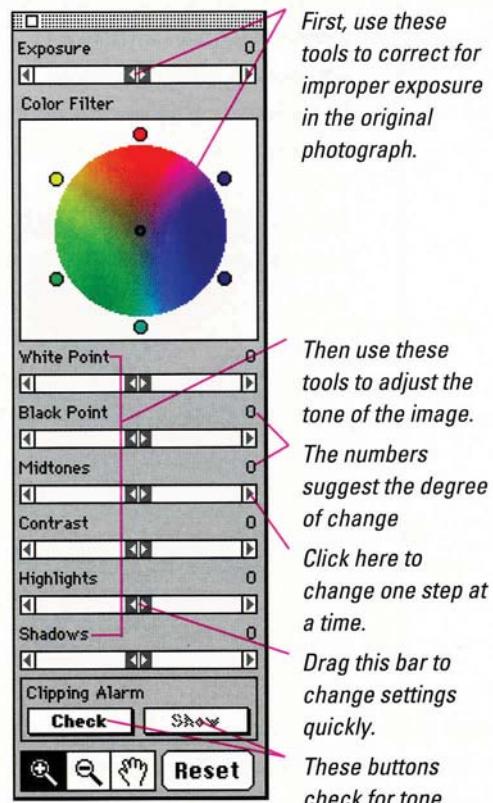
As you work with any one of the tool palettes, Cachet maintains a record of how the working image appeared when you opened the palette. As you correct the image, Cachet shows how your changes affect this recorded appearance. However, Cachet does not actually apply the changes until you switch to a new palette.

When you switch to a new palette, Cachet updates its record of the original appearance of the image, and then opens the new palette with its tools set to zero. If you switch back to the old palette, the tools in that palette will also be set to zero. The zero settings reflect that no changes have been made to the image since you opened the palette.

(cont. on next page)

You can use the Check and Show buttons to check for **tone clipping** as you make changes with the tools in this palette. When tones are clipped, you lose details in highlights or shadows. See "Tone Clipping" later in this chapter for more details.

Reset

You can use the Reset button to reset all the tools in this palette to zero. The image then appears as it did when you opened the palette. If you save the image and then make additional changes without switching to another palette, the Reset button displays the image as it appeared when you last saved it.

You can also hold down the Command key and click an individual tool to reset it to zero without resetting the other tools.

Cachet automatically closes the Exposure & Tone palette when you choose another palette from the Image menu.

To adjust color properties

• Choose Color from the Image menu.

• Adjust the settings for saturation, color cast, and lightness to enhance the color in the working image.

The Color palette has three tools that you can use to enhance the color in your image. Here, you are not necessarily trying to correct a problem. Instead, you may want to create a particular mood or suggest a time of day or just make an image look better than it does naturally.

When you use this palette, you can think of color as having two components: chrominance and luminance. **Chrominance** is the chromatic component, typified by the difference between green and blue, for example. **Luminance** is the achromatic component—the difference between light blue and dark blue, for example.

*You move the **color indicator** in the color map to change the color cast.*

You move the sliders to change the saturation or lightness.
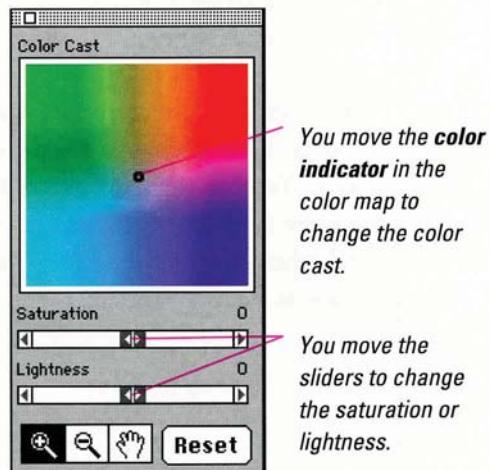
As with the Exposure & Tone palette, you can use the Reset button to reset all the tools in this palette to zero. Hold down the Command key and click an individual tool to reset it to zero without resetting the other tools.

Cachet automatically closes the Color palette when you choose another palette from the Image menu.

You can adjust and readjust the settings of the tools, easily exploring the effects of different color corrections and easily resetting any or all of the tools in the palette. However, once you have switched to a new palette, you cannot easily undo the changes you made with the first palette. Therefore, it's a good idea to make all your changes in one palette before you switch to another. You can, however, take a snapshot of the image before you switch to a new palette, then later restore the snapshot if you need it. For details, refer to "Snapshots" in Chapter 4.

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You can use the MultiChoice window to find a solution to a color problem quickly, easily, and visually

If you're not sure what's wrong with your image—if you don't know whether the color balance is too green or too blue, for example—it may be easier to choose from several variations than to adjust the settings in a tool palette. The MultiChoice window gives you this option.

You can use the MultiChoice window to make any of the corrections you can make with the Exposure & Tone palette or the Color palette. The window displays six variations of the working image at a time. You choose the one that best matches your reference image.

You can also customize the MultiChoice window to fit your needs. You can change the size of the window and the images in it. You can change the layout of the images and adjust the degree of change between each variation. You also decide whether you want the MultiChoice window to show the same view as the working image.

To choose from multiple images

• *Choose Color or Exposure & Tone from the Image menu.*

• *Choose MultiChoice from the Tools menu.*

• *Choose the tool you want to use from the pop-up menu in the lower-left corner of the MultiChoice window.*

• *Click the image in the MultiChoice window that best matches your reference image.*

The MultiChoice window displays six variations of the working image. When you first open this window, it shows variations in exposure if you are using the Exposure & Tone palette. If you are using the Color palette, it shows variations in color cast.

You can use a pop-up menu in the lower-left corner of the window to switch to a different tool. Each time you choose a tool, the MultiChoice window displays six new variations of the working image for that tool. You click the one you think is the best match for the reference image.

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How MultiChoice works with the tool palettes

When the MultiChoice window is open, you can work with the tool palettes, too. Cachet updates the images in the MultiChoice window as you change individual tool settings in the palette. So you can display six variations for one tool in the window and then adjust another tool in the palette to see the combined effect. For example, you can judge the combined effect of adjustments to the mid-tones and contrast by choosing Midtone from the MultiChoice pop-up menu and then adjusting the contrast slider.

When you click one of the images in the MultiChoice window, Cachet changes the working image to match your choice exactly and then displays six new variations of the modified working image in the MultiChoice window. You continue selecting images until you get the match you want. At any point in the process, you can also use the tools on the palette, either to refine corrections made with the MultiChoice variations, or to see combined effects.

When you click one of the MultiChoice images, Cachet changes the working image to match your choice, and the MultiChoice window displays six new choices.

When you click the lower-left corner, a pop-up menu displays the tools.

Click and drag here to change the size of the images within the window.

Click and drag here to change the size of the window.

To change the layout of MultiChoice images

• *Choose Layout from the Tools menu.*

• *Choose Grid, Row, or Column from the submenu.*

Cachet normally displays the MultiChoice images in a grid of two rows and three columns.

• When you're working with the color filter, the six images each represent one step toward each of the six color handles.

• When you're working with one of the other tools, the variations form a clockwise progression from upper left to lower left. The current settings for the working image fall between the third and fourth image in the window.

You may prefer to view the choices as a linear progression, say, from light to dark or from high contrast to low contrast. In this case, you can rearrange the images in a single row or column to see this progression more clearly. The current settings still fall between the third and fourth images. Or you may simply change the layout of the images to use the space on your screen more efficiently.

A row is 6 horizontal images.

You can also choose a column of 6 vertical images or the standard grid of 2 rows and 3 columns.

The current settings for the image always fall here—between the third and fourth image in the window.

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To adjust the degree of variation among images

• *Choose Step from the Tools menu.*

• *Choose Small, Medium, or Large from the submenu.*

The MultiChoice window normally shows six images that vary moderately. However, you can change the degree of variation, called the "step," between each image.

For finer control of the variations, choose Small. For a greater range of choice, choose Large.

The actual percent change represented by a step varies with each tool. You can compare the slider settings before and after you choose a MultiChoice image to determine the exact numerical change.

```
Tools
  MultiChoice  ⌘M
  Step          ▶   Small
  Layout        ▶  ✓Medium
                     Large
  Gamut Alarm
  Color Meter
  PANTONE® Colors
```
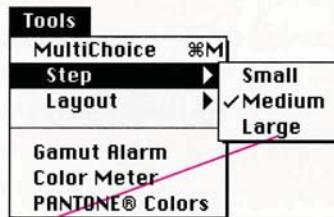
Choose the degree of variation you want between images in the MultiChoice window.

To lock MultiChoice views to the working image

• *Choose Preferences from the Edit menu.*

• *Click Main to see the Main options.*

• *Click the option for locking MultiChoice to the image window to check or uncheck it.*

• *Click OK.*

As you work, you may change the size of the working image, zoom in or out, or scroll to a different part of the image. You usually want the view of the images in the MultiChoice window to match the view of the working image. That is, if you zoom in on the working image, the variations in the MultiChoice window should also appear zoomed in.

Sometimes, though, you may want to continue to see the entire image in one window, even though you're looking at only part of the image in the other window. You can lock the MultiChoice images to the working image or unlock it to meet your needs.

```
┌─ Edit Preference: ─┐  ┌──────────────────────────────────────┐
│                    │  │ Main Preferences:                    │
│  ● Main            │  │  ⊠ Ask for a file when Cachet starts │
│  ○ Folders         │  │  ⊠ Lock MultiChoice to image window  │
│  ○ Performance     │  │  ┌─ Zoom Clicks ──────────────────┐  │
│                    │  │  │  ● Keep click under mouse      │  │
│                    │  │  │  ○ Center click in window      │  │
│                    │  │  └────────────────────────────────┘  │
│                    │  │  ┌─ Zoom Step ────────────────────┐  │
│                    │  │  │  ● Additive (×1, ×2, ×3, ×4...) │  │
│                    │  │  │  ○ Doubling (×1, ×2, ×4, ×8...) │  │
│                    │  │  └────────────────────────────────┘  │
│                    │  │              [ Cancel ]  [  OK  ]     │
└────────────────────┘  └──────────────────────────────────────┘
```
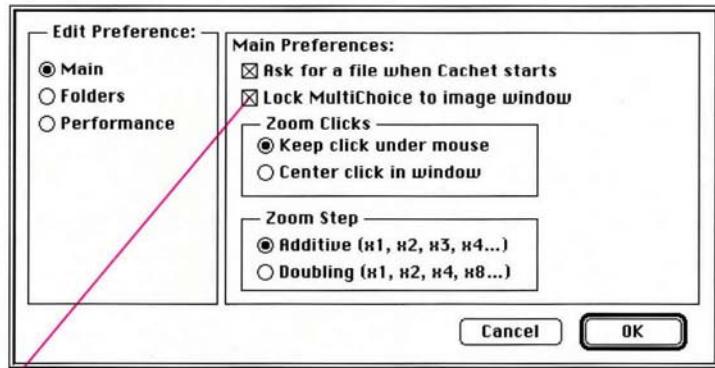
When this option is checked, the view of the images in the MultiChoice window matches the view of the working image.

The Exposure Tools—
A Quick Glance

Cachet has two tools for solving problems that occur in the original photography—the exposure tool and the color filter.

• The **exposure tool** compensates for improper shutter speed and f-stop. It's the tool to use if your original is over- or underexposed. The best way to tell if a photograph is incorrectly exposed is to look at the original negative or slide.

• The **color filter** corrects for color balance problems that occur when the wrong combination of lighting, film, and camera filter are used. Besides looking at the original negative or slide, the best way to tell if an image has color balance problems is to compare it on-screen to a reference image with good color balance.

If the original is underexposed

A negative is too light when it's underexposed. It looks "thin."

A slide is too dark when it's under-exposed. You need to increase the exposure with the exposure tool.

If the original is overexposed

An overexposed negative is too dark.

An overexposed slide is too light. You need to decrease the exposure with the exposure tool.

If the color balance is wrong

Blue tints often result from using indoor film or filters outside.
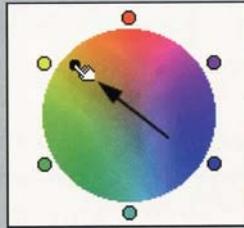
To correct a blue tint, drag the color indicator away from blue

Fluorescent lighting often produces a green tint.
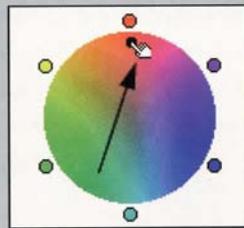
To correct a green tint, drag the color indicator away from green.
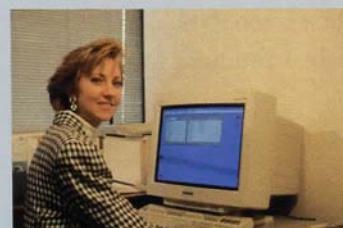
Indoor photographs, taken with daylight film may turn out yellow-orange.
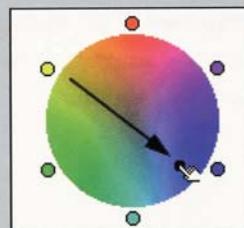
To correct a yellow-orange tint, drag the color indicator away from yellow-orange.

If you don't have the original

Compare your scanned image to a reference image with similar lighting and color composition. If your image is lighter overall, decrease the exposure. If your image is darker overall, increase the exposure.

Also, errors in scanning can sometimes produce an effect similar to under- or overexposure. If the original looks good, but the on-screen image is lighter or darker than your reference image, use the exposure tool to match the overall lightness before you make other adjustments.

Without the original, it is very difficult to ascertain whether your scanned image has an exposure problem. Therefore, you may prefer to use the midtones, highlights, and shadows tools instead of the exposure tool.

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Exposure:

Adjusts the brightness of an image that is overexposed or underexposed
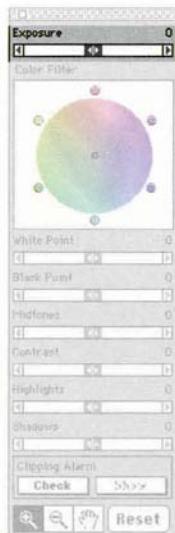
When you take photographs, exposure is controlled by the combination of the f-stop and the shutter speed. If this combination is not right for the lighting conditions, the resulting image is overexposed or underexposed.

You can use the exposure tool in Cachet to compensate for incorrect f-stop and shutter speed. This tool works best when you have the original image—such as a transparency—and can see that it is overexposed or underexposed. If the original is correctly exposed, you should not need to use the exposure tool.

Always make exposure corrections before you make brightness corrections with other tools such as the midtones tool or the lightness tool in the Color palette. To make exposure corrections, choose a well-exposed reference image with similar lighting and subject matter.

Exposure Problems—What You See

Overexposed: The original slide is too light. (If you're working with a negative, it's too dark.) You need to decrease the exposure.

Underexposed: The original slide is too dark. (An underexposed negative is too light.) You need to increase the exposure.

To correct for overexposure or underexposure

• *Choose Exposure & Tone from the Image menu.*

• *Move the exposure slider to left or right to decrease or increase the exposure.*

The working image shown here on the left is underexposed. The image is uniformly too dark compared to the reference image on the right.

Working image

Reference image

When you increase the exposure, Cachet changes the image to make it appear to have been taken at a lower f-stop or a slower shutter speed. The result is a brighter image.

Color Filter:

Adjusts the color balance of an image
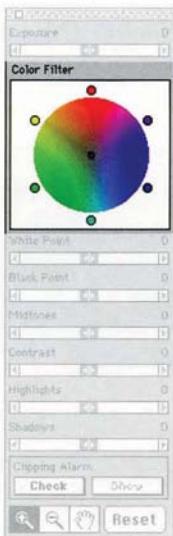
Color balance is what makes the colors of an image look natural or unnatural. Colors are balanced when anything that appears gray or neutral in the original subject also appears gray or neutral in the image.

Color balance problems usually occur when the original photograph was taken with film that didn't match the lighting conditions. For example, when films designed for daylight are used to photograph scenes lit by fluorescent lights, the result is usually a photograph with a greenish or yellowish tint.

Experienced photographers avoid these problems by using filters. But you can compensate for film and filter errors by using the color filter in Cachet, which acts like the appropriate set of camera filters.

Correcting color balance may be most important when you're working with several photographs of the same subject, taken under different lighting conditions. You want the color balance to match when they appear next to each other on a single page. Look for a reference image that has good neutral tones.

Poor Color Balance—What You See

Overall distortion: The image appears tinted with a particular hue. Typical color casts are green-yellow, blue, and red-orange. Choose a filter of the complementary color.

Local distortion: Some colors in the image do not match the color of the real-world objects they illustrate. They are too red, too blue, or too green, for example. As with overall distortion, choose a filter of the complementary color to correct the overall image. If you want to correct individual colors, see Chapter 3.

To adjust color balance

• *Choose Exposure & Tone from the Image menu to display the color filter.*

• *Click the color handles around the color filter to shift the color balance a little at a time.*

• *Click anywhere in the color filter to select a specific filter color.*

• *Drag the color indicator in the color filter to monitor the change as you move.*

Here the working image on the left is tinted blue, probably as a result of a mismatch between the film and the lighting conditions.

To achieve the same color balance as the reference image on the right, you need to use a filter of a **complementary color**—yellow, in this case. Complementary colors always appear opposite each other on the color filter, so you can just drag the color indicator away from the dominant color tint.

*The **color indicator** shows the amount of correction. You can drag it to change the color balance. Or just click where you want it.*

*Clicking the **color handles** shifts the color incrementally.*
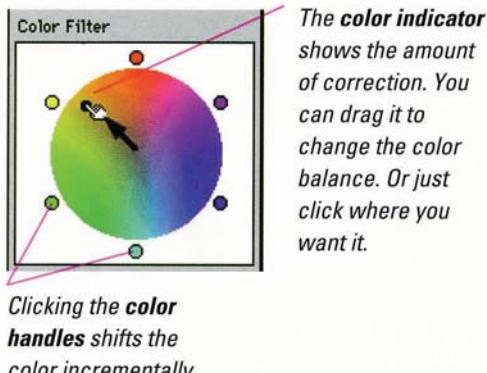
You can also use the color cast tool in the Color palette to change the overall tint of an image. See "Color Cast" later in this chapter.

The Tone Tools—
A Quick Glance

All photographs have a range of tones from dark to light. Problems with tone arise when this range is too wide for the printing process or too narrow to fully reproduce all the details in the image. Or they may result from a distortion in the range of tones—too many dark tones compared to light tones, for example.

Cachet has six tools for correcting tone problems.

• The **black point** and **white point** tools adjust the **end points** of the range to make the best use of the printing process.

• The **contrast** tool adjusts the ratio of the brightest tones to the darkest tones.

• The **midpoint**, **highlights**, and **shadows** tools each change the brightness of the image in different areas.

If the image lacks crispness or looks dull

When the white point is too low, the highlights are muddy and dark. For cleaner whites, increase the white point setting.

When the black point is too low, there is little or no black in the image. To get crisp blacks, increase the black point setting.

If the main subject is too dark or too light

When the midtones setting is too low, the image overall is too dark. Detail is lost in the darker areas.

When the midtones setting is too high, the image overall appears washed out. Detail is lost.

If the image looks flat or stark

When the contrast is too low, there's not enough difference between the darkest and lightest tones, and the image looks flat. Increase the contrast with the contrast tool.

When the contrast is too high, there are lots of very light and very dark tones, but few midtones. The image looks stark. Decrease the contrast.

You can use the tone tools in whatever order you like. However, the best results are usually obtained if you make tone adjustments in the following order:

• First, adjust the white point and black point if the image lacks crispness or looks dull.

• Second, adjust the midtones if the main subject is too dark or too light.

• Then, adjust the contrast if the image looks flat or stark.

• Finally, adjust the highlights and shadows if details are lost in those areas.

If details get lost in the shadows and highlights

When highlights are too bright, details get lost in the light parts of the image. You may be able to recover them by decreasing the brightness with the highlights tool.

Details also get lost in dark shadows. Increase the brightness with the shadows tool to bring out these details.

Tip:
Use the tone clipping buttons to locate areas of pure white and pure black. You may lose detail in these "clipped" areas. As a rule, you get the best printed results when just a few tones—both light and dark—are clipped.

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Adjusts the point where light tones become white and the point where dark tones become black
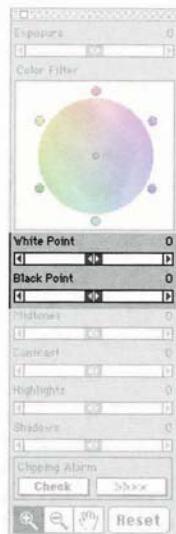
Photographs have a range of tones from dark to light. You can increase or decrease the variation in tones by adjusting the end points of this range.

When you adjust the white point, you are adjusting mainly the light end of the range. Changing the dark point adjusts mainly the dark end of the range.

Problems with **end points** often result from improper scanner settings. The scanned image doesn't make good use of the available range of tones. Or you may simply want to adjust white and black point to make use of the entire dynamic range of the printing process you are using.

Often, white and black point problems look like contrast or brightness problems. However, the tools for correcting contrast and brightness can't correct end point problems. So it's best to adjust the end points before you adjust brightness and contrast settings.

For end point adjustments, use a reference image that has good detail in the light and dark areas. It is very difficult to make good end point adjustments if you rely only on comparing the working and reference images on screen. As you adjust the end points, use the Check and Show buttons to check your image for clipping. As a rule of thumb, you want to adjust the end points point just until colors begin to be clipped. See "Tone Clipping" later in this chapter for more information.

White and Black Point Problems—What You See

Low white point value: The image lacks crispness. The highlights appear muddy or dark. You see little or no pure white. You need to increase the white point setting.

High white point value: The highlights are solid white and devoid of detail. Too much of the image is white. You cannot compensate for lack of detail by changing the white point, but you can get more ink coverage (less pure white) by lowering the white point setting. You may be able to get more details by re-scanning the original photograph or slide with a lower exposure setting on your scanner.

Low black point value: The image lacks crispness. The shadow areas of the image may appear washed out. You see little or no black. You need to increase the black point setting.

High black point value: The image is dark. You see too much black but little detail in the dark areas of the image. Cachet cannot recreate detail that was lost in the scanning process, so you can rarely improve an image by lowering the black point setting. You may be able to get more details by re-scanning the original photograph or slide with a higher exposure setting on your scanner.

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To adjust the white point

• *Choose Exposure & Tone from the Image menu.*

• *Move the white point slider to the left or right to decrease or increase the white point setting.*

This gray scale shows what happens when you change the white point from low to high. On the left, the setting for the white point is low, and you see many shades of gray, most of which are dark. On the right, the setting is high, and there are fewer shades of gray, most of which are light.

The lower bar shows the shift to gray when the white point is too low.

The lower bar shows the shift to white when the white point is too high.

Here's the same comparison for a color photograph.

To adjust the black point

• *Choose Exposure & Tone from the Image menu.*

• *Move the black point slider to the left or right to decrease or increase the black point setting.*

Here the gray scale shows what happens when you change the black point from high to low. On the left, the setting for the black point is high, and you see a lot of black and few shades of gray, most of which are dark. On the right, the setting is low, and there are many shades of gray, all of which are light.

The lower bar shows the shift toward black when the black point is too high.

The lower bar shows the shift away from black when the black point is too low.

Here's the same comparison for a color photograph.

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Contrast:

Adjusts the brightness of light tones compared to the brightness of dark tones

Contrast is the ratio between the brightness of the light and dark regions in an image. For example, on a bright sunny day, the sun provides a bright source of direct light with harsh shadows. In such lighting conditions, contrast is high. On a snowy overcast day, even though the brightness may be high, the light is diffuse, so the contrast is low.

Appropriate contrast is defined by the context of the picture. High and low contrast are not necessarily good or bad. High contrast is a problem primarily when the image looks too harsh for the subject and details are lost in both highlights and shadows. Low contrast is a problem when the image looks dull.

If contrast is the major problem in your image, choose a reference image that matches the lighting situation in your photograph. Don't try to match the contrast in a sunny snowscape to the contrast in a woodland setting, for example.

Contrast Problems—What You See

Too much contrast: The image looks too harsh. You see very dark and very light tones in the shadows and highlights respectively but few midtones anywhere. You lose detail in the shadows and highlights. You may need to reduce the contrast in the image as a whole.

Too little contrast: The image looks dull and flat. You see a predominance of midtones with few highlights or shadows. You may need to increase the contrast in the image as a whole.

To adjust contrast

• *Choose Exposure & Tone from the Image menu.*

• *Move the contrast slider to the left or right to decrease or increase the contrast.*

The contrast in the working image on the left is too high. It lacks detail in the shadows, which are too dark, and in the highlights, which are too light. Notice the hard edges, particularly around the faces.

When you decrease the contrast, Cachet reduces the variations in brightness across dark and light tones.

The transitions between light and dark are softer when the contrast is reduced.

You generally get the best pictures with the highest possible contrast that does not lose detail in highlights and shadows.

Adjusting contrast is similar to adjusting highlights, and shadows

The effects of the contrast tool are similar to effects you can produce using the highlights, and shadows tools.

• **Increasing contrast** is equivalent to decreasing brightness in the shadows *and* increasing brightness in the highlights in equal amounts.

• **Decreasing contrast** is equivalent to increasing brightness in the shadows *and* decreasing brightness in the highlights in equal amounts.

The highlights, and shadows tools are described starting on the next page.

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Midtones, Highlights, and Shadows:

Adjusts the brightness and detail of the image
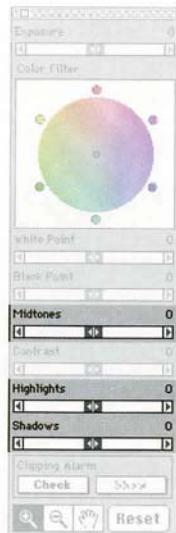
If the exposure of an image is correct, the brightness of the image should match the brightness of the original subject. However, you may still find that the image is a little lighter or darker than you like, primarily due to the subject matter.

You can use the midtones tool to adjust the brightness when you want the overall image to appear brighter or darker, primarily in the midtones. Use a reference image that has the quality of brightness you want.

You can also use the highlights and shadows tools to bring out details that are lost in shadows and highlights—or to hide details you don't want to show. Choose a reference image with the amount of detail you want in the highlights and shadows. The reference image should also have good overall contrast for the subject. (Of course, the highlights and shadows tools cannot bring out details that were lost in the scanning process.)

Brightness Problems—What You See

Too light overall: The colors in the image are pale. The overall image is light, but the image has sufficient detail and a complete range of tones. You need to reduce the midtones setting.

Too dark overall: The image is dark. It looks like a scene viewed through dark glasses. Details vanish in the dark areas of the image. You need to increase the midtones setting.

Problems with highlights: The brightness of the overall image is good, but you're losing detail in the highlights. You need to decrease the highlights setting. If the details in the highlights are distracting, you can hide them by increasing the highlights setting.

Problems with shadows: The brightness of the overall image is good, but you're losing detail in the shadows. You need to increase the shadows setting. If details in the shadows are distracting, you can hide them by reducing the shadows setting.

To adjust brightness in the midtones

• Choose Exposure & Tone from the Image menu.

• Move the midtones slider to the left or right to decrease or increase brightness in the midtones.

The working image on the left is dark compared to the reference image on the right. Perhaps the day was a little stormy.

Here, the image appears too dark overall.

When you increase the brightness, Cachet lightens the midtones of the image. When you decrease brightness, Cachet darkens them.

Here, the midtones are noticeably brighter.

To adjust brightness in the highlights

• *Choose Exposure & Tone from the Image menu.*

• *Move the highlights slider to the left or right to decrease or increase the brightness in the highlights.*

Sometimes you may want to increase the detail in the highlights of an image without changing the overall brightness of the image. For example, you can improve the detail in the young man's scarf by decreasing the highlights setting.

When you decrease the highlights setting, the light tones appear a little darker, increasing the detail in the highlights. When you increase the highlights setting, the light tones appear a little brighter, decreasing detail.

How the midtones, highlights, and shadows tools work together

The effects of the midtones, highlights, and shadows tools overlap considerably. This prevents harsh transitions that might create undesired effects in images. However, if you find that one of these tools has too global an effect on a particular image, you can use the other tools to undo some of this global effect.

For example, if decreasing the highlights darkens the whole image too much, you can adjust the midtones or shadows to lighten up the areas you did not want to affect. However, since darkening the highlights and lightening the shadows decreases the contrast of your image, you may need to use the contrast tool to regain some contrast.

To adjust brightness in the shadows

• Choose Exposure & Tone from the Image menu.

• Move the shadows slider to the left or right to decrease or increase brightness in the shadows.

Sometimes, details of the photograph are lost in shadow, as the outline of the woman's legs and the folds in the man's pants. You can increase the brightness in shadow areas to gain detail.

Here, some details are lost in the shadow areas.

When you increase the shadows setting, the dark tones become a little lighter, so you see more details. When you decrease the shadows setting, the dark tones become darker, so you see fewer details.

With a higher shadows setting, the details are more visible.

Tone Clipping:

Locates the pure whites and pure blacks in an image

As you make adjustments to your working image, you may want to see which areas of the image are pure white or pure black. Most images will have some pure whites and blacks before you make any adjustments. As you work with the tone tools—especially white point and black point—you may increase or decrease the amount of pure white and black. This can result in **clipping**, a situation in which light tones become white and dark tones become black. Clipping generally results in some loss of detail either in the highlights or the shadows of the image.

Cachet's Exposure & Tone palette has Check and Show buttons that you can use to identify areas of pure white and pure black. These areas may have lost detail without your noticing it.

You can also use the Check and Show buttons to gauge the amount of white and black point adjustment you need to make. In general, it's best to adjust these end points just until tones start to be clipped. Clipping can actually have a positive effect on the image, so long as only less important regions of the image are clipped.

The Check button analyzes the image to locate areas of pure white and pure black.

The Show button shows these clipped areas.

To check for tone clipping

• *Choose Exposure & Tone from the Image menu.*

• *Click the Check button.*

• *Click and hold the Show button to display clipped tones.*

Here, changes in the exposure and tone of the working image have resulted in some clipping of colors in the highlights in the water and on the man's head.
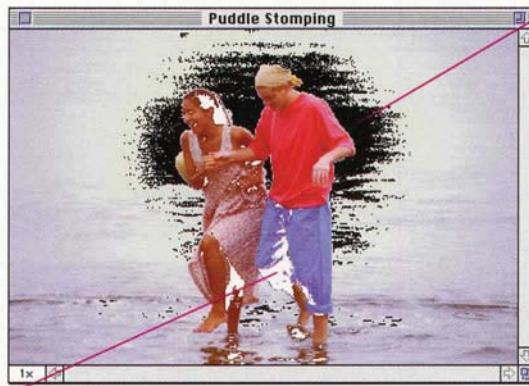
Black indicates areas where light tones have been clipped.

White indicates areas where dark tones have been clipped.

If you are concerned about the loss of detail due to tone clipping, you can readjust the tones with the tools in this palette.

The Color Palette—
A Quick Glance

Cachet's Color palette is for the artist in you—the one who wants to adjust the world of color to make it more spectacular than it already is. It is also very useful for adjusting the gamut of your image to the gamut of your target printer. (See Chapter 5, "Printing," for more information.)

The Color palette has three tools—the saturation tool, the color cast tool, and the lightness tool. With these tools, you can change the color properties of the overall image to meet your artistic objectives. You can also change the color properties of individual parts of the image with a corresponding set of tools in the Selective Color palette. See Chapter 3 for details.

If you want a different mood

A color cast can make an image look warm and inviting. You click a warm color—yellow or orange—in the color cast tool to achieve this warmth.
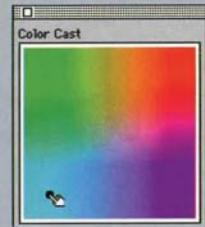
A cool color cast can suggest reserve—or maybe even an approaching storm. You click a cool color—blue, green, or purple—from the color cast tool to get that mood.

If you want more vivid color

This image is undersaturated. The dock and palm trees look especially pale. Increase the saturation to make them more vivid.

But don't increase the saturation too much. Otherwise the image may look unnatural, as it does here. Also, you may not be able to reproduce very saturated colors in the printing process.

If things get too dark or too light

When you change color cast and saturation, an image may get too dark. You can use the lightness tool to lighten things up.

Or use the lightness tool to lighten an image that's a little too dark.

Color Cast:

Creates a tint over the entire image

A color cast is an overall tint over an image. Sometimes such a tint results from exposure problems and is undesirable. In this case, you can use the color filter described earlier in this chapter to correct the color balance.

Sometimes, however, you may simply want to change the color cast of an image for artistic purposes. Changing the color cast can change the mood or ambiance of the image. For example, a slight orange cast is typical of light conditions in the early morning. You can suggest early morning by adding such a cast to your image. You can also use the color cast tool to correct an undesirable color cast that results from the subject matter itself.

When you're working with color cast, choose a reference image that has the overall mood you want to achieve. Using a reference image will help you judge how much mood—that is, how much color cast—to add.

Color Cast Problems — What You See

Undesirable tint: The overall color of the image is unappealing or unnatural. Objects that appear white in reality appear tinted in the image. You need to shift the color cast to a more neutral or more desirable tint. In general, it's best to use the color filter to solve this problem. However, in some cases, you may get the result you want with the color cast tool.

The wrong mood: The light in the image suggests morning when you want to suggest high noon or vice versa. Or the image may simply be too ordinary. You can enhance it by shifting the color cast to create the mood you want.

To shift the color cast of an image

• *Choose Color from the Image menu.*

• *To add a specific color cast, click on a similar color in the color map.*

Suppose you want to suggest a bright, sunny day when your photograph was actually taken under overcast skies. The reference image on the right, which was taken under bright sunlight, suggests that you need to shift the color of the working image on the left toward yellow.

When you shift the color cast, Cachet changes the hue and saturation of every pixel in the image, without changing the lightness.

Changing the color cast shifts the chrominance—the hue and saturation—of every pixel.

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Saturation:

Adjusts the purity of color in an image

Changing the saturation affects how colorful an image appears to be. In saturated images, the colors are full-strength or pure. In undersaturated images, the colors look diluted or pale.

Like many other color characteristics, the desirable saturation depends on your goals for the photograph. People generally respond better to saturated images. However, keep in mind that too much saturation may make your image look unnatural and print unreliably. You generally get the best results by using the highest saturation you can without getting undesirable effects such as unprintable colors. (To check the printability of your colors, see "Color Checks" in Chapter 5.)

For saturation adjustments, use a reference image with the same range of colors and tones as your image. It's hard to compare the saturation of a predominantly blue or green image with that of a predominantly red or orange image.

Saturation Problems—What You See

Oversaturated: The colors in the image look wet, gaudy, or unnaturally intense. You see few details in colored areas—they appear as "blotches." You need to decrease the saturation.

Undersaturated: The image looks pale, gray, or pastel. You don't see any vivid colors. You may want to increase the saturation.

To adjust saturation

• *Choose Color from the Image menu.*

• *Move the saturation slider to the left or right to decrease or increase the saturation.*

Here the working image on the left is undersaturated compared to the reference image on the right. It looks more gray than colorful.

When you increase the saturation, the colors become less gray and more colorful.

Increasing saturation gets rid of the "gray day" feeling.

If your image is predominantly gray

If your image has lots of gray or neutral tones in it, changing the saturation will not necessarily make it more colorful. You can't increase the purity of a color that isn't there.

If you want, however, you can add color to a primarily neutral (or gray) image with a combination of Cachet tools. Use the color cast tool to add color overall. Then use the Selective Color palette to add specific colors to parts of the image that you select. See "Chapter 3, Adjusting Selected Colors," for details.

Lightness:

Adjusts the overall lightness of the image

Lightness has no hue and saturation. It has only black, gray, or white values. It is the component that makes light blue different from dark blue, for example. If you think of color as having chromatic and achromatic components, lightness is the achromatic component.

In Cachet, the lightness tool adjusts the overall lightness of the image. If you have made the proper adjustments with the exposure and tone tools, you shouldn't need to use the lightness tool to correct for problems in the original. But you may need to use it to control how light or dark the image appears as you change the color cast and saturation. The lightness tool may be particularly useful in combination with the saturation tool for correcting out-of-gamut colors. (See "Color Checks" in Chapter 5.)

Because the lightness tool is really an aid to help you achieve the saturation or color cast that you want, you don't need a special reference image to adjust the lightness. Use the same image you use for adjusting saturation and color cast.

Lightness Problems—What You See

Too light: The colors in the image are pale. The overall image is light, with more detail in the dark tones than the light tones. You need to reduce the lightness (even though you may lose some detail in dark areas).

Too dark: The image is dark for the subject matter. Details are difficult to see, especially in the dark tones. You need to increase the lightness (although you may lose some detail in the light areas).

To adjust overall lightness

• Choose Color from the Image menu.

• Move the lightness slider to the left or right to decrease or increase the overall lightness.

For the best results, you should generally make overall lightness adjustments using the midtones tool in the Exposure & Tone palette. Generally, you'll only need to use the lightness tool to make very slight adjustments to the overall lightness or to compensate for changes you've already made with the saturation or color cast tools. The lightness tool may also be helpful if you decide to make manual adjustments to out-of-gamut colors.

In the image on the left, the saturation has been corrected, but some of the details in the dark areas have been lost. The overall image also looks a little dark.

When you increase the lightness, Cachet shifts the lightness of every pixel by the same amount.

The lightness tool works with the saturation and color cast tools to control the same kinds of problems as the midtones tool in the Exposure & Tone palette.

Adjusting Selected Colors

3.

With Cachet, you can change colors selectively. For example, you could make a blue shirt red.

*This technique, called **selective color correction,** is particularly useful when you want to match an identity color (such as a product logo) or adjust a memory color (such as "sky blue" or "grass green"). With Cachet, you can make these changes without changing the overall color characteristics of the image.*

*You can apply selective color corrections to an entire image, or you can define **masks** that limit the changes to one or more regions of the image. First, select the colors you want to change. Then, define any masks you need.*

You can automatically or manually change the colors you select to match colors in a reference image or other colors in the working image. You can even change the selected colors to appear like PANTONE colors that you specify. Or, you can make manual adjustments to the color cast, saturation, and lightness.

This chapter explains the tools you use for selecting and changing colors, for creating masks, and for specifying PANTONE colors.

The Selective Color palette has all the tools you need to adjust selected colors automatically or manually. In the top half of the palette, you'll find tools for selecting colors, automatically adjusting them to match other colors, and limiting these changes to specific areas of the image. The tools in the bottom half let you manually adjust the color cast, saturation, and lightness of the selected colors.

Use the **wand** to select colors.

Use the **constraint tools** to create masks that limit the changes to areas you select.

Use the **dropper** to automatically adjust selected colors to match other colors.

Use these color correction tools to change selected colors manually.
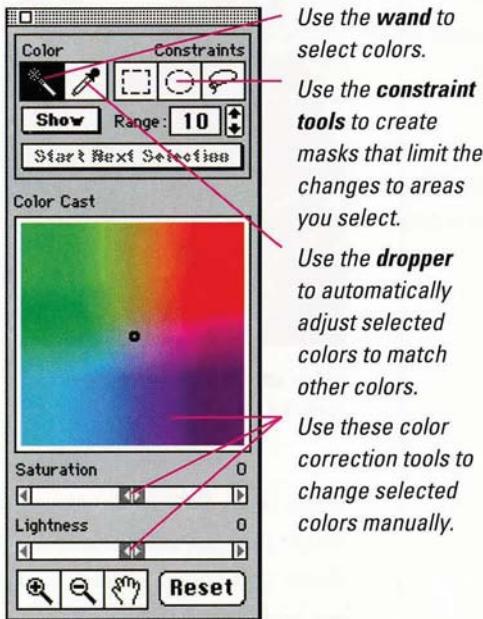
To select colors

• *Choose Selective Color from the Image menu.*

• *Use the wand to click the color you want to select in the working image.*

• *Hold down the Shift key and click additional colors, if necessary.*

• *Hold down the Shift key or Show button to see the selected colors.*

Use the **wand** to select the colors you want to change. Each time you click with the wand, Cachet momentarily highlights pixels whose colors fall within a given range from the color you click. To see the highlighted pixels again, you can hold down the Show button or press the Shift key.

When you click here
with the wand ....

Cachet selects these pixels.

If the first click selects some—but not all—of the pixels you want, you can add to the selection by holding the Shift key down and clicking again with the wand on pixels that are not yet highlighted.
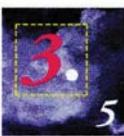
You can adjust the range of colors by changing the setting in the Range box in the Selective Color palette. At higher settings, you select more colors (and Cachet highlights more pixels) each time you click or Shift-click with the wand.

Because the same colors may appear in several parts of the image, you may want to limit the color changes to a particular area using **masks**. For example, in the picture above, you may only want to select the red in the jacket. So you need to limit the selection to that area. See "Masks" later in this chapter for details.

If you don't like a selection, you can click somewhere else in the image to select different colors. If you make several selections, you can use the Undo command to de-select the last color you selected.

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To match selected colors automatically

• *Select the colors you want to change.*

• *Click the dropper in the tool palette.*

• *Click the color you want to match in the reference image or in another part of the working image.*

Once you have selected the colors you want to change, you can use the **dropper** to pick up the color you want to match from the reference image or another part of the working image. You can also pick up a color from the PANTONE window. (See "PANTONE Colors" later in this chapter.)
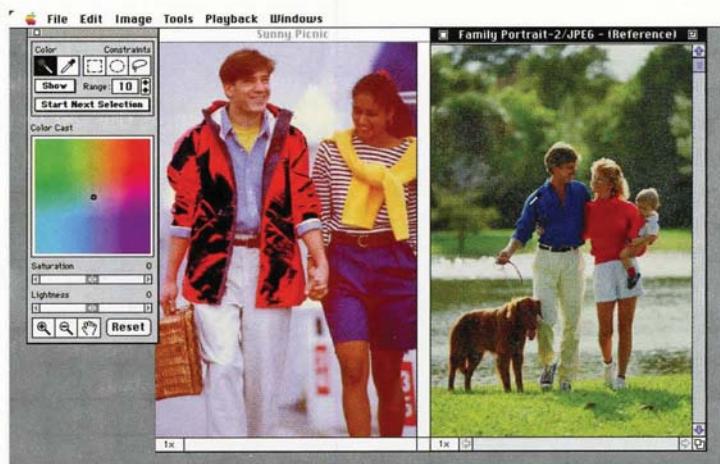
You can use the dropper to pick up a color and apply it to the selected pixels. If the wand is selected, the cursor automatically becomes a dropper when you move it into a reference image window.

When you click a color with the dropper, Cachet applies that color to the selected colors in the working image. Cachet preserves the color variation in the selected pixels when it applies the new color, so you get a comparable range of colors. Cachet also shows the new color settings on the tools in the Selective Color palette.

You can experiment with different color matches by clicking different colors with the dropper. When you are satisfied with the color in the selected areas, you can record them by clicking Start Next Selection or by selecting a different palette from the Image menu. If you don't like any of the changes, click Reset to cancel the color changes. After you click Reset, the colors you selected are still selected and any masks you defined are still active.

As long as the colors remain selected, you can adjust them manually using the lightness, saturation, and color cast tools.

CAUTION:
When you click Start Next Selection, Cachet prepares for your next set of corrections by recording the selective color change, de-selecting all the pixels in the image, and resetting all the tools in the Selective Color palette to zero. **You cannot use the Undo command to restore the selection.**

To adjust selected colors manually

• *Select the colors you want to change.*

• *Click anywhere in the color map to adjust the color cast of the selected areas.*

• *Drag the sliders to adjust the saturation and lightness of selected areas.*

You can adjust selected colors manually using the color correction tools in the Selective Color palette—color cast, saturation, and lightness.

These tools work the same way as the tools in the Color palette. They are particularly useful for making refinements after you have matched a color automatically. Sometimes the new color is a bit too saturated for the rest of the image or bit too dark or too light. Without changing the selection, you can make the adjustments you want using the color cast, saturation, and lightness tools.
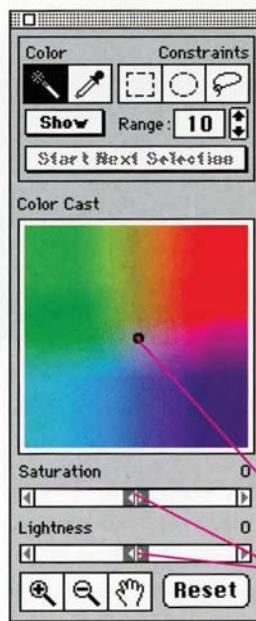
Click anywhere in the color map to adjust the color cast of selected areas.

Use these sliders to adjust the saturation and lightness.

Masks:

You can limit color changes to areas you select.

Sometimes you may want to change a color in one part of the image without changing it everywhere. For example, you may want to change a red jacket without changing other red areas of the image.

You can create **masks** to limit color changes to a particular area of the image. Masks outline the area you want to change and prevent changes from affecting the rest of the image. You can create masks before or after you select colors with the wand. You can also create and change masks after you change colors, as long as you don't click the Start Next Selection button.

Masks don't actually de-select pixels. Nor do they block the wand from selecting pixels. When you click a color with the wand, Cachet always selects all the pixels within that color range, whether they are masked or not. But if they're masked, you don't see the selected pixels, and Cachet does not change them. However, if you remove a mask, you see all the selected pixels again. If you've changed the color of the selected pixels and remove the mask, Cachet changes the color of any selected pixels that were formerly masked.

To create a mask

• *Click one of the constraint tools in the Selective Color palette.*

• *Click and drag in the image to outline the area you want to change.*

• *Hold down the Shift key and outline additional areas that you want to change.*

• *Hold down the Command key and drag over an outlined area to remove part or all of the outline.*

You use three **constraint tools**—the **rectangular marquee,** the **elliptical marquee,** and the **lasso**—to outline the areas you want to adjust using the Selective Color palette. You can use these tools alone or in combination, outlining one or several parts of the image at the same time.
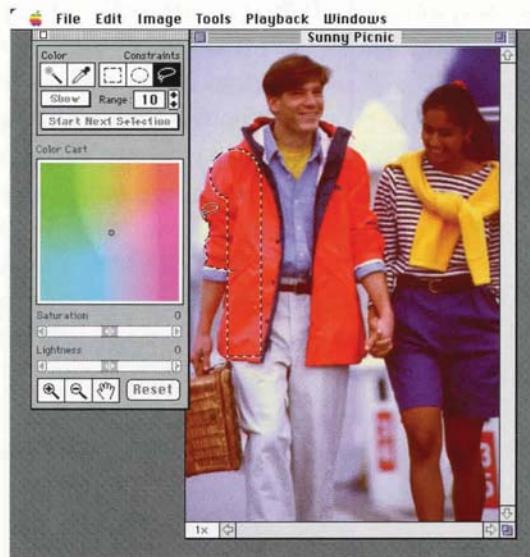
You can outline more than one area at a time, using any or all of the constraint tools.

As you work, you can change constraint tools and add as many areas as you want as long as you hold down the Shift key. After outlining an area, you can remove the outlining from part of the area by holding down the Command key while you outline the part you want to remove. You can also remove the outlining from the entire area by holding down the Command key and outlining it. To remove all the masks, click anywhere in the image with one of the selection tools.

PANTONE Colors:

You can specify these industry-standard colors in Cachet

PANTONE colors are part of a proprietary system of color matching. The system consists of a book of color chips with identifying codes. These codes relate the colors to inks that printers can buy ready-made or mix to exact instructions. The system is widely used to guarantee exact color matches for color elements like company logos. They are also used by artists to specify colors for individual design elements.

Cachet lets you select PANTONE colors from a special PANTONE Simulated Color Pages window. The colors are displayed in columns and rows of chips that are labeled with identifying numbers. There are two sets of colors—those for coated papers and those for uncoated papers.

You can choose a PANTONE color from a standard PANTONE color chart and then find the corresponding color in Cachet's PANTONE window. Then, you can use the Selective Color palette to apply the color to parts of your image.

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To find a PANTONE color by number

• Find the color you want and its number in a standard PANTONE color chart.

• Choose PANTONE® Colors from the Tools menu.

• Choose Coated or Uncoated from the pop-up menu in the PANTONE window.

• Type the number of the color you selected in the box at the bottom of the window.

• Click Find.

For best results, you should work with both a standard PANTONE color chart and the PANTONE window in Cachet. Use the chart to find the exact color you want. Then you can find the color by its number in Cachet's PANTONE window.

Use arrows to scroll a column at a time.

Choose colors for coated or uncoated stock from this pop-up menu.

Type the number of a color you want to find here.

When you click Find, Cachet finds the color and outlines it in the window. You can then apply it to selected areas of the image with the dropper. See "To specify a PANTONE Color."

To find a set of close PANTONE colors

• *Choose PANTONE® Colors from the Tools menu.*

• *Choose Coated or Uncoated from the pop-up menu in the PANTONE window.*

• *Click the search tool—the eye—in the PANTONE window.*

• *Click the image window to make it active and then click the color you want to search for.*

You can find the PANTONE colors that most closely match a color in the working image or a reference image. You use the search tool, which looks like an eye.

When you click a color in the image window with this tool, Cachet finds a set of PANTONE colors that are close in appearance to the color you clicked and displays them in the PANTONE window. The closest PANTONE color appears outlined.
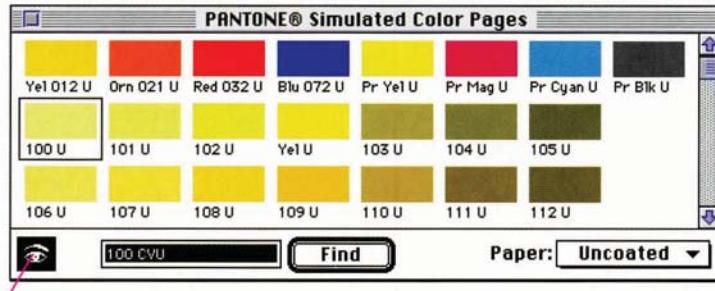
Click here to select the search tool. When you move the pointer over the image, the cursor becomes an eye. You can then click the color you want to search for.

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When you apply a PANTONE color in a photographic image, you may not get the color you want the first time. Because Cachet applies a range of colors to match the range of the selected pixels, the resulting color may not be exactly what you expect.

If you're not happy with the results, you can use the search tool to double-check the PANTONE color after you apply it. When you click with this tool, Cachet finds the closest PANTONE color. So you can see how close you are to the color you want. You can also try adjusting the lightness setting, typically closer to the zero point. You can also experiment with colors that are close to the color you want to see if they result in a better effect.

To specify a PANTONE Color

- *Choose Selective Color from the Image menu.*

- *Select the colors you want to change.*

- *Choose PANTONE® Colors from the Tools menu and find the color you want.*

- *Click the dropper in the tool palette.*

- *Click the PANTONE window to make it active, and then click the color you want.*

You can apply standard PANTONE colors to selected colors in your working image.

Select the colors you want to change with the wand.

Use the dropper to click the PANTONE color you want.
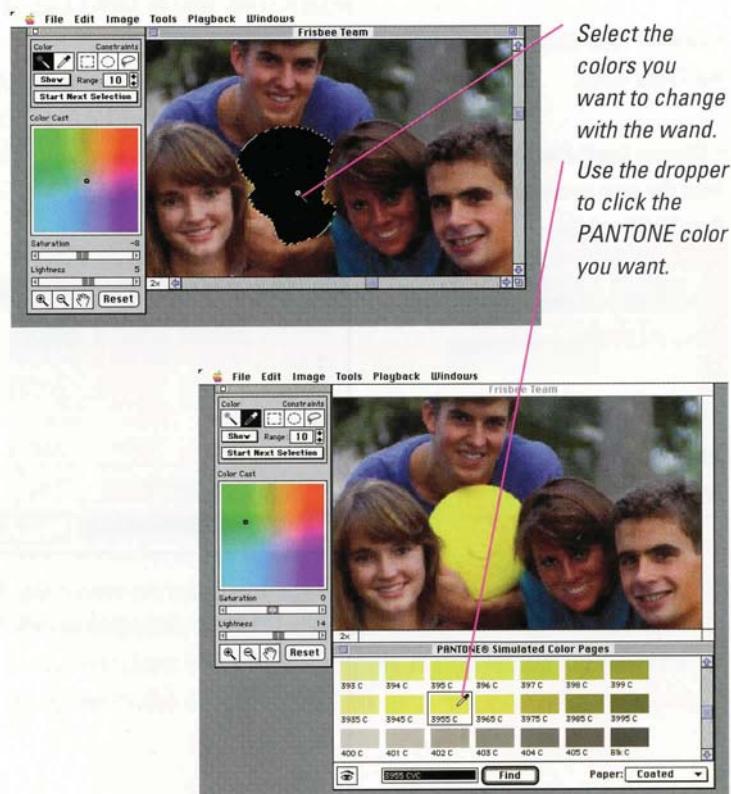
When you apply a PANTONE color, Cachet actually applies a range of colors to preserve the color variation in the selected pixels. So the PANTONE color is more a color guide than a precise target. Also, some PANTONE colors may be outside the gamut of the printing method you are using, and may therefore be adjusted during the printing process. See "Color Checks" in Chapter 5 for more information about out-of-gamut colors.

Saving Your Work

4.

When you work with Cachet, you want to be able to experiment—to try out one solution, save it, and then try several more until you get the one you want. Or, you may simply want to keep a record of interim versions. But photographic files are large, and saving multiple copies takes a lot of time and a lot of disk space.

To solve this problem, Cachet gives you snapshots and scripts. **Snapshots** *make it easy to experiment with lots of different solutions to color problems by temporarily saving interim solutions.* **Scripts** *make it easy to apply the best solution to lots of similar photographs.*

Of course, you'll probably want to save your final images in files when you're through making corrections. And you may sometimes need to know how to get rid of changes—changes that you don't like or that you made accidentally.

This chapter shows you all the ways to save—and not save—your work.

Snapshots:

Use these temporary records of your changes to experiment and backtrack

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When you correct a color image, you may go through many steps before you get the results you want. But you may also want to record at least some of the steps along the way, in case you decide that an earlier solution works better. You can take snapshots to record these interim solutions.

A **snapshot** is a temporary record of the current state of the working image. Subsequently, you can restore the snapshot version of the image if you like it better than a later version. You can also preview snapshots without restoring them.

Cachet automatically names snapshots "Snapshot 1," "Snapshot 2," "Snapshot 3," and so forth. But you can give them more meaningful names. You can also delete snapshots you no longer want.

Cachet automatically maintains one snapshot named "Last Saved Version." This is a snapshot of the working image when you last used the Save or Save As command (or when you opened the image if you haven't saved it since).

CAUTION:
Snapshots are temporary. If you save changes with the Save or Save As commands, close the image without saving changes, or use the Revert command to restore the original image, all the snapshots are lost.

To take a snapshot

• Choose Take Snapshot from the Playback menu.

• If you want, type a name for the snapshot.

• Click Snap.

You can take a snapshot of the working image at any stage in your color correction. You can take as many snapshots as your Macintosh memory allows. (Fortunately, snapshots take up very little memory, especially compared to image files.)

When you take a snapshot, a dialog box prompts you for the name of the snapshot. You can type a descriptive name, or you can let Cachet automatically assign a snapshot number.

Cachet automatically numbers snapshots. You can give them more meaningful names.

When you click Snap, Cachet temporarily records the current state of the image.

To preview snapshots

• *Choose Restore Snapshot from the Playback menu.*

• *Select the snapshot you want to preview from the list in the dialog box.*

• *Click Preview.*

You can preview a snapshot before you decide to restore it as the working image. You select the snapshot from the list in the Restore Snapshot dialog box.

Select the snapshot you want to preview.
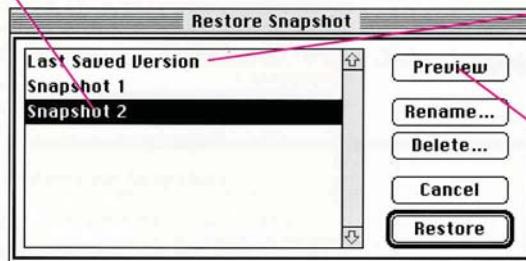
This is a snapshot of the working image when you last saved it.

Click here to preview the selected snapshot.

When you click Preview, Cachet temporarily displays it as the working image. Cachet displays the tool palette you were using when you took the snapshot, and the palette reflects the settings for the snapshot. The dialog box remains open. If it blocks your view of the working image, you can move the dialog box by dragging the title bar at the top.

If you don't like the snapshot, you can select a different snapshot and click Preview again.

If you like it, you can click Restore to restore it.

If you don't want to restore any of the snapshots, you can click Cancel. Cachet then displays the image as it was when you chose the Restore Snapshot command.

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To restore a snapshot

• *Choose Restore Snapshot from the Playback menu.*

• *Select the snapshot you want to restore from the list in the dialog box.*

• *Click Restore.*

If you decide to "go back" to one of your snapshots, you can restore it as the working image. You select the snapshot you want to restore from a dialog box that lists all the snapshots you have taken.
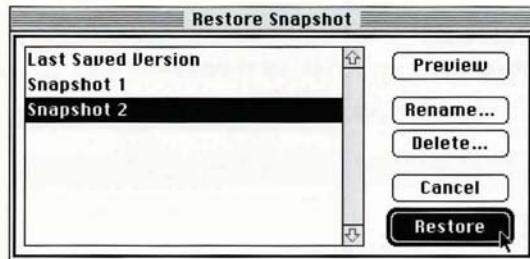
When you click Restore, Cachet adjusts the working image to match the appearance of the snapshot.

If you were working with a different tool palette when you took the snapshot, Cachet displays that tool palette and the settings you used to correct the image.

After you restore a snapshot, you can continue making changes, or you can save the snapshot solution in a script or in a file. See "To create a script" in the section on "Scripts" and "To save changes" in the section on "Files," both later in this chapter.

To rename a snapshot

• *Choose Restore Snapshot from the Playback menu.*

• *Select the snapshot you want to rename from the list in the dialog box.*

• *Click Rename.*

• *Type the new name in the new dialog box, and then click OK.*

• *Click Cancel to close the Restore Snapshot dialog box.*

When you take snapshots, you may find that it's faster and more convenient to let Cachet label them by number rather than type a descriptive name each time. However, if you take a lot of snapshots, the numbers may become less meaningful. You can rename these snapshots to identify them more clearly.

When you click Rename, a new dialog box prompts you for the name.

Rename Snapshot

Old Name: **Snapshot 2**
New Name: Final Snapshot

[Cancel]   [OK]

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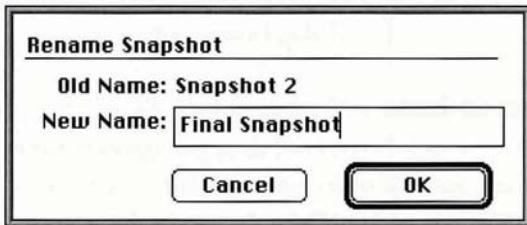
To delete a snapshot

• *Choose Restore Snapshot from the Playback menu.*

• *Select the snapshot you want to delete from the list in the dialog box.*

• *Click Delete.*

• *Click Cancel to close the Restore Snapshot dialog box.*

You can delete snapshots as you work to get rid of any that you no longer need. You can select the snapshots you want to delete from the Restore Snapshot dialog box. You can preview them before you delete them.

When you click Delete, a new dialog box displays the name of the snapshot and asks you to confirm that you want to delete it. If you click OK, the snapshot is permanently removed from memory, and its name is removed from the snapshot dialog boxes.

Scripts:

Use these permanent records of changes to make the same corrections to other images

As you work with an image, you can capture all the changes you make and save them as a permanent record called a **script.** You can then use the script in several ways:

• For groups of images that all have the same problems, you can correct one of the images, save the script, and then apply the script to the rest of the images instead of correcting each one individually.

• Even though Cachet uses a low-resolution version of the working image for your interactive session, it still needs to process the complete image file whenever you print, save, or create color separations. So, when you need to work with large image files, you can work more quickly if you correct an image scanned at low resolution, save the corrections in a script, and then apply the script to the same image scanned at a higher resolution.

• You can also use scripts as a quick way to save different versions of the image as you work. Unlike snapshots, which are temporary, scripts are permanent and can be used to recreate a series of color corrections at any time. Interim scripts are particularly valuable if your system fails while you are working.

Scripts are saved as permanent files on your disk and are always available until you remove them from the disk.

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To create a script

• *Correct your image.*

• *Before you choose Save or Save As from the File menu, choose Save Script from the Playback menu.*

• *Type a name for the script in the dialog box.*

• *Click Save.*

As you work with an image, Cachet records all of your operations. You can save this record as a script at any time during color correction. The Save Script dialog box prompts you for a name for the script.

```
┌──────────────────────────────────────────────┐
│           🗁 Scripts ▼                          │
│  ┌──────────────────────┐⇧    ⊂⊃ Station 4     │
│  │                      │     ┌──────────┐     │
│  │                      │     │  Eject   │     │
│  │                      │     └──────────┘     │
│  │                      │     ┌──────────┐     │
│  │                      │     │ Desktop  │     │
│  │                      │     └──────────┘     │
│  │                      │     ┌──────────┐     │
│  │                      │⇩    │   Save   │     │
│  └──────────────────────┘     └──────────┘     │
│  Save Script File As:         ┌──────────┐     │
│  ┌──────────────────────┐     │  Cancel  │     │
│  │Script 1│             │     └──────────┘     │
│  └──────────────────────┘                      │
└──────────────────────────────────────────────┘
```
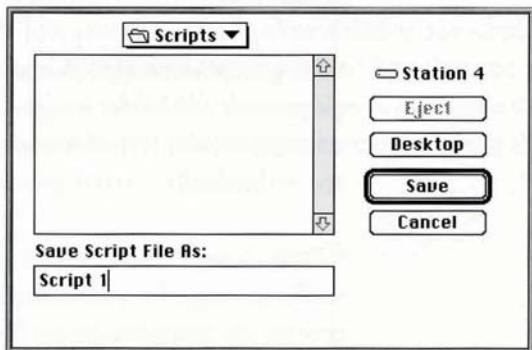
When you click Save, Cachet saves the script file on your disk. You can rename or remove these files as you would any standard Macintosh file. You may want to create a folder for all of your scripts.

CAUTION:
If you plan to create a script, be sure to choose Save Script **before you choose Save or Save As.** Choosing Save or Save As applies your corrections to the data in the image file and deletes Cachet's internal record of your changes.

To apply a script

• *Open the image you want to change.*

• *Choose Apply Script from the Playback menu.*

• *Select the script you want from the dialog box.*

• *Click Open.*

You can apply a script to any working image. When you choose Apply Script, Cachet displays the standard directory dialog box. You can use this dialog box to select the script.

```
┌─ Scripts ▼ ─┐
  D Final Script        ⇧        ⊂⊃ Station 4
  D Script 1
  D Script 2                     [  Eject  ]
                                 [ Desktop ]

                                 (  Apply  )
                        ⇩        [ Cancel  ]
```
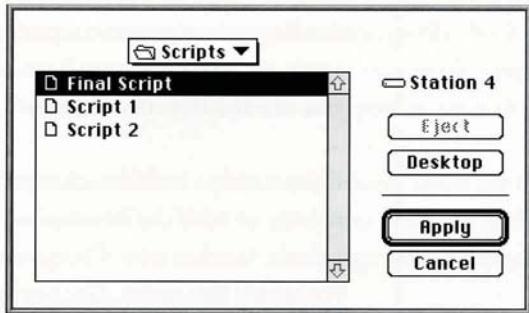
When you open the script, Cachet performs the same sequence of operations that you originally performed when you created the script. Cachet shows the progress of this operation.

> **CAUTION:**
> When you apply a script, the operations recorded in the script are performed on the most recently saved version of the working image. Any changes you make but do not save before applying the script will be lost.

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Once the script is applied, you can make additional changes or save the image with the Save or Save As command. If you don't like the results, you can choose Undo immediately after you apply a script to restore the original image. You can also use the Revert command to restore the original image after you apply a script. You may have to adjust the image window after you use the Revert command.

If your script includes changes made with the Orientation palette or with the constraint tools in the Selective Color palette, Cachet asks if you want to apply these changes when you apply the script. Cachet applies constrained selective color changes to the same regions of the working image as were outlined with constraint tools in the image with which you created the script. Unless the two images are more or less identical, the constrained selective color changes are probably not appropriate.

> ⚠ There are Orientation or Selection operations in this Script. Do you want to apply those changes?
>
> ─ Orientation or Selection Changes ─
> ○ Apply all changes.
> ◉ Omit Orientation and Selection changes.
>
> [Cancel]   [**Apply**]
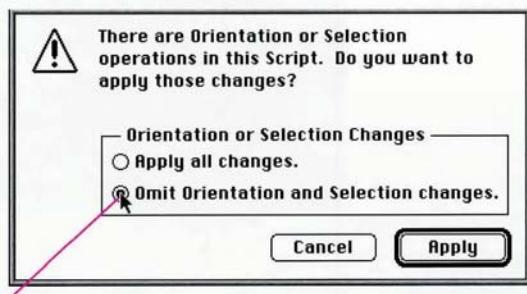
Click here if the selective color and orientation changes in the script are not appropriate for the image you are correcting.

Files:

When you save changes in a file, the changes are permanent
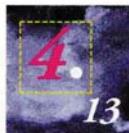
In Cachet, the best time to save images in files is usually when you're through making color corrections. For large files, saving can take a long time. Saving also permanently changes the image file. So it's better to use snapshots and scripts to save as you work, and then save the image in a file when you're sure you've got it the way you want it.

As in most Macintosh applications, there are two ways to save images in files. You can save your changes, replacing the original image. Or you can save the image with a different name, leaving the original image file intact.

You can save images you've corrected with Cachet in any of the following file formats: TIFF-RGB, PICT, Adobe Photoshop, or Raw-RGB. See "Files and File Formats" in the section on "The Software" in Chapter 6 for explanations of these formats.

This section does not explain how to generate color separations using the Save Separations command on the File menu. You'll find this information in Chapter 5 under "Color Separations."

To save changes

• *Choose Save from the File menu.*

You can save changes you make to an image, permanently replacing the original image with the new image data. When you save changes, Cachet saves the new image in a file with the Cachet icon. This icon shows the format of the file. The format is the same as the format you used to open the file. Cachet also resets all the color settings for the Cachet tools to zero.

CAUTION

You cannot restore the original image after you choose Save. If you want to save the new image without destroying the original, use the Save As command (see next page). If you want to save interim versions of the image as you work, see the section on "Snapshots" in this chapter. If you want to save color settings without changing the original image, see the section on "Scripts" in this chapter.

To save the working image with a different name

• *Choose Save As from the File menu.*

• *Type a new name for the file.*

• *Select a file format from the Format pop-up menu.*

• *Click Save.*

You can save the working image with a different name if you want to save the changes you've made and preserve the original image. When you choose Save As, Cachet prompts you for the name, location, and format of the new file:

☐ User Images ▼		
☐ After a Ride		⬜ Station 4
☐ House		
☐ New UP		Eject
☐ On a Picnic		
☐ On the Dock		Desktop
☐ Puddle Stomping		
☐ Sunny Picnic		Save
☐ Vegetable Basket		
Save Document as:		Cancel
Working Image		
Format: TIFF ▼		
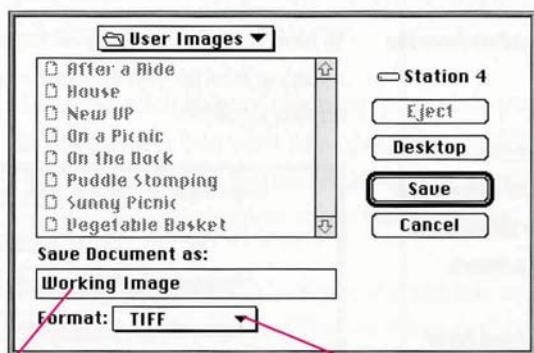
Type the new name here.   *Click here to select a new format for the copy, if you want.*

You can save the file in TIFF-RGB, PICT, Adobe Photoshop, or Raw-RGB format. See "Files and File Formats" in the section on "The Software" in Chapter 6 for explanations of these formats.

After Cachet saves the new file, it becomes the new working image.

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To save an image in compressed format

• *Choose Export from the File menu.*

• *Select a plug-in module from the Export using list.*

• *Choose No Corrections from the Correct for Printer list unless you want to save device information for one of the listed printers.*

• *Choose the sharpening level you want, or choose None for no sharpening.*

• *Click Export.*

• *Select options in the dialog box.*

• *Click OK.*

You can compress and de-compress image files with plug-in modules compatible with Adobe Photoshop. Because color image files are so large, you may want to compress your images when you are not working on them.

When you choose Export from the File menu, Cachet displays a dialog box so you can choose a plug-in module, and set other export options.

Choose a plug-in module for file compression from this list.

Usually, you'll choose No Corrections here.
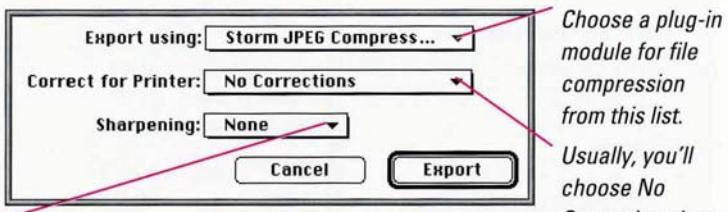
Choose the sharpening level you want.

Correct for Printer When you are saving an image in compressed format, you generally don't need to save device information, so you can usually leave Correct for Printer set to No Corrections. However, if you plan to open the compressed file in another image editing application and then print the file from that application on a three-component (RGB or CMY) device, you can save device-specific printing information in your compressed image file.

Sharpening You can sharpen your image before saving it. Sharpening is a process of image enhancement that results in a "crisper" looking image. You can choose None, Low, Medium, High, or Maximum. If you re-open the compressed file in Cachet or another image editing application, you will see the results of sharpening. (For an example of the effects of sharpening, see the "Sharpening" sidebar on page 5.16.)

You may also use the Correct for Printer and Sharpening menus if you are printing on a printer that is accessed through a plug-in module instead of the Macintosh Chooser. (For information about printing through plug-in modules, see "To print using a plug-in module" in the section on "The Early Proof" in Chapter 5.)

After you click Export, the plug-in module you selected displays its own dialog box with any options or settings you need to select. Refer to the documentation that came with the plug-in module for information about these options.

For more information, refer to the sidebar on plug-in modules on page 1.6, or refer to "Plug-In Modules" in the section on "The Software" in Chapter 6.

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Oops!

**When you make changes
you don't want to save,
Cachet can help**

Color correction is an iterative
process. Cachet streamlines the
process, but you're still bound
to make some changes that you later decide aren't quite right.

Sometimes it's easy to see right away that you didn't get the
result you wanted from a change. But sometimes, you go
through several steps before you realize you need to back up.
So Cachet gives you three ways to recover from wrong choices
or accidents:

• You can undo the last operation you performed.

• You can reset some or all of the tools in the palette you're
currently working with.

• You can get rid of all the operations you've performed since
you last saved the image, reverting to the original.

Of course, you can also use snapshots to save and restore
interim versions of the image. See "Snapshots" in this chapter.

To undo the last change

• *Choose Undo from the Edit menu.*

You can undo many of the operations in Cachet **if you choose the Undo command immediately after you perform the operation**. For example, if you are selecting several colors for selective color correction and you accidentally select the wrong one, you can use the Undo command to undo the last selection, leaving the rest of the selection intact. You can also undo the effects of restoring snapshots and applying scripts.

When you choose Undo, the command name changes to Redo. If you then choose Redo, Cachet performs the operation you just undid.

CAUTION:
You cannot undo any of the commands in the File menu.

To reset the settings in the current tool palette

• *To reset an individual tool, hold down the Command key and click the tool.*

• *To reset all the tools, click the Reset button in the tool palette.*

As you work with a tool palette, you may change the settings for one or more of the tools in that palette. You can reset an individual tool to remove all the changes you've made with that tool. Or you can reset the settings for all the tools.

When you reset all the tools, Cachet generally displays the image as it appeared when you most recently opened the tool palette. If you save the image and then make additional changes without switching to another palette, the Reset button displays the image as it appeared when you last saved it.

To revert to a previous version

• *Choose Revert from the File menu.*

You can always restore the last version of the image that you saved, regardless of how many operations you have performed or which tool palettes you have used. When you choose the Revert command, Cachet asks you to confirm that you want to discard all the changes you've made since you last saved the image.

If you don't remember what the last version you saved looks like, you can preview it by restoring the snapshot named "Last Saved Version." For more information, see "To preview snapshots" earlier in this chapter.

> **CAUTION:**
> You cannot undo the Revert command.

Printing

5.

With Cachet, you can print color images directly on a color printer. Or you can prepare color-separation files that you can use to generate color separation films on an imagesetter.

In both cases, Cachet uses EfiColor device profiles to achieve faithful color reproduction. A device profile is a collection of information about a printer or printing method. It contains all the information that Cachet needs to reproduce a color image faithfully using that printer or printing method. As long as you have an EfiColor device profile for the printer you want, you can print from Cachet and know that the colors in the printout are a faithful rendering of the true colors in your image.

Of course, because of the limits of printing devices, not every picture will print perfectly on every printer. So Cachet has two tools that you can use to check for color reproduction problems before you print—a gamut alarm and a color meter.

This chapter explains how to get an "early proof" on a color printer and how to make color separations for professional color reproduction. It also explains how to use the gamut alarm and the color meter.

Color Checks:

Before you print, you can check for out-of-gamut colors and measure color values

Every printer or printing method has a **gamut**—the range of colors that it is capable of reproducing. Each image also has a gamut—the range of colors that make up the image. Sometimes, the gamut of the printer and the gamut of the image do not match. Your image may contain **out-of-gamut colors**—that is, colors that your printer cannot reproduce.

Whenever you print or create color separations, Cachet automatically adjusts the gamut of your image to fit within the gamut of the printing method you choose. However, if you want to adjust out-of-gamut colors manually, you can use Cachet's **gamut alarm** to determine which colors are out of the gamut of your reproduction method.

You may also want to check the values of individual colors with Cachet's **color meter** before you print. You can measure the RGB, CIELAB, and CMYK values of any color in your image. The color meter gives you a numerical reading of the colors in your image.

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It's the final printing method that counts

When you check for out-of-gamut problems, always specify the final reproduction method you plan to use.

For example, suppose you are planning to produce your final color proofs on an Agfa system and then print your publication on coated stock using a sheetfed press. In this case, you should choose **SWOP - Coated** from the Target Printer menu, even if you're going to use a color printer to produce an early proof before you make color separations.

When you print, Cachet will automatically produce a fit between your image and the early color proof. If you adjust the image for the color printer, you'll have to adjust it again when you get ready to make color separations, and the information you get from the early proof will be less reliable.

To check for out-of-gamut colors

• *Choose Gamut Alarm from the Tools menu.*

• *Choose a printer or printing method from the Target Printer pop-up menu in the Gamut Alarm window.*

• *Click Check.*

When you get ready to print, you can use Cachet's gamut alarm to check your image for colors that your printing method cannot reproduce.

Target Printer:	SWOP-Coated ▼
Sensitivity:	9

Turn up the sensitivity to find more of the colors outside the printer's gamut.

Check
Show

When you click Check, Cachet analyzes the colors in your image and compares them to the capabilities of your printer.
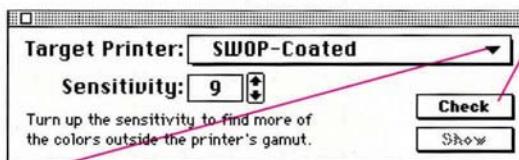
Click here for a pop-up menu of printers. You select the printing method you plan to use for your final reproduction.

You always choose the printing method that you plan to use for your final reproduction. When Cachet has finished analyzing the image, it briefly highlights all the areas that are out of the gamut of the printing method you chose. If necessary, you can then adjust the colors (typically using the saturation and lightness tools), and then click Check again to re-check the image.

To show out-of-gamut colors

• Click and hold the Show button in the Gamut Alarm window.

After you have checked the image with the Check button, you can view the problem colors again with the Show button in the Gamut Alarm window. Cachet highlights the out-of-gamut areas of the image as long as you hold down the Show button.
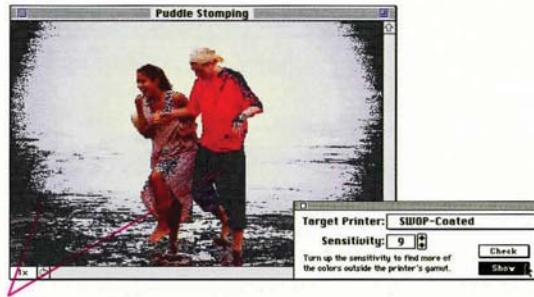
The colors in the highlighted areas are out of gamut for your printer.

See the sidebar on the next page for guidelines on adjusting out-of-gamut colors

What to adjust when colors are out of gamut

When colors are out of gamut, you don't *have* to do anything. Cachet automatically adjusts the gamut of your image to the gamut of your printer or printing method. Nevertheless, you may want to make your own adjustments. Here are some guidelines.

• If you have a few out-of-gamut colors in the background of your image, let Cachet make the adjustments automatically.

• If your visual center of attention is out of gamut, you can get involved. However, if you adjust the image so there are *no* out-of-gamut colors, your image may appear too pastel.

Therefore, the best results are usually achieved with a moderate amount of out-of-gamut colors.

• Most out-of-gamut problems are saturation problems. If a lot of the colors across the entire image are out of gamut, adjust the overall saturation.

• If the out-of-gamut colors are localized—maybe they all appear in the reds—use selective color correction. You don't want to reduce the overall saturation just to compensate for one part of the image that is oversaturated. (However, if most of the out-of-gamut colors are skin tones, try to solve the problem by correcting the overall saturation—skin tones are difficult to correct selectively.)

• Before drastically reducing the saturation, though, try making small lightness adjustments. Because printer gamuts are widest around the midtones, a small increase in the lightness of a shadow color or a small decrease in the lightness of a highlight color may put them in the gamut without sacrificing saturation. Big changes in lightness, however, are not advisable since they might cause significant loss of detail.

To adjust the sensitivity of the gamut alarm

• Click the up arrow to increase the Sensitivity setting in the Gamut Alarm window and find more out-of-gamut colors.

• Click the down arrow to decrease the Sensitivity setting and find fewer out-of-gamut colors.

When you check for out-of-gamut colors, you may find that the gamut alarm is either too sensitive or not sensitive enough for your purposes. In other words, you may want to be warned about more (or fewer) out-of-gamut colors than the gamut alarm highlights automatically.

You can adjust the sensitivity of the gamut alarm to get just as much warning as you want. You use the sensitivity setting in the Gamut Alarm window. If you want to be warned about *all* out-of-gamut colors, use the highest setting. On the other hand, if you want to be warned only on colors that are extremely out-of-gamut, you can use a lower setting.
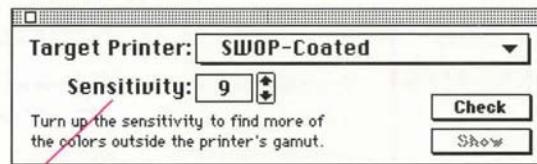
This controls how many colors Cachet highlights when you check for out-of-gamut colors.

The gamut alarm highlights more colors with the Sensitivity set to 9 ...

...than it does with the Sensitivity set to 6.

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With Cachet, you usually don't need to measure color.

But sometimes, the color meter can give you an extra measure of control. For example, in small areas of color, it may be difficult to see exactly what's in the image. If you know that one of these areas should be a neutral gray, you can check the color values. In RGB, if the color values are close to each other, you know that the selected color is neutral. Alternatively, in a CIELAB representation, you know that the selected color is neutral (or gray) if the **A** and **B** values are both very close to zero.

If you are used to specifying CMYK values, you may also want to check your visual adjustments against the actual percent values that translate into dot sizes and densities on the printed page.

To measure color values

• *Choose Color Meter from the Tools menu.*

• *Choose a mode from the pop-up menu in the Color Meter window.*

• *If you are checking CMYK values, choose the target printer and GCR level.*

• *Click the color you want to measure in the image. Or hold down the mouse button to measure values as you drag.*

You can measure colors in an image with Cachet's color meter. This tool gives you a numeric reading of the color values, as well as showing visually their position within a given **color space.**
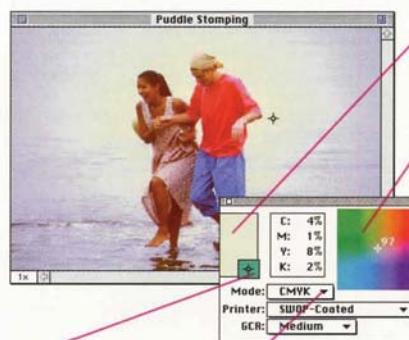
This swatch shows the color under the color scope.

*The **color map** gives you a picture of the position of the color in the CIELAB color space.*

*The **color scope** measures values continuously when you hold down the mouse button and move the cursor over the image.*

Click here to choose RGB, CIELAB, or CMYK values. If you choose CMYK values, you must also select a target printer, and you can also choose a GCR level.

When you choose Color Meter from the Tools menu, the **color scope** is automatically selected. When you move the pointer into the image area, the cursor becomes a scope. When you click, Cachet reads the values of the color under the scope. It displays the color as a swatch in the Color Meter window. It also displays the position of the color on a color map. You can drag to see the color values for different color areas across the image.
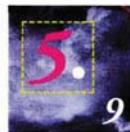
The meter shows color values in three color spaces: RGB, CIELAB, and CMYK (for a specific reproduction method). It also shows you the position of the color in the CIELAB color space with a color map. The number on the map represents the lightness of the color, where 0 is black and 100 is white. The position of the number indicates the color's position in this color space.

The Early Proof:

You can use color printers for quick, inexpensive color proofs

With Cachet, you can use a color printer to get a quick printout of your image. You can print directly to a variety of color printers. For a complete list, refer to the *EfiColor Profiles Guide*.

You can use the Print command on the File menu to print an image on the printer you have designated with the Chooser. However, a few color printers are only available through plug-in modules. If your printer is one of these, you need to use the Export command on the File menu when you're ready to print.

Whichever way you print, you can specify the appropriate EfiColor device profile, the page and image size, the orientation, and other printing options, depending on the printer you are using. This section gives the details.

How device profiles assure consistent color

Different kinds of color printers produce color in different ways.

Some printers, such as the Kodak XL7700, the Fiery/Canon CLC1, and the Fiery/Canon CLC500, produce continuous tone images. Others, such as the QMS Color Script 100 , are halftone printers.

Printers also differ in the number of colorants they use. The Kodak XL7700 uses just three: cyan, magenta, and yellow. The Fiery/Canon CLC1, Fiery/Canon CLC500, and the QMS ColorScript are CMYK printers. On the Macintosh, the HP PaintWriter can be accessed only as an RGB device.

To get consistent results on such diverse printers, Cachet naturally has to make a lot of adjustments to the color values in an image. To make these adjustments, Cachet uses EfiColor device profiles that characterize particular printers and printing methods.

• When you use the gamut alarm to check for out-of-gamut colors, Cachet uses a device profile to determine which colors your printer will not be able to reproduce.

• When you measure CMYK values with the color meter, Cachet uses a device profile to determine the CMYK values that are necessary to reproduce the color you measure on the printer you specify.

• When you print directly to a printer, Cachet uses the device profile for that printer to map the gamut of your image to the gamut of the printer and then convert the RGB values in the image file to the appropriate CMY, CMYK or RGB values for the printer you are using.

• When you make color separations in Cachet, and then import the files into a page layout program for printing, Cachet uses a device profile to make color separations that will produce the most faithful reproduction of your color image with the printer or printing method you plan to use.

Cachet comes with EfiColor device profiles for a variety of color printers, as well as several offset printing configurations. The Cachet Installer installs these device profiles automatically when you install Cachet. However, you can choose to install only those profiles you need for the printers and printing methods you plan to use—and save some disk space.

If Cachet doesn't have a device profile for the printer or printing methods you're using, you can call the technical support team at EFI for advice. Refer to the technical support information included with Cachet.

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To set up the printed page

• *Choose Page Setup from the File menu.*

• *Choose the standard page setup options that apply to your printer.*

• *Click OK again to close the Page Setup dialog box.*

You can specify the paper size for your printout. You can also specify the orientation of the image on the page—horizontal or vertical—as well as a percent reduction or enlargement. Your printer may have a variety of other options for such things as printer effects and image inversion. These options all appear in the Page Setup dialog box and should be described in the documentation that comes with your printer.

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To print directly from Cachet

• *Make sure you have designated the printer you want with the Chooser.*

• *Choose Print from the File menu.*

• *Specify the number of copies and the type of paper feed.*

• *Choose your printer in the Target Printer pop-up menu.*

• *Click Size to change the height, width, or resolution of the image before printing.*

• *Click the Halftone button to modify the halftone setup if your printer supports halftoning.*

• *Choose the GCR level you want from the GCR pop-up menu.*

• *Choose the sharpening option you want from the Sharpening pop-up menu.*

• *Click OK.*

When you print on a printer you have selected with the Chooser, Cachet uses the Print dialog box for the printer you selected. You must also specify the target printer in the Print dialog box. In addition, you can set GCR and sharpening levels, and for PostScript printers you can change the size and control the halftone setup.

Selecting a target printer You must specify the target printer. A pop-up menu lists all the printers you can use with Cachet. When you choose one of these printers and click OK, Cachet maps the gamut of your image to the gamut of the printer and produces the data necessary to print the image.

| LaserWriter "Canon Fiery" | | 7.1 | Print |
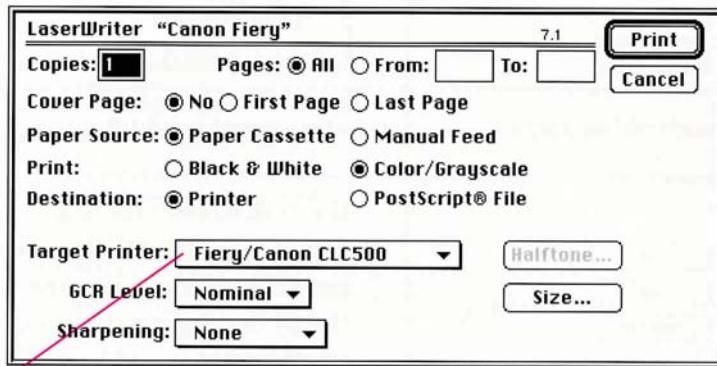
Always specify the target printer when you print. Cachet then converts the image data to the appropriate CMYK, CMY, or RGB data for your printer.

CAUTION
Some printers may also offer other useful options. You can refer to the documentation that comes with your printer for explanations of these options. Using these printer-specific options, however, may affect the appearance or quality of your printed image.

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Gray component replacement (GCR)

Whenever you print, create color separations, or use the color meter to measure color values in an image, you have control over the amount of gray-component replacement (GCR) that Cachet uses, provided that you select a CMYK printer or printing method.

Gray component replacement (GCR) is a technique for removing from the color separations some or all of the cyan, magenta, and yellow that produce gray and replacing them with an appropriate amount of black.

If the EfiColor device profile for the target printer you've selected supports different levels of gray component replacement, you will be able to choose the level you want from the GCR menu. The available GCR levels are None, Low, Medium, High, and Maximum. If your printer or printing method does not support different GCR levels, the GCR pop-up menu is set to Nominal and cannot be changed.

Changing the image size and resolution If you're printing on a PostScript printer, you can click the Size button to change the image size and resolution before printing. When you click the Size button, a new dialog box appears. You can use this box to specify the height or width you want. These changes affect only the printed image, not the image file itself.

Image size...	Current:	New:	Unit:
Width:	2.68	2.68	inches ▾
Height:	1.79	1.79	
Resolution:	300.00	300.00	pixels/inch ▾
File Size (Kb):	1,266	1,266	805 н 537
☒ Preserve File Size		Cancel	OK
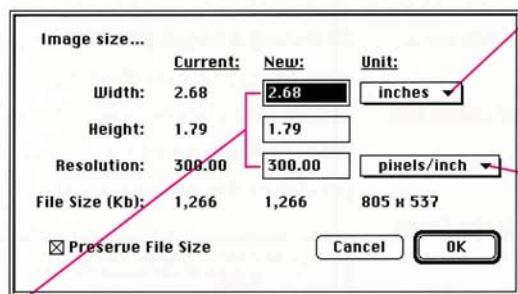
You can specify dimensions in inches, centimeters, picas, or points.

You can specify resolution in pixels per inch or pixels per centimeter.

Specify the height, width, or resolution that you want. Cachet calculates whichever values you don't enter.

You need to enter the height, width, or resolution you want. Cachet calculates the remaining values, preserving the **aspect ratio** of your image as it appears on the screen. If you need to change the aspect ratio to meet page layout requirements, you can either:

• crop the image using Cachet's cropping tool (see "To crop an image" in the "Orientation" section of Chapter 1); or

• make color separations, import them into your page layout document, and adjust the size there (see "Color Separations" later in this chapter).

Changing the halftone setup PostScript devices let you modify the halftone setup, including the line frequency, screen angles, and dot shape. When you print to such a device, you can click the Halftone button in the Print dialog box to change the halftone setup. When you click the Halftone button, Cachet displays the following dialog box:
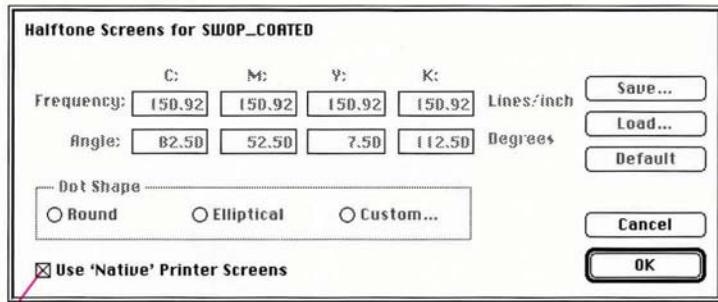
Halftone Screens for SWOP_COATED					
	C:	M:	Y:	K:	
Frequency:	150.92	150.92	150.92	150.92	Lines/inch
Angle:	82.50	52.50	7.50	112.50	Degrees

Dot Shape
○ Round   ○ Elliptical   ○ Custom...

☒ Use 'Native' Printer Screens

Save...
Load...
Default

Cancel
OK

Uncheck this box to change line frequency, screen angles, and dot shape.

Halftone Screens for swop_coated					
	C:	M:	Y:	K:	
Frequency:	150.92	150.92	150.92	150.92	Lines/inch
Angle:	82.50	52.50	7.50	112.50	Degrees

Dot Shape
● Round   ○ Elliptical   ○ Custom...

☐ Use 'Native' Printer Screens

Save...
Load...
Default

Cancel
OK
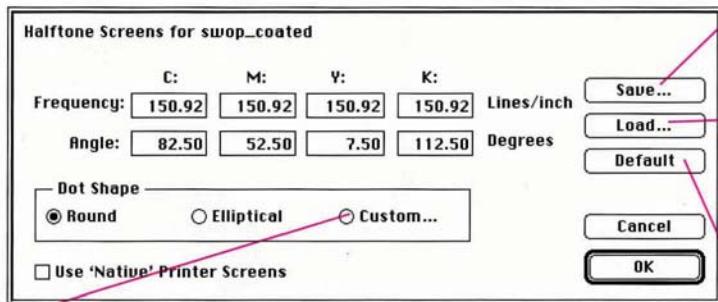
Click here to save your halftone setup.

Click here to load a halftone setup you have previously saved.

Click here to use Cachet's default halftone setup.

Click here if you want to enter PostScript code to customize the dot shape.

Sharpening the image Whenever you print on a color printer, you have the option of sharpening your image first. Sharpening often produces a "crisper" looking printout. You can choose among the following sharpening levels: None, Low, Medium, High, or Maximum. (See the sidebar on the next page for more information.)

Sharpening your image at output time

Whenever you print on a color printer, generate color separations, or export an image file in compressed format, you have the option of sharpening your image first.

Sharpening is a process of image enhancement that results in a "crisper" looking image. When you sharpen an image, Cachet detects areas in the image where obvious changes in color occur and automatically increases the contrast or focus along these edges, giving the image a sharper overall appearance.

You can choose among the following sharpening levels: None, Low, Medium, High, or Maximum.

No sharpening

Low sharpening

Medium sharpening

High sharpening

Maximum sharpening

To print using a plug-in module

• *Choose Export from the File menu.*

• *Select the appropriate plug-in module from the Export using pop-up menu.*

• *Choose your printer from the Correct for Printer pop-up menu.*

• *Choose the sharpening level you want from the Sharpening pop-up menu.*

• *Click Export.*

• *Select options in the dialog box.*

• *Click OK.*

A few color printers are not accessible through the Macintosh Chooser, but rather through a plug-in module that comes with the printer. For more information on plug-in modules, refer to "Plug-in Modules" in the section on "The Software" in Chapter 6.

When you print using a plug-in module, you must choose the appropriate plug-in module and specify the target printer in the Export dialog box. In addition, you can sharpen your image before printing.

Selecting a target printer You must specify the target printer. A pop-up menu lists all the printers you can use with Cachet. When you choose one of these printers and click OK, Cachet maps the gamut of your image to the gamut of the printer and produces the data necessary to print the image.

Export using:	**Storm JPEG Compress...** ▼
Correct for Printer:	**Kodak HL7700(Chooser)** ▼
Sharpening:	**None** ▼
	Cancel **Export**

Choose the plug-in module here

Specify the printer you're using.
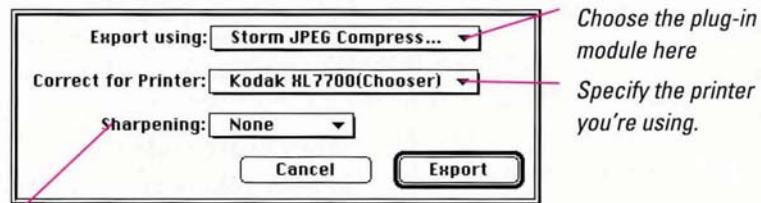
Choose a sharpening level if you want.

CAUTION
Some plug-in modules may also offer other useful options. You can refer to the documentation that comes with your printer for explanations of these options. Using these printer-specific options, however, may affect the appearance or quality of your printed image.

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Most full-color printing processes produce color images by first separating them into four monochrome images called **color separations.** These four images are then printed in four different colors to produce the full-color image. The four colors–or printing primaries–are Cyan, Magenta, Yellow, and black (CMYK).

Color separation is typically an expensive, time-consuming process that requires a lot of expertise. But with Cachet, you don't need to do all of the calibrating and fine-tuning that's required by the traditional color separation process. Cachet uses the EfiColor **device profiles** to calculate the color separation values appropriate to the printing process you are using. As with color printers, Cachet converts the RGB values that make up your image to CMYK values that will reproduce the image on the proofing system you choose, faithfully rendering the true colors in your image.

When you've made all your color corrections and you're ready to make color separations, you follow three steps:

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Step 1. Create color separations in Cachet.

Cachet produces **color separation files** that will faithfully reproduce your image, using the printing method you select. You need to create color separation files for each printer or reproduction method you plan to use. In other words, if you produce early proofs on a color printer but still plan to use a professional proofing system before going to press, you'll need to generate two sets of color separation files—one for the color printer, and one for the professional proofing system.

Step 2. Import the color-separation files into a page layout program.

You can place the color-separation files on pages in most major page layout programs. You can crop them and change their size without affecting the color reproduction.

Step 3. Use the page layout program to print the publication.

Finally, you print the publication on a color printer, or generate **color separation films** on an imagesetter. Whichever way you print, your page layout program uses the color data created by Cachet to reproduce your color images faithfully.

If you're working with a service bureau

If your service bureau has Cachet, you don't need to make color separations yourself. Just send your image files to the bureau and let the technicians there make the separations. Your service bureau may have device profiles that specifically describe the bureau's printing method.

If your service bureau doesn't have Cachet, you do need to make color separations. Make sure you choose the appropriate options for the printing method, the proofing method, and the screen size from the Target Printer pop-up menu. Then send your color separation files to the bureau, along with copies of the image files for reference.

To create color separations

• **Choose Save Separations from the File menu.**

• **Choose a printer or printing process from the Target Printer list.**

• **Click the file format you want in the File Format box.**

• **Choose the GCR level you want if your printer or printing process supports GCR.**

• **Choose the Sharpening level you want.**

• **Choose the file options you want from those displayed in the bottom half of the dialog box.**

• **Click OK.**

To make color separations, you create a file or set of files that you can use to print composite proofs on a color printer or produce color separation films on an imagesetter. You create these **color separation files** with the Save Separations command on the File menu.

When you choose Save Separations, Cachet displays a dialog box you use to set options for your color separation files.

Choose whether to save your separations in EPS, TIFF-CMYK, Raw-CMYK, or Raw-RGB format.

*Choose the reproduction method you will be using—generally a printing method such as **SWOP**.*

```
┌─ File Format ──┐  ┌─ Printer options ──────────────────┐
│ ⦿ EPS          │  │ Target Printer: [ SWOP-Coated    ▼] │
│ ○ TIFF - CMYK  │  │                                     │
│ ○ Raw - CMYK   │  │ GCR Level: [ High    ▼]             │
│ ○ Raw - RGB    │  │                                     │
└────────────────┘  │ Sharpening: [ None   ▼]             │
┌─ Encapsulated PostScript File Options ──────────────────┐
│ ┌─ File Format ──┐  ┌─ Preview Picture ─┐  ┌─────────┐  │
│ │ ○ Normal       │  │ ○ None            │  │Halftone…│  │
│ │ ⦿ DCS (5 files)│  │ ○ Black and White │  └─────────┘  │
│ │                │  │ ⦿ 256 Colors      │  ┌─────────┐  │
│ └────────────────┘  └───────────────────┘  │ Size…   │  │
│ ┌─ Data Format ─┐  ┌─ DCS Image Data ──┐   └─────────┘  │
│ │ ○ ASCII text  │  │ ○ Only in sub-files│              │
│ │ ⦿ Binary      │  │ ⦿ Also in main file│              │
│ └───────────────┘  └────────────────────┘              │
│                          ┌────────┐ ┌──────────┐       │
│                          │ Cancel │ │    OK    │       │
│                          └────────┘ └──────────┘       │
└─────────────────────────────────────────────────────────┘
```
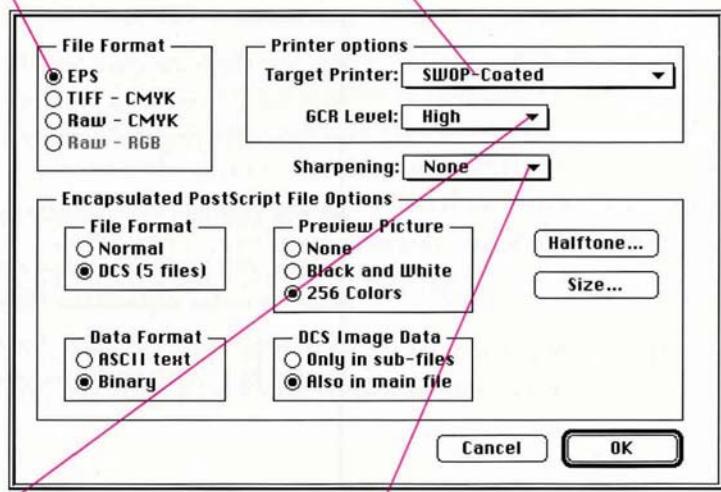
Choose the GCR level you want (if your printer supports GCR).

Choose the sharpening level you want.

These options change depending on the File Format you choose and are explained on the next two pages. You can save separations in four different file formats, and the options shown in the bottom half of the Save Separations dialog box vary depending on which file format you choose. The four file formats are:

- EPS/DCS
- TIFF-CMYK
- Raw-CMYK
- Raw-RGB

Most printers do not support all of these formats. Any that are not available appear grayed out in the dialog box. If you're not sure which format to use, refer to the sidebar on color separation file formats. Whichever file format you select, you can set additional options in the bottom half of the dialog box. Refer to the notes below.

When you click OK, Cachet prompts you to enter a name for the color separation files:

🖸 User Images ▼	⊂⊐ Hard Disk 2
🗅 House	**Eject**
🗅 New UP	
🗅 On a Picnic	**Desktop**
🗅 On the Dock	
🗅 Puddle Stomping	**New** 🗂
🗅 Sunny Picnic	
Please name separations file:	**Cancel**
Puddle Stomping.sep	**Save**
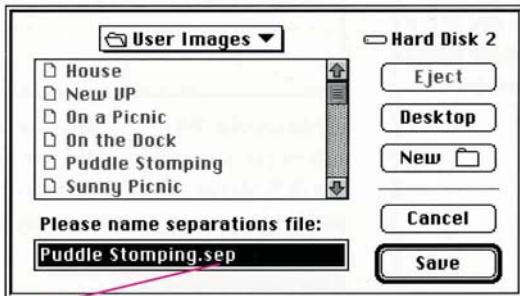
*Cachet adds the suffix **.sep** to the file name, but you can change it if you want.*

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EPS/DCS File Options If you are saving separations in EPS format, the bottom half of the dialog box lets you specify the File Format, Data Format, Preview Picture, and DCS Image Data options. In addition, you can use the Size button to resize the image, and you can use the Halftone button to change the halftone setup.

Normal format produces a single file with four separations.

DCS produces five files—four separation files (sub-files) and a control file (main file).

Use ASCII if you're working with PageMaker 4.0 or 3.02 Color Extension. Binary is more compact and faster to print.

This option saves space if you don't need to print color composite proofs on a color printer.

For many purposes, a black-and-white image is sufficient.

This option displays a blank frame.

If you need to see color on the screen, this option gives you a preview image with 256 colors.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌─ File Format ─┐   ┌─ Printer options ──────────────────┐  │
│  │ ◉ EPS         │   │ Target Printer: │ SWOP-Coated  ▼ │  │
│  │ ○ TIFF - CMYK │   │                                    │  │
│  │ ○ Raw - CMYK  │   │   GCR Level: │ High    ▼ │         │  │
│  │ ○ Raw - RGB   │   │                                    │  │
│  └───────────────┘   │   Sharpening: │ None    ▼ │        │  │
│                      └────────────────────────────────────┘  │
│  ┌─ Encapsulated PostScript File Options ──────────────────┐  │
│  │  ┌─ File Format ─┐   ┌─ Preview Picture ─┐  ┌─────────┐ │  │
│  │  │ ○ Normal      │   │ ○ None            │  │Halftone…│ │  │
│  │  │ ◉ DCS (5 files)│  │ ○ Black and White │  └─────────┘ │  │
│  │  └───────────────┘   │ ◉ 256 Colors      │  ┌─────────┐ │  │
│  │                      └───────────────────┘  │ Size…   │ │  │
│  │  ┌─ Data Format ─┐   ┌─ DCS Image Data ──┐  └─────────┘ │  │
│  │  │ ○ ASCII text  │   │ ○ Only in sub-files│            │  │
│  │  │ ◉ Binary      │   │ ◉ Also in main file│            │  │
│  │  └───────────────┘   └────────────────────┘            │  │
│  └─────────────────────────────────────────────────────────┘  │
│                                     ┌────────┐  ┌────────┐    │
│                                     │ Cancel │  │   OK   │    │
│                                     └────────┘  └────────┘    │
└─────────────────────────────────────────────────────────────┘
```
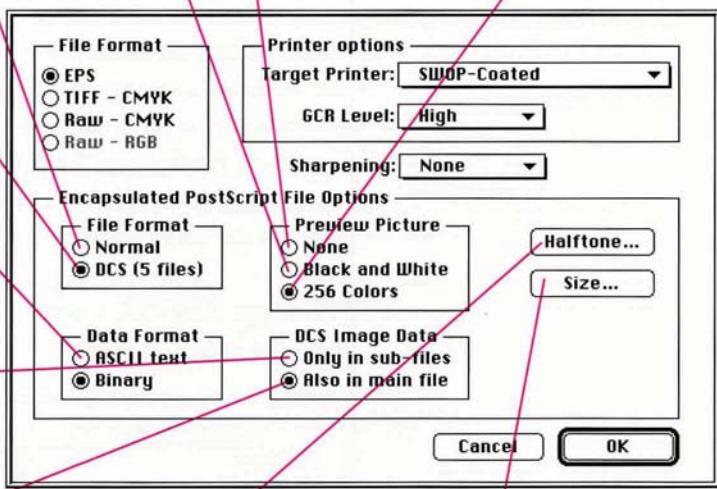
*If you choose this option, you can use the DCS files to produce color separations **and** to print color composite proofs on a color printer.*

Click here to change the line frequency, screen angles, and dot shape.

Click here to change the image size and resolution.

• **File Format.** You can choose Normal for standard EPS format, or DCS if you want to generate Desktop Color Separation files.

• **Data Format.** You also specify a data format. You should use the binary format unless your page layout program or other application requires ASCII data.

• **Preview Picture.** You can specify how you want the image to appear in your page layout application: as a blank frame, a black-and-white image, or a color image.

• **DCS Image Data.** If you choose the DCS file format, you must also specify whether you want the color separation data to appear only in the four separation files or also in the control file.

• **Size.** Click the Size button to change the image size and resolution before generating color separations. Cachet displays a dialog box you can use to specify the height or width you want. These changes affect only the printed image, not the image file itself.

Image size...	Current:	New:	Unit:
Width:	2.68	2.68	inches ▾
Height:	1.79	1.79	
Resolution:	300.00	300.00	pixels/inch ▾
File Size (Kb):	1,266	1,266	805 н 537

☒ **Preserve File Size**   [Cancel] [OK]
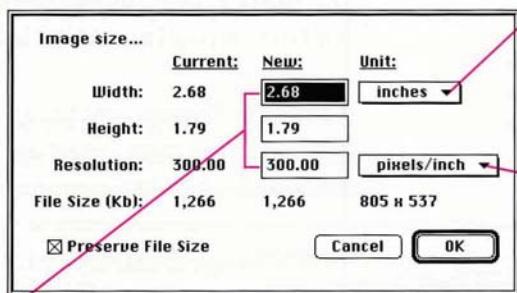
You can specify dimensions in inches, centimeters, picas, or points.

You can specify resolution in pixels per inch or pixels per centimeter.

Specify the height, width, or resolution that you want.

You need to enter the height, width, or resolution you want. Cachet calculates the remaining values, preserving the **aspect ratio** of your image.

• **Halftone.** Click the Halftone button to change the halftone setup—including the line frequency, screen angles, and dot shape—if your printer or printing method supports modifications of the halftone setup. Cachet displays the following dialog box:
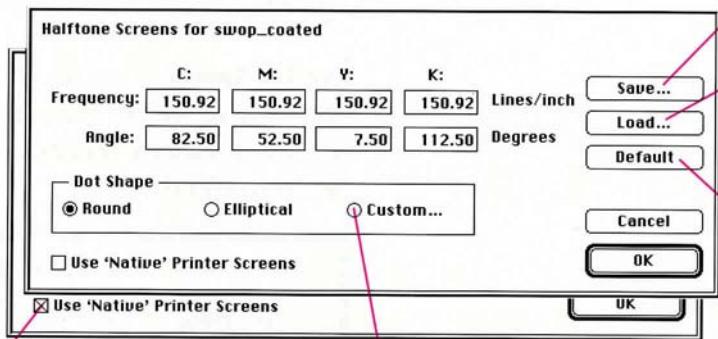
Click here to save your halftone setup.

Click here to load a halftone setup you have previously saved.

Click here to use the Cachet default halftone setup.

Uncheck this box to include the halftone setup in the color separation file.

Click here if you want to enter PostScript code to customize the dot shape.

If you leave the "Use Native Printer Screens" option checked, Cachet does not include halftone setup information in the color separation files. When you place the color separations in a page layout application or generate films on an imagesetter, the page layout application or imagesetter determines the halftone setup. If "Use Native Printer Screens" is un-checked, Cachet includes the halftone setup information in the color separation files.

> **CAUTION:**
> Check with your service bureau *before* including halftone setups in your color separation files. For the best results, your service bureau may prefer that you not include them. For more information on working with service bureaus, refer to the *EfiColor Profiles Guide.*

TIFF-CMYK File Options If you are saving separations in TIFF-CMYK format, the bottom half of the Save Separations dialog box includes a Size button you can use to change the image size and resolution before generating color separations. See the description of the Size button above under "EPS/DCS File Options."

Raw File Options If you are saving separations in Raw-CMYK or Raw-RGB format, the bottom half of the Save Separations dialog box includes options for specifying the color format and header size for the file.

File Format	Printer options
○ EPS	Target Printer: SWOP-Coated ▼
○ TIFF - CMYK	GCR Level: High ▼
● Raw - CMYK	
○ Raw - RGB	Sharpening: None ▼

Raw File Options
— Color Format —
● Interleaved   Width: 517   Header Size: 0
○ Planar   Height: 344

Cancel   OK
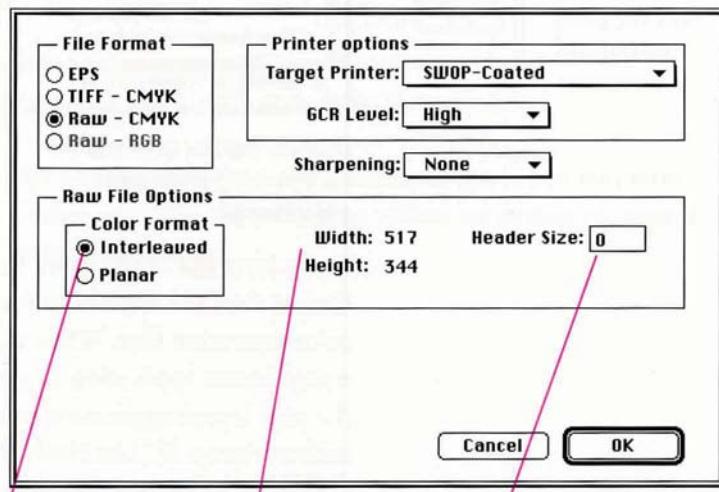
Click the Color Format you want.

Cachet displays the width and height in pixels here.

Specify the header size (usually 0).

You can save the color separation data in **interleaved** format (with the color components of each pixel listed together) or **planar** format (with the first color component for all pixels appearing first, followed by the second, and so forth). Use the format that is appropriate for the next device that will be used to read this file.

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Color separation files– What format to use?

You use the Save Separations command on the File menu to create color separations of an image you've corrected in Cachet. Cachet creates **color separation files** that you can include in a page layout application, open with another image editing application, or transfer to a non-Macintosh computer system for further work.

You can create color separation files in five different formats:

TIFF-CMYK Supported by current versions of most page layout applications. Creates a single color separation file containing image data for all four CMYK layers.

EPS Supported by most page layout applications. You can create EPS files in binary or ASCII format. Files in ASCII format are substantially larger than those in binary format, so you generally select ASCII format only if your application requires it.

DCS A variant of EPS originally developed by Quark for use with Quark XPress. Creates five separate color separation files–one for each CMYK layer, and one main control file.

Raw-CMYK A primitive format for storing color-separated images. Used only for exchanging separated images with computer systems that cannot interpret TIFF-CMYK, EPS, or DCS data.

Raw-RGB A special-purpose file format. Used only for creating color separation files you plan to print on 3-component non-PostScript devices such as the Kodak XL7700.

If you're planning to use your separated images in a page layout application or edit them using another Macintosh image editing application, you'll usually want to choose TIFF-CMYK, EPS, or DCS. The table below shows which formats you can use with a range of common applications.

Choosing Between TIFF-CMYK and DCS

If you're using the latest version of Quark XPress or PageMaker, you'll have to choose between two preferred formats: TIFF-CMYK and DCS. Here are some guidelines to help you choose:

• Cachet create a single file for each separated image in TIFF-CMYK format. On the other hand, there are five separate files for each image you separate and save in DCS format.

• TIFF-CMYK format generally takes less disk space than DCS format.

• Cachet can creates a **screen preview** for each separated image in DCS format. Page layout applications can use the screen preview to display the image.

• TIFF-CMYK files do not include a screen preview. Instead, page layout applications convert the CMYK values in the file to RGB values for display. As a result, moderate to gross color shifts may occur when you place TIFF-CMYK files into some applications. The images, however, will print correctly.

Application	Ver. #	TIFF-CMYK	EPS	DCS
Adobe Photoshop	2.0, 2.01	P	S	
Adobe Photoshop	before 2.0		P	
Aldus PageMaker	4.2	P	S†	P
Aldus PageMaker	4.01		S†	P
Aldus PageMaker	4.0		S‡	
Aldus PageMaker	3.02		S‡	
Aldus Preprint	1.5	P	S	P
Aldus Preprint	1.0		S‡	
Letraset ColorStudio	1.5	P		
Quark XPress	3.1	P	S	P
Quark XPress	3.0		S	P
Quark XPress	before 3.0			P

P = Preferred   †Supported with Aldus Preprint 1.5 or later
S= Supported   ‡Supported with EPS Data Format set to ASCII text.

Reference

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This chapter is your Cachet reference. The first section provides some basic reference information about Cachet. It describes the Cachet software, reference images, and file formats, explains plug-in modules, describes Cachet's printing support, and defines the system requirements for Cachet.

A menu-by-menu command reference provides a quick overview of what each command does and how it works. At the end of the chapter, you'll find a table of keyboard shortcuts that lists operations you can perform using the Shift, Option, and Command keys.

Throughout this chapter, you'll find cross-references to help you find more information in earlier chapters. These references appear with an arrow in front of them, like this:

➜ *"Exposure" in Chapter 2.*

This means you should refer to the section called "Exposure" in Chapter 2 to find more information.

The Software:

Here's what you need to
know about disks, files,
and system requirements

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This section provides some
basic reference information
about Cachet, including:

System Requirements The basic requirements your Macintosh
system must meet before you can use Cachet.

The Cachet Software The Cachet application, EfiColor
Processor, EfiColor database, reference images, supporting
files, and Cachet Installer.

Plug-in Modules Mini-programs that extend Cachet's capabilities.

Files and File Formats Four kinds of files you use with Cachet:
image files, color separation files, script files, and halftone
setup files.

Printing Support EfiColor device profiles ensure faithful color
reproduction of your image with a wide variety of printers and
printing processes.

System Requirements

To use Cachet, your Macintosh system must meet the following requirements:

CPU: Macintosh II family with math co-processor

Memory: At least 5 MB RAM (8 MB or more recommended)

Video card: 8-bit or 24-bit color video

Monitor: Color monitor, 13 inches or larger

Storage: 2-4 megabytes hard disk space for a minimum installation or approximately 20 MB for a complete installation, depending on the number and size of images you're working with

System software: System 6.0.5 or later with 32-bit QuickDraw, or System 7

Using 8-bit video If you use 8-bit color video, performance will be reduced. In particular you cannot get immediate updating of the image as you work with tools in the Exposure & Tone palette, and the quality of colors displayed is lower overall.

Compatibility with certain 24-bit video cards Some 24-bit video cards may not be able to update colors immediately as you work with the Exposure & Tone palette. Such video cards may cause system errors unless you uncheck the "Immediate feedback with millions of colors" option in the Performance section of the Preferences dialog box.

The Cachet Software

The Cachet software includes the Cachet application, the EfiColor database and EfiColor processor, a collection of reference images, a set of images to use with the tutorial in *Learning Cachet*, supporting files, and an Installer you can use to install what you need automatically. This section gives the details.

The Cachet Installer

The Installer automatically installs the Cachet application and supporting files on your hard disk. Refer to the *Start Here* guide for instructions on using the Installer. After you install Cachet, your Cachet folder should look something like this:

This folder contains the EfiColor database.

This plug-in module is included with Cachet.

This folder contains compressed reference images.

This folder contains uncompressed reference images

This is the Cachet application.

This folder contains images you use with the tutorial in Learning Cachet.
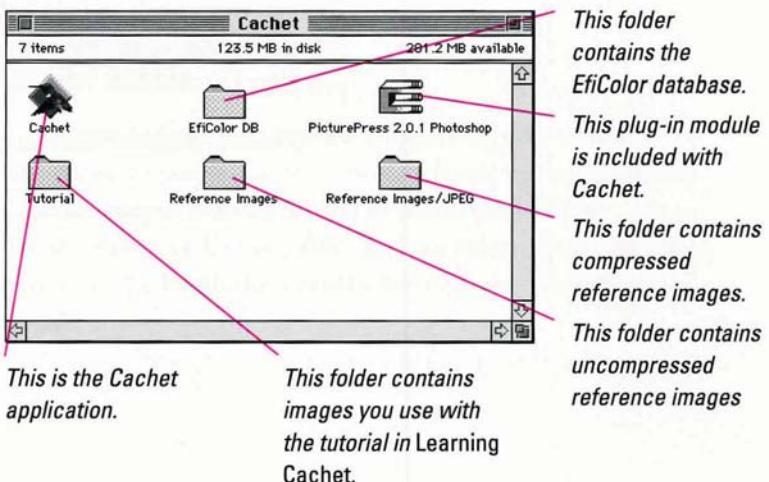
The Installer also places a file called EfiColor Processor in your system folder, and two files in the Preferences folder in your system folder: Cachet Preferences and EfiColor Preferences.

The Cachet application

The Cachet application runs under Macintosh Operating System 6.05 or later. To check the version number and serial number of your Cachet software, choose About Cachet from the Apple menu.

The EfiColor database

This folder contains the EfiColor database. This database includes a series of **device profiles** that Cachet relies on whenever you use the gamut alarm or the color meter, print an image on a color printer, or create color separation files.

You can choose not to install all the device profiles , but you will need a device profile for each printer or printing process you plan to use.

→ *"Printing Support" later in this section.*

Reference Images/JPEG
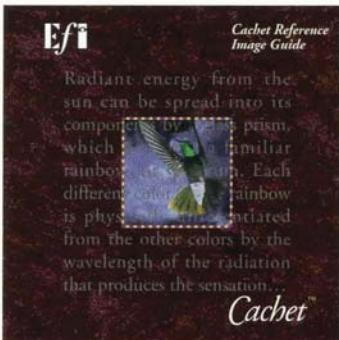
Reference images

Cachet comes with a set of reference images. These images have a gamma of 2.2 and were printed using color separations created in Cachet. You use these images as guides when you make color corrections.

The *Cachet Reference Image Guide* shows how the reference images look when printed. The images represent a variety of lighting conditions and subjects.

➔ *"Reference Images" in Chapter 1.*

Tutorial
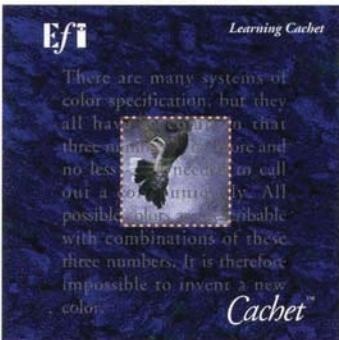
Tutorial images

Cachet also comes with a set of images that go with the tutorial in *Learning Cachet.* You can choose not to install the tutorial images, but you'll need to install them if you want to use the *Learning Cachet* guide. You can delete them later when you're finished with the tutorial. See *Learning Cachet* for details.

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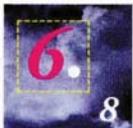
Plug-in Modules

Plug-in modules are mini-programs developed by third-party vendors. These mini-programs work with Cachet to provide features that Cachet does not provide by itself. Plug-in modules are generally distributed on floppy disks and come with their own separate documentation. With Cachet, you can use plug-in modules compatible with Adobe Photoshop.

Cachet supports two kinds of plug-in modules:

• **Import plug-ins** let you control a scanner or video frame grabber, de-compress a compressed image file, or open a file in a format Cachet does not normally support (such as Photo CD).

• **Export plug-ins** let you save Cachet image data in a file format that Cachet does not support by itself, or control printers (like the Kodak XL7700) that are not available through the Macintosh Chooser.

Some plug-in packages provide both import and export functions. For example, you can use plug-in modules to save disk space by compressing and de-compressing image files.

To use plug-in modules, you must install them on your Macintosh. If you install plug-in modules in the same folder as the Cachet application, Cachet will find them automatically. If you install plug-ins in a different location, you need to set the "Program Extensions Folder" option in the Folders section of the Preferences dialog box.

Cachet lists your plug-in modules in a pop-up menu in the dialog boxes you see when you choose Import or Export from the File menu. When you use a plug-in module, it displays its own dialog box with settings and options appropriate for the operations it performs.

Files and File Formats

You work with four types of files in Cachet:

- **Image files** that you color correct or use as reference images.

- **Color separation files** that you create with the Save Separations command on the File menu.

- **Script files** that you create with the Save Script command on the Playback menu.

- **Halftone setup files** that you create with the dialog box that appears when you click the Halftone button in the Print or Save Separations dialog box.

Image Files

Image files contain digital images. That is, they contain the data that describes an image that has been scanned or captured from a video source. Cachet can open and save image files in four formats:

- TIFF-RGB
- PICT
- Adobe Photoshop
- Raw-RGB

Cachet cannot open files in either TIFF-CMYK or Raw-CMYK format.

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House TIFF-RGB

TIFF-RGB files Tag Image File Format (TIFF) is a standard graphic file format used on a variety of computers, including Macintosh, MS-DOS, and Unix systems. There are TIFF variants for RGB and CMYK data, called TIFF-RGB and TIFF-CMYK respectively. Cachet can save color separations in TIFF-CMYK format and can open and save image files in TIFF-RGB format.

➜ *"To open a file in TIFF-RGB, PICT, or Photoshop format as the working image" in the section on "The Working Image" in Chapter 1.*

House PICT

PICT files PICT is a standard graphic file format for the Macintosh and is also supported by some IBM PC applications, including Corel Draw. PICT files may be compressed when you save them and de-compressed when you open them.

➜ *"To open a file in TIFF-RGB, PICT, or Photoshop format as the working image" in the section on "The Working Image" in Chapter 1.*

House Photoshop

Adobe Photoshop files These are image files saved in Adobe Photoshop in its standard file format. Cachet can open and save image files in this format.

➜ *"To open a file in TIFF-RGB, PICT, or Photoshop format as the working image" in the section on "The Working Image" in Chapter 1.*

House Raw-RGB

Raw-RGB files Raw-RGB is a simple file format for storing digital images. It is most often used to exchange data between very different applications or platforms. For example, you might use it to open images produced by microphotography with a scientific workstation.

Raw-RGB files consist of a header, which may be empty, followed by image data. The image data may be either **interleaved**, with the red, green, and blue values for each pixel listed together, or **planar**, with all the red values first, followed by all the green values, and then all the blue values.

You can open and save files in Raw-RGB format in Cachet. However, to open it, you must know the size of the header (usually zero), as well as the width and height of the image in pixels. If you save an image in Raw-RGB format, Cachet displays the header size, height, and width in a dialog box before saving the file. You should make a note of this information, since you'll need it if you want to open the file in Cachet.

➔ *To open a file in Raw-RGB format as the working image" in the section on "The Working Image" in Chapter 1.*

Color Separation Files

Color separation files are files you can use to produce color composite proofs on a color printer or color separation films on an imagesetter. Generally, you import color separation files into another application—such as a page layout application—before printing or producing films.

Color separation files include data for each layer of the color-separated image—four layers for CMYK printing processes, three for CMY and RGB processes. Color separation files generally also include a **screen preview** that page layout applications use to display the image.

➔ *"To create color separations" in Chapter 5.*

You can create color separation files with Cachet in any of five file formats:

- TIFF-CMYK
- Encapsulated PostScript (EPS)
- Desktop Color Separation (DCS)
- Raw-RGB
- Raw-CMYK

House TIFF-CMYK

TIFF-CMYK files For color separations in TIFF-CMYK format, Cachet generates a single file. This file contains the image data for all four CMYK layers. Separations in TIFF-CMYK format use less disk space than those in other formats, and a single TIFF-CMYK file is easier to keep track of than five DCS files. However, TIFF-CMYK files may not look as good *on the screen* once you place them in your page layout application. Although TIFF-CMYK files do not contain a screen preview, many page layout applications can generate one based on the TIFF-CMYK data. However, moderate to gross color shifts usually occur with the screen previews generated by page layout applications. Despite any color shifts you see on the screen, the images will print correctly.

House EPS

Encapsulated PostScript (EPS) files Encapsulated PostScript (EPS) format is a standard graphic format used on a variety of computers, including Macintosh, MS-DOS, and Unix systems.

House DCS

Desktop Color Separation (DCS) files A variant of EPS, Desktop Color Separation (DCS) format is the only way to use color-separated images in versions of Quark XPress before 3.0. For color separations in DCS format, Cachet generates five files: one for each CMYK layer and one main control file. Many other applications, including all versions of Quark XPress since 3.0, can also import DCS files. Separations in DCS format use more disk space than those in other formats, and there's more work involved in keeping track of the five separate DCS files. However, the screen previews included in DCS files look better on the screen than the ones generated by page layout applications based on TIFF-CMYK files.

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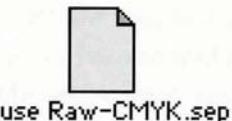
House Raw-RGB

House Raw-CMYK.sep

House Script

Raw-RGB files Some printers can only accept color separation files in Raw-RGB format, including the Kodak XL7700 and the Hewlett Packard PaintWriter XL.

Raw-CMYK files Raw-CMYK is a primitive format for exchanging color-separated images with systems that cannot interpret any other format.

Script files

Script files are files that Cachet creates when you choose the Save Script command from the Playback menu. They record all the operations you've performed since you last saved the image (or since you opened the image if you haven't yet saved it). You can use the script later to perform the same operations on a different image.

Script files appear on your disk as permanent files. However, you cannot open them directly. When you choose the Apply Script command from the Playback menu, Cachet reads the script file you select and applies the changes to the current working image.

→ *"Scripts" in Chapter 4.*

House Halftone Settings

Halftone setup files

It takes time to specify the halftone setup—line frequency, screen angles, and dot shape—you want for a particular printer or printing process. Once you create a halftone setup, you can save it in a file and re-use it later.

Halftone setup files are created when you click the Save button in the dialog box that appears when you press the Halftone button in the Print or Save Separations dialog box. You can load a halftone setup you've previously created by clicking the Load button in the same dialog box.

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Printing Support

The EfiColor database consists of a series of **device profiles** that Cachet uses to control color reproduction for a variety of printers and printing processes. Each device profile describes a single color printer or printing process. For example, there's a device profile for the QMS ColorScript 100, and there's another one for the combination of a 3M Matchprint proofing system, a sheetfed press, and uncoated stock.

Cachet uses the information in a device profile to convert the RGB values in an image file to CMYK (or other) values appropriate for the printing process you are using. Cachet also uses this information for identifying out-of-gamut colors with the gamut alarm and for measuring CMYK values with the color meter.

The EfiColor database that comes with Cachet includes a basic set of device profiles. For more information, refer to the *EfiColor Profiles Guide*.

You use the File menu to do the following:

• Open, close, save, resize and resample image files

• Cancel changes you've made and revert to the last saved version of the working image

• Access plug-in modules

• Print on a color printer

• Create color separation files

Here are the details about each command on the File menu.

Open...

Opens an image file you want to correct or use as a reference image. You can open files in TIFF-RGB, PICT, Photoshop, or Raw-RGB format. You cannot open EPS, TIFF-CMYK, or Raw-CMYK files in Cachet.

The Open dialog box appears automatically each time you start Cachet unless you uncheck the "Ask for a file when Cachet starts" option in the Main section of the Preferences dialog box.

When you choose Open, Cachet displays a dialog box listing files in TIFF-RGB, PICT and Adobe Photoshop format. The dialog box also lists any TIFF-CMYK files, but you cannot open these in Cachet.

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When you select a file from the dialog box, Cachet displays the
file format, the size of the file in bytes, the date the file was
created, and the date it was last changed. You can use other
options to see additional files and specify whether you want
to open the image as a working image or a reference image.

```
Select a file to open:
 ▭ User Images ▼
┌────────────────────────┐      ▭ Hard Disk 2
│ ▯ House            ⇧  │
│ ▯ New UP             │        ┌──────────┐
│ ▯ On a Picnic        │        │  Eject   │
│ ▯ On the Dock        │        └──────────┘
│ ▯ Puddle Stomping    │        ┌──────────┐
│ ▯ Sunny Picnic       │        │ Desktop  │
│ ▯ Vegetable Basket   │        └──────────┘
│                   ⇩  │        ┌──────────┐
└────────────────────────┘      │   Open   │
Format:   TIFF                  └──────────┘
File Size: 533,754              ┌──────────┐
Created:  3/10/91, 11:24 AM     │  Cancel  │
Modified: 3/10/91, 11:24 AM     └──────────┘
                                 Open File For...
                                 ● Correction
                                 ○ Reference
                                 ☐ See all files
```

Click here to
open a file as the
working image.

Click here to
open a file as a
reference image.

Click here to open a Raw-RGB file.

For Correction This option opens the file as the working image.
You can open only one working image at a time. When you
open an image for correction, Cachet automatically displays
the Exposure & Tone palette.

➡ *"To open a file in TIFF-RGB, PICT, or Photoshop format as
the working image" in the section on "The Working Image" in
Chapter 1.*

For Reference This option opens the file as a reference image. Reference images are labeled "Reference" in the window's title bar. You can open several reference images at the same time.

➔ *"To open a reference image" in the section on "Reference Images" in Chapter 1.*

See all files If you check this option, the dialog box lists all the files in the current folder and activates the Format pop-up menu. If you select a file that is not in TIFF-RGB, Adobe Photoshop or PICT format, Cachet assumes it is in Raw-RGB format and asks you for additional information when you click Open:

Raw File Reading Options ┌─ **Color Format** ─┐ ◉ **Interleaved** ○ **Planar** **Width:** `0` **Height:** `0` **Header Size:** `0` (Cancel) ((OK))	*You must enter the width and height in pixels.* *Enter the header size (usually 0).*
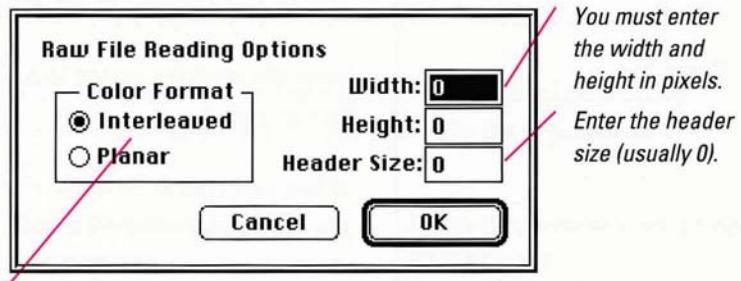
Click the correct format for the file you selected.

When you click Open, Cachet tries to open the file. If the file is not actually in Raw-RGB format, Cachet displays an error message.

➔ *"To open a file in Raw-RGB format as the working image" in the section on "The Working Image" in Chapter 1.*

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Close

Closes the active window and removes it from the Windows menu. Clicking the window's close box has the same effect as choosing Close from the File menu.

If the active window contains a working image that you have changed, Cachet asks you if you want to save your changes before closing the window.

Save

Saves any changes you have made to the working image, replacing the original image file. Cachet saves the file in its original format. Any snapshots you have taken are discarded.

➔ *"To save changes" in the section on "Files" in Chapter 4.*

Save As...

Saves the working image in a new image file whose name and format you specify.

When you choose Save As, Cachet displays a dialog box that you use to name your file and select the folder and drive where you want to save it. A pop-up menu in the dialog box gives you a choice of four formats: TIFF-RGB, PICT, Photoshop, and Raw-RGB.

➔ *"To save the working image with a different name" in the section on "Files" in Chapter 4.*

When you save an image in Raw format, Cachet prompts you
for additional information:

Raw File Writing Options

─ Color Format ─ **Header Size:** `0`
◉ Interleaved   **Width:** 344
○ Planar   **Height:** 517

[Cancel] [OK]

*You generally
don't need to
change this.*

*Cachet automa-
tically provides
these values.
Make a note of
them if you want
to open this file
again in Cachet.*

*Click the format you want to save the file in.*
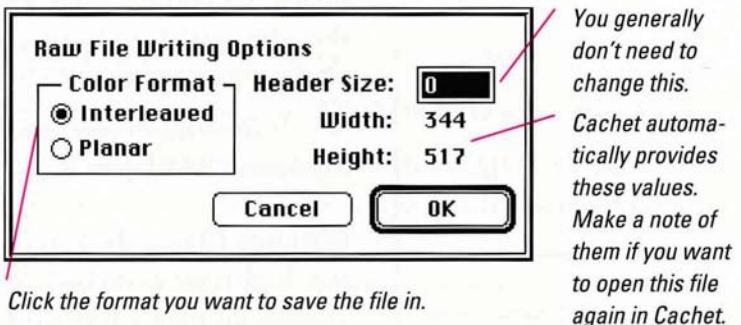
Save Separations...

Creates color separation files whose name and format you specify.

When you choose Save Separations, Cachet displays a dialog
box that you use to specify how you want the separations to
be created:

*Choose the format for the color
separation files.*

*Choose the printer or printing process
you plan to use.*

─ File Format ─   ─ Printer options ─
◉ EPS   **Target Printer:** SWOP-Coated ▾
○ TIFF – CMYK
○ Raw – CMYK   **GCR Level:** High ▾
○ Raw – RGB
                         Sharpening: None ▾

─ Encapsulated PostScript File Options ─
  ─ File Format ─   ─ Preview Picture ─
  ○ Normal   ○ None   [Halftone...]
  ◉ DCS (5 files)   ○ Black and White
                    ◉ 256 Colors   [Size...]

  ─ Data Format ─   ─ DCS Image Data ─
  ○ ASCII text   ○ Only in sub-files
  ◉ Binary   ◉ Also in main file

[Cancel] [OK]

*Specify the GCR
level.*

*Specify the
Sharpening level.*

*Click to change the
halftone setup.*

*Click to change the
size of the
separated image.*

Target Printer This pop-up menu lists the device profiles installed in your EfiColor database. You must choose the printer or printing process you plan to use. This ensures that the color separations will render the true colors of your image on the printer or printing method you select.

➔ *"To create color separations" in the section on "Color Separations" in Chapter 5.*

GCR Level Choose the level of gray-component replacement (GCR) that you want Cachet to perform on your image when creating the color separation files. You can choose None, Low, Medium, High, or Maximum. If the Target Printer does not support different GCR levels, the GCR pop-up menu is set to Nominal and cannot be changed.

➔ *"Gray component replacement (GCR)" on page 5-14.*

File Format You can create color separation files in five
different formats: TIFF-CMYK, EPS, DCS, Raw-CMYK, and
Raw-RGB.

→ *"Files and File Formats" earlier in this chapter.*

→ *"Color separation files—Which format to use' on page 5-28.*

If you choose EPS, Raw-RGB, or Raw-CMYK, Cachet
displays a dialog box that you use to specify additional options:
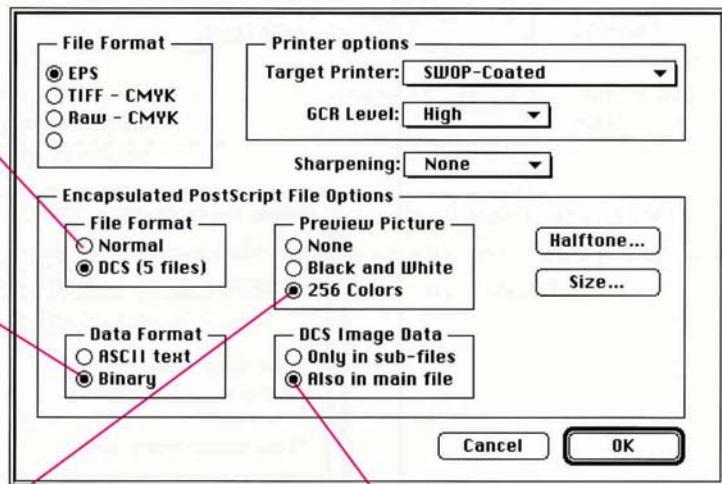
*Click Normal for
a single EPS file,
DCS for five
separate DCS
files.*

*Choose Binary
unless your
page layout
application
requires ASCII
text.*

```
┌─ File Format ──┐  ┌─ Printer options ──────────────────┐
│ ◉ EPS          │  │ Target Printer:  SWOP-Coated     ▼ │
│ ○ TIFF - CMYK  │  │ GCR Level:  High    ▼              │
│ ○ Raw - CMYK   │  └────────────────────────────────────┘
│ ○              │     Sharpening:  None    ▼
└────────────────┘
┌─ Encapsulated PostScript File Options ──────────────────┐
│ ┌─ File Format ─┐  ┌─ Preview Picture ─┐  ┌ Halftone... ┐│
│ │ ○ Normal      │  │ ○ None            │  └─────────────┘│
│ │ ◉ DCS (5 files)│ │ ○ Black and White │  ┌ Size...     ┐│
│ └───────────────┘  │ ◉ 256 Colors      │  └─────────────┘│
│ ┌─ Data Format ─┐  ┌─ DCS Image Data ──┐                 │
│ │ ○ ASCII text  │  │ ○ Only in sub-files│                │
│ │ ◉ Binary      │  │ ◉ Also in main file│                │
│ └───────────────┘  └───────────────────┘                 │
│                              ┌ Cancel ┐  ┌──  OK  ──┐     │
└──────────────────────────────────────────────────────────┘
```

*Choose the type of screen preview
you want.*

*Click here if you want to use the
same DCS files to produce color
composite proofs and final,
separated films.*

→ *"To create color separations" in the section on "Color
Separations" in Chapter 5.*

Sharpening Choose the level of sharpening you want Cachet to perform when creating the color separation files. You can choose None, Low, Medium, High, or Maximum.

➔ *"Sharpening your image at output time" on page 5-16.*

Halftone This button lets you modify the line frequency, screen angles, and dot shape when you generate color separations for a printer or printing process that supports halftoning. You can save the halftone setup in a file, and then re-use it later.

Click here to load a halftone setup you have previously saved.

Click here to save your halftone setup.
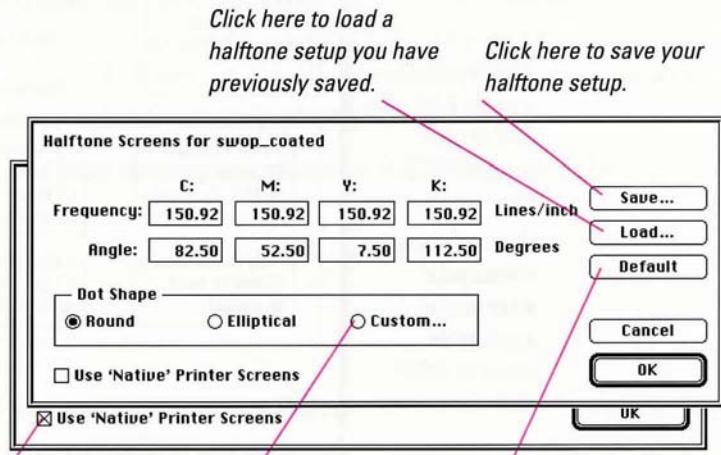
Uncheck this box to change line frequency, screen angles, and dot shape.

Click here if you want to enter PostScript code to customize the dot shape.

Click here to use Cachet's default halftone setup.

Size This button lets you change the size or resolution of the separated image without changing the contents of the image file itself. When you click the Size button, Cachet displays a dialog box that you use to specify additional options:

Image size...	Current:	New:	Unit:
Width:	2.68	2.68	inches ▼
Height:	1.79	1.79	
Resolution:	300.00	300.00	pixels/inch ▼
File Size (Kb):	1,266	1,266	805 ห 537
⊠ Preserve File Size		Cancel	OK
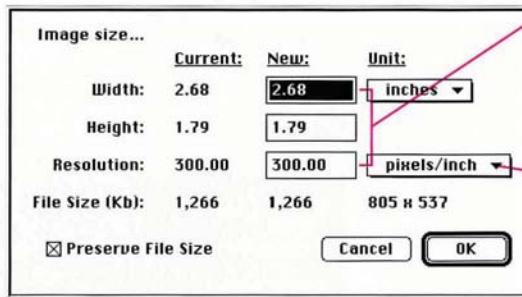
Enter the height, width, or resolution. Cachet calculates whichever values you don't enter.

Choose the measurement unit from the pop-up menu.

Cachet preserves the width-to-height or aspect ratio of the image by automatically calculating whichever value you don't enter. Cachet also adjusts the resolution to match the new dimensions.

Revert

Restores the working image to the last version you saved.

Revert discards any changes you have made to an image since the last time you saved it. To prevent accidental loss of data, Cachet asks you to confirm this command before removing your changes.

→ *"To revert to a previous version" in the "Oops" section in Chapter 4.*

> **CAUTION**
> You cannot undo the Revert command with the Undo command.

Get Info...

Displays information about the image in the active window.

Get Info shows the name and location of the file, its size in bytes, its dimensions in pixels, and its file format.

→ *"To get information about an image" in the section on "The View Through the Window" in Chapter 1.*

Resize Image...

Lets you resize or resample the working image.

When you choose Resize Image, Cachet displays a dialog box that you use to specify additional options:
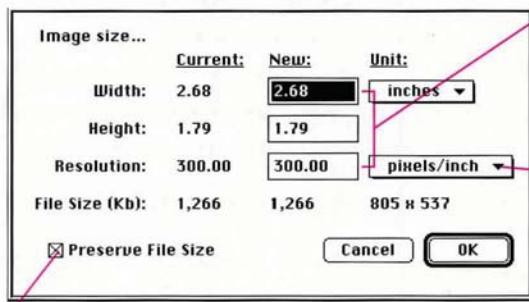
Image size...	Current:	New:	Unit:
Width:	2.68	2.68	inches ▼
Height:	1.79	1.79	
Resolution:	300.00	300.00	pixels/inch ▼
File Size (Kb):	1,266	1,266	805 × 537

⊠ Preserve File Size   (Cancel) (OK)

Enter the height, width, or resolution. Cachet calculates whichever values you don't enter.

Choose the measurement unit from the pop-up menu.

Uncheck this box to resample the image.

The minimum dimensions are 16 pixels by 16 pixels. The maximum width is 4,095 pixels; there is no practical height limit. You can convert these limitations to inches or centimeters as long as you know the resolution of your printer. On a 300 dpi device:

16 pixels: $\frac{16}{300}$ =0.054 inches

4095 pixels: $\frac{4095}{300}$ =13.65 inches

Cachet preserves the width-to-height or aspect ratio of the image by automatically calculating whichever value you don't enter. Cachet also adjusts the resolution to match the new dimensions.

Import...
and Export...

Gives access to plug-in modules you've installed.

These commands appear dimmed unless you have installed at least one plug-in module. When you choose Import or Export, Cachet displays a dialog box so you can choose the plug-in module you want. Then, the plug-in module displays its own dialog box with options appropriate to its functions. (Most plug-ins come with documentation that explains how to use any options provided in this dialog box.)

➔ *"Plug-in Modules" earlier in this chapter.*

➔ *"To open a compressed image as the working image" and "To scan a slide or photograph or capture a frame from a video source" in the section on "The View Through the Window" in Chapter 1.*

➔ *"To save an image in compressed format" in the "Files" section in Chapter 4.*

Page Setup...

Displays a dialog box with page setup options for the printer you have selected with the Chooser. See your Macintosh user's guide and the documentation that comes with your printer for information about using the Chooser and setting up your printer.

➔ *"To set up the printed page" in the section on "The Early Proof" in Chapter 5.*

Print...

Prints the working image on the printer you have selected with the Chooser.

➔ *"To print directly from Cachet" in the section on "The Early Proof" in Chapter 5.*

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The Print command displays a dialog box with printing options for the printer you have selected with the Chooser. Regardless of which printer you are using, the Print dialog box includes several options you use to specify how you want the working image to be printed.

Choose the format for the color separation files.

Choose the printer or printing process you plan to use.

File Format
- ⦿ EPS
- ○ TIFF – CMYK
- ○ Raw – CMYK
- ○ Raw – RGB

Printer options
Target Printer: [SWOP-Coated ▼]
GCR Level: [High ▼]
Sharpening: [None ▼]

Encapsulated PostScript File Options

File Format
- ○ Normal
- ⦿ DCS (5 files)

Preview Picture
- ○ None
- ○ Black and White
- ⦿ 256 Colors

[Halftone...]

[Size...]

Data Format
- ○ ASCII text
- ⦿ Binary

DCS Image Data
- ○ Only in sub-files
- ⦿ Also in main file

[Cancel] [OK]
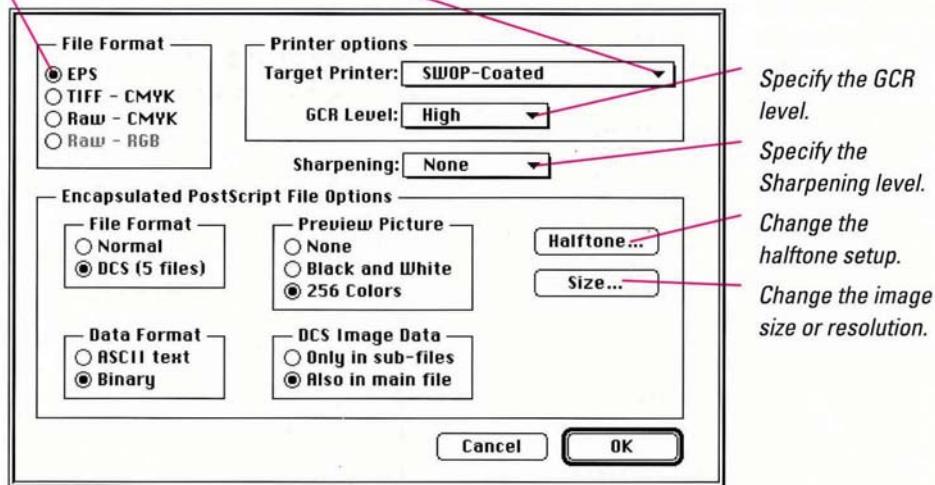
Specify the GCR level.

Specify the Sharpening level.

Change the halftone setup.

Change the image size or resolution.

Target Printer This pop-up menu lists the device profiles installed in your EfiColor database. You must choose a profile for the printer you plan to use.

➔ *"To create color separations" in the section on "Color Separations" in Chapter 5.*

GCR Level Choose the level of gray-component replacement (GCR) that you want Cachet to use when creating the color separation files. You can choose None, Low, Medium, High, or Maximum. If the Target Printer does not support different GCR levels or is not a CMYK device, the GCR pop-up menu is set to Nominal and cannot be changed.

➔ *"Gray component replacement (GCR)" on page 5-14.*

Sharpening Choose the level of sharpening you want Cachet to perform when creating the color separation files. You can choose None, Low, Medium, High, or Maximum.

➔ *"Sharpening your image at output time" on page 5-28.*

Halftone This button lets you modify the line frequency, screen angles, and dot shape when you generate color separations for a printer or printing process that supports halftoning. You can save the halftone setup in a file, and then re-use it later.

Click here to save your halftone setup.

Click here to load a halftone setup you have previously saved.

Click here to use Cachet's default halftone setup.
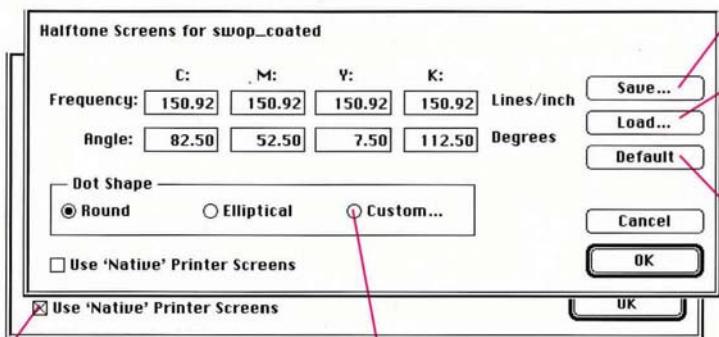
Uncheck this box to change line frequency, screen angles, and dot shape.

Click here if you want to enter PostScript code to customize the dot shape.

Size This button lets you change the size or resolution of the printed image without changing the contents of the image file itself. When you click the Size button, Cachet displays a dialog box that you use to specify additional options:
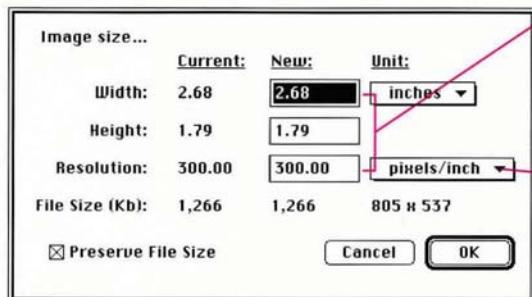
Enter the height, width. or resolution. Cachet calculates whichever values you don't enter.

Choose the measurement unit from the pop-up menu.

Cachet preserves the width-to-height or aspect ratio of the image by automatically calculating whichever value you don't enter. Cachet also adjusts the resolution to match the new dimensions.

You can use pop-up menus to change the units of measure for the image height and width. The options are: inches, centimeters, pixels, and points. You can display resolution in pixels per inch or pixels per centimeter.

Quit...

Quits the Cachet application and returns you to the Finder. If a working image is open when you quit, Cachet asks if you want to save any changes you've made.

The Edit menu is a standard menu in all Macintosh applications. It includes the Cut, Copy, Paste, Clear, and Show Clipboard commands that you use to move data from one place to another within a file and between files. You can use these commands with any desk accessories you open, but they are not appropriate for editing images in Cachet.

However, the Undo and Preferences commands on the Edit menu are useful when you work in Cachet.

Undo

Reverses the effect of your last action on the working image. When you choose Undo, the Undo command is replaced by the Redo command. This command restores the original action you undid.

You can undo most operations that affect the appearance of the working image. You cannot undo any commands on the File menu, however. When you cannot undo the most recent operation, the Undo command appears dimmed in the Edit menu.

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Preferences...

Lets you specify your preferences for options and settings in three categories: Main, Folders, and Performance. When you click a category, its options appear to the right in the dialog box. The options for each category are as follows:

"Main" preferences

This category of preferences includes the following general working options:

Check if you want Cachet to display the Open dialog box each time you start Cachet.

┌─ **Edit Preference:** ─┐ ┌─ **Main Preferences:** ─
⊙ **Main**   ☒ **Ask for a file when Cachet starts**
○ **Folders**   ☒ **Lock MultiChoice to image window**
○ **Performance**   ┌─ **Zoom Clicks** ──────
                             ⊙ **Keep click under mouse**
                             ○ **Center click in window**

                             ┌─ **Zoom Step** ──────
                             ⊙ **Additive (×1, ×2, ×3, ×4...)**
                             ○ **Doubling (×1, ×2, ×4, ×8...)**

                                         [Cancel]   [OK]
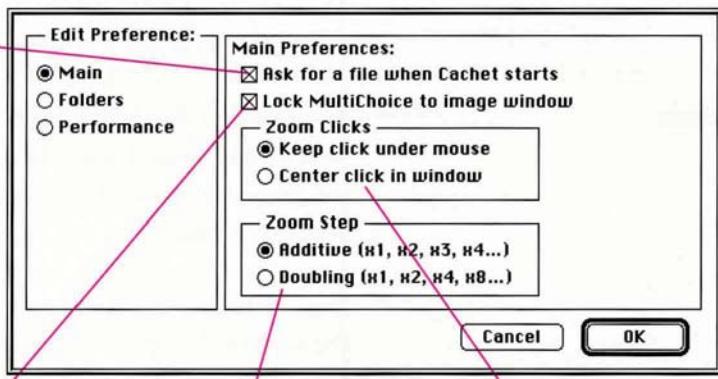
Check if you want Cachet to update the images in the MultiChoice window when you zoom or scroll the working image.

Specifies how much the image is enlarged or reduced each time you click the zoom-in or zoom-out tool.

Determines the position of the image in the window after you zoom.

Zoom clicks You have two options for Zoom Clicks:

• "Keep click under mouse" tells Cachet to keep the point you click in the same position in the window when the image is reduced or enlarged.

• "Center click in window" tells Cachet to move the point you select to the center of the window when the image is reduced or enlarged.

Zoom steps You also have two options for Zoom Steps:

• "Additive" enlarges and reduces slowly—increasing the multiplier by 1 with each step—1X, 2X, 3X, 4X, and so on.

• "Doubling" enlarges and reduces more quickly—doubling the multiplier with each step—1X, 2X, 4X, 8X, and so on.

➔ *"The View Through the Window" in Chapter 1.*

➔ *"Multiple Choice" in Chapter 2.*

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"Folders" Preferences

These preferences let you tell Cachet what folders you want to use for temporary files, plug-in modules, and halftone setups.

Tells Cachet where to store the temporary files that are created as you work.

```
Edit Preference:          Temporary Files Folder
○ Main                    ⦿ System Folder
⦿ Folders                 ○ Custom... [        ]
○ Performance
                          Program Extensions Folder
                          ⦿ Cachet Folder
                          ○ Custom... [        ]

                          Halftone Files Folder
                          ⦿ Cachet Folder
                          ○ Custom... [        ]

                                    [ Cancel ]  [ OK ]
```
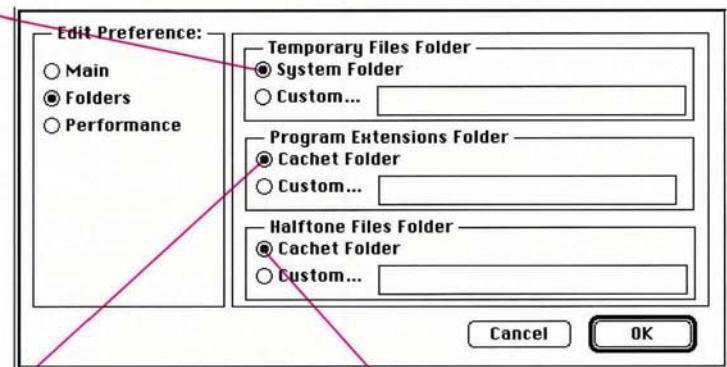
Tells Cachet where to look for plug-in modules.

Tells Cachet where to store halftone setup files you create.

Temporary files folder Cachet creates temporary files as you work. By default, Cachet stores these temporary files in your system folder. You can click Custom to specify a different folder. If you don't have enough space on your startup disk to work with large images, you can specify a folder on another disk that has more space.

Program extensions folder If you are using plug-in modules for importing and exporting images, you must tell Cachet where these programs are located. By default, Cachet assumes that plug-in modules are stored in your Cachet folder. If not, you can click Custom to specify another location. You'll need to install all of your plug-in modules in the same folder.

→ *"Plug-in Modules" earlier in this chapter.*

Halftone files folder If you create halftone setups that you want to re-use, you have the option of saving them in files. By default, Cachet saves halftone setups in your Cachet folder. You can click Custom to specify a different folder.

➔ *"To create color separations" in the "Color Separations" section in Chapter 5.*

➔ *"To print directly from Cachet" in the section on "The Early Proof" in Chapter 5.*

"Performance" Preferences

These options help you tailor the performance of Cachet to your needs:

Updates the working image in real-time as you work with Exposure & Tone palette, provided you are using 24-bit color video.

┌─ **Edit Preference:** ─┐   **Performance Preferences:**
○ **Main**   ☒ **Immediate feedback with millions of colors**
○ **Folders**
● **Performance**   ┌─ **Busy Cursor** ─┐
                              ○ **No busy cursor**
                              ● **After [20]⬍ tenths of a second**

                              Use [50]⬍ % of memory for images
                              (Takes Effect Next Time You Run Cachet)

                              [Cancel]   [**OK**]
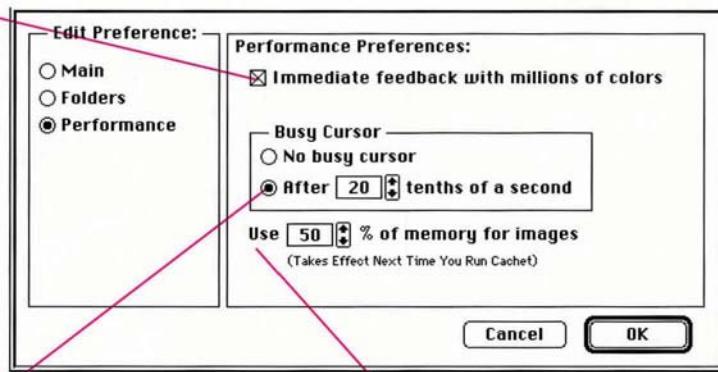
Tells Cachet how soon to display the busy cursor—a rotating ball— when processing an image.

Improves the speed of image processing by increasing the memory available for some functions and reducing it for others.

Immediate feedback If you are using 24-bit color video, Cachet normally updates your working image immediately as you make adjustments with the Exposure & Tone palette. For example, you see the effect of dragging the white point slider to the left or right even before you release the mouse button. Some 24-bit cards cannot update immediately, and you may experience system crashes with such video cards. To solve the problem, uncheck the "Immediate feedback with millions of colors" option. This option has no effect if you are using an 8-bit color card.

Busy cursor By default, Cachet displays a busy cursor (the rotating ball) if an operation takes longer than two seconds. You can adjust this time delay if you want to be alerted sooner (or later).

Memory allocation If you want to improve the performance for image processing functions, you can increase the amount of memory allocated to these functions. However, you may run out of memory if you try to open several tools—such as the MultiChoice window, the PANTONE window, and the color meter—at the same time.

Cachet comes with four tool palettes for working with color images. Three of them have tools for adjusting one or more color characteristics. Most of these tools are sliders that represent a range of possible values for the given color characteristic. A fourth palette has tools for cropping the image or changing its orientation.

Tools for Viewing Images

In addition to their individual tools, all palettes share a set of viewing tools. These are:

Zoom-in

You use the zoom-in tool to magnify the image in a window. When you select this tool and move the pointer into an image window, the cursor becomes a magnifying glass with a plus sign at its center. When you click the image, Cachet enlarges it. You can control the amount of enlargement with the "Zoom Steps" option in the Main section of the Preferences dialog box. If you hold down the Option key while this tool is selected, Cachet temporarily switches to the zoom-out tool.

Zoom-out

You use the zoom-out tool to reduce the image in a window and view more of it. When you select this tool and move the pointer into an image window, the cursor becomes a magnifying glass with a minus sign at its center. When you click the image, Cachet reduces it. As with the zoom-in tool, you can control the amount of reduction with the "Zoom Steps" option in the Main section of the Preferences dialog box. If you hold down the Option key while this tool is selected, Cachet temporarily switches to the zoom-in tool.

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Hand tool

You use the hand tool to move an image around in its window. In comparison to the scroll bars, which move an image horizontally or vertically, you can use the hand tool to move the image in any direction.

Reset

Reset button

All the tool palettes except the Orientation palette include a Reset button. This button resets all the tools on the palette to zero (0). The zero setting represents the image as it appeared when you opened the tool palette.
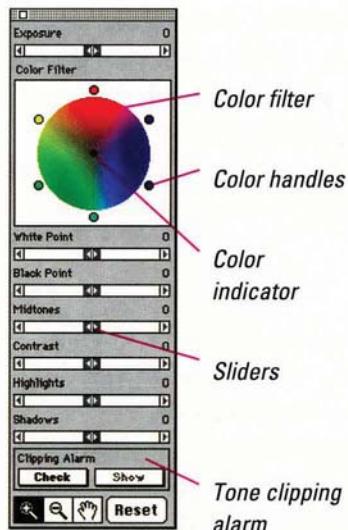
Exposure & Tone...

Displays a palette with tools for correcting exposure problems and adjusting the overall tone of an image. The tools in the Exposure & Tone palette are the color filter and sliders for exposure, white point, black point, contrast, midtones, highlights, and shadows. The changes you make with these tools apply to the entire image. In addition, this palette has a clipping alarm that you can use to check for clipping of tones in highlights and shadows.

Color filter

Color handles

Color indicator

Sliders

Tone clipping alarm

If you are using a 24-bit color video card, Cachet updates the working image immediately as you make changes with tools in this palette. For example, you see the effect of dragging the white point slider to the left or right even before releasing the mouse button.

Exposure

The exposure tool compensates for exposure problems—that is, improper shutter speed or f-stop—in the working image. Underexposed images appear to be too dark. Overexposed images appear to be too light.

When you increase the exposure setting, Cachet adjust the image so it appears to have been taken at a lower f-stop or a slower shutter speed. When you decrease the exposure setting, Cachet adjusts the image so it appears to have been taken at a higher f-stop or a faster shutter speed.

➜ *"Exposure" in Chapter 2.*

Color filter

The color filter corrects color balance problems by adjusting the balance of red, green, and blue tones in an image. Color balance problems typically occur when the film, lighting, and/or camera filter don't match.

The six **color handles** around the color wheel represent the basic colors in two color spaces: red, green, and blue on one hand; and cyan, magenta, and yellow, on the other. You can click these color handles to shift the color balance incrementally in the direction of one of the basic colors.

You can also change the color balance by dragging the donut-shaped **color indicator** in the color filter. The colors in the middle of the filter are neutral. Those around the edge are more saturated. The color indicator is initially set to the neutral position in the center of the wheel.

➜ *"Color Filter" in Chapter 2.*

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White point and black points

Photographic images have a range of tones from dark to light.

• The white point is the point where the light tones in an image become white. When you increase the white point setting, more light tones are represented as white. When you decrease the white point setting, fewer light tones are represented as white.

• The black point is the point where dark tones in an image become black. When you increase the black point setting, more dark tones are represented as black. When you decrease the black point setting, fewer dark tones are represented as black.

➔ *"White and Black Points" in Chapter 2.*

Contrast

Contrast is the ratio between the brightness of the light and dark areas in an image. The contrast tool changes this ratio.

When you increase the contrast, the difference between the lightest and darkest areas becomes more pronounced. When you decrease the contrast, this difference becomes less pronounced.

➔ *"Contrast" in Chapter 2.*

Midtones, Highlights, and Shadows

The midtones, highlights, and shadows tools adjust the brightness of an image. Each tool affects a different part of the range of tones in the image.

• The highlights tool affects principally the lighter end of the range. Increasing the highlights setting makes the lighter tones brighter; decreasing it makes them less bright.

• The midtones tool affects principally the tones in the middle part of the range. Increasing the midtones setting makes the mid-range tones brighter; decreasing it makes them less bright.

• The shadows tool affects principally the darker end of the range. Increasing the shadows setting makes the darker tones brighter; decreasing it makes them less bright.

The effects of these three tools overlap considerably. This prevents harsh transitions that might create undesired effects in images.

➜   *"Midtones, Highlights, and Shadows" in Chapter 2.*

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Tone clipping alarm

The tone clipping buttons let you highlight clipped areas in the working image—areas of pure white and pure black. If too many tones in your image are clipped, you may be losing details in the highlights and/or the shadows.

The Check button analyzes the image for clipped tones. The Show button shows the result of the analysis. Areas of pure white are highlighted in black. Areas of pure black are highlighted in white.

→ *"Tone Clipping" in Chapter 2.*

Color...

Color cast tool

Color indicator

Sliders
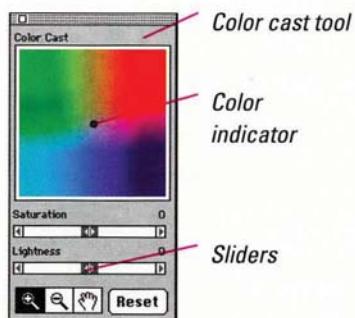
Displays the Color palette, which includes tools for adjusting the color cast, saturation, and lightness of the working image.

You generally use the tools in the Color palette for enhancing the colors in an image to create a particular mood or ambiance. The changes you make with these tools affect the entire image.

Unlike the Exposure & Tone palette, the Color palette does not update the working image immediately as you make changes. For example, you do not see the effect of dragging the saturation slider to the left or right until you release the mouse button.

Color cast

A color cast is an overall tint of an image. Changing the color cast of an image can change the overall mood or ambiance of the image.

The color cast tool is a **color map**. The color cast of the original image is represented by the center of the color map. It changes as you move the color indicator from the center. You can click anywhere in the map to shift the color cast.

→ *"Color Cast" in Chapter 2.*

Saturation

Saturation is the purity of a color—for example, the difference between a pale red and a deep, vivid red. The saturation tool increases or decreases the overall saturation of the image.

When you increase the saturation setting, the colors appear more pure. When you decrease the saturation, the colors become more neutral, diluted with gray.

→ *"Saturation" in Chapter 2.*

Lightness

Lightness is a measure of how light or dark colors in an image appear, regardless of their hue or saturation. For example, lightness is the component that makes light blue different from dark blue. The lightness tool changes the overall lightness of the image.

When you increase the lightness setting, the image becomes lighter. When you decrease it, the image becomes darker.

→ *"Lightness" in Chapter 2.*

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Selective Color...

Wand
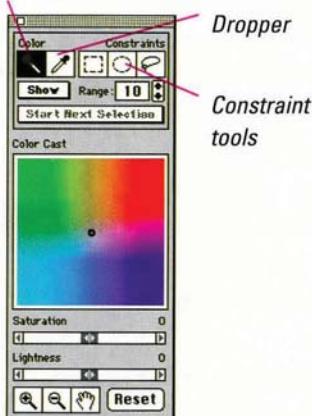
Dropper

Constraint tools

shift

⌘

⌐ ⌐
⌐ ⌐

option

Displays a palette with tools for adjusting specific colors in an image. The Selective Color palette, like the Color palette, has tools for adjusting color cast, saturation, and lightness. In addition it has tools for selecting and matching colors and for constraining color changes to particular areas of the image.

Constraint tools

The Selective Color palette includes three constraint tools: the rectangular marquee, the elliptical marquee, and the lasso. You use these tools alone or in combination to outline the regions in an image where you want to apply selective color changes. When you click colors with the wand, Cachet only selects pixels within the outlined areas.

After using one of these tools to outline a region, you can add to that region by holding down the Shift key while outlining another region with the same or a different constraint tool. The regions you outline do not have to be contiguous.

You can "de-outline" a region or part of a region that you have already outlined. To do so, hold down the Command key while outlining the region you want to "de-outline."

→ *"Masks" section in Chapter 3.*

The rectangular marquee This tool outlines a rectangular area of any dimension. The rectangle is normally anchored at the point where you click and begin dragging with this tool. If you hold down the Option key, though, the rectangle is anchored at a center point and drawn outward.

The elliptical marquee This tool outlines an elliptical or circular area of any dimension. The ellipse or circle is normally anchored at the point where you click and begin dragging with this tool. If you hold down the Option key, though, the ellipse is anchored at a center point and drawn outward.

The lasso This tool outlines an area that you draw freehand. If the area you draw with the lasso is not enclosed, Cachet draws a line from the point where you begin drawing to the point where you release the mouse button.

Wand

The wand selects the colors you want to adjust. You click on a color you want to adjust, and Cachet selects all pixels in a range of colors close to the color of the pixel you click. You can adjust this range (see "Range" below). If you have outlined one or more areas with the constraint tools, Cachet only selects pixels within the outlined areas.

After you select one range of colors, you can add to the selection by holding down the Shift key while clicking another pixel with the wand.

If you hold down the Option key while this tool is selected, the wand temporarily becomes the dropper.

➔ *"To select colors" in the section on "The Tools" in Chapter 3.*

Show button

The Show button highlights the pixels you've selected with the wand. If no pixels are selected, the Show button is dimmed.

➔ *"To select colors" in the section on "The Tools" in Chapter 3.*

Range

This option specifies how wide a range of colors is selected
each time you click a pixel with the wand. A low range setting
selects only pixels that are very close to the color of the pixel
you click. A high range setting selects more pixels with more
color variation. You click the up and down arrows to increase
and decrease the range setting from 1 to 30. The default
setting is 10.

➔ *"To select colors" in the section on "The Tools" in Chapter 3.*

Dropper

The dropper picks up a color from a reference image or
another part of the working image and applies it to the selected
pixels in the working image. Cachet preserves the color
variation in the selected pixels when it applies the new color so
that you get a comparable variation in the new color.

If you hold down the Option key while this tool is selected,
the dropper temporarily becomes the wand.

➔ *"To match selected colors automatically" in the section on "The
Tools" in Chapter 3.*

Start Next Selection button

This button applies the selective color changes to the working
image, de-selects all the pixels, and resets the color cast,
saturation, and lightness tools.

Until you click this button, you can experiment with different
color changes. That is, you can select different colors with the
wand, change the size or shape of any regions outlined with

the constraint tools, and apply different color changes with the dropper or the color tools. But once you've pressed the Start Next Selection button, you cannot undo any of these changes.

Displays a palette of tools for rotating, flipping, and cropping the working image.

Orientation...

Orientation tools
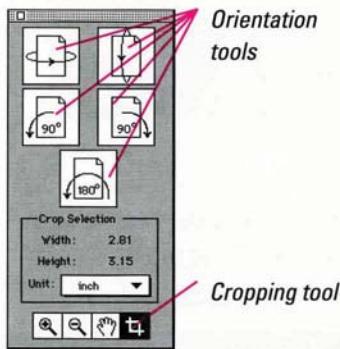
Cropping tool

Orientation tools

You can use these tools to flip the image from left to right and top to bottom. You can also rotate an image 90 degrees to the left or right or 180 degrees.

→   *"To flip or rotate an image" in the "Orientation" section in Chapter 1.*

Cropping tool

You can use the cropping tool to crop the image. When you select the crop tool and move the pointer into the image, the cursor becomes a frame. You can then click and drag to draw a frame around the part of the image you want to keep. Click again inside the frame to complete cropping the image.

Once you save an image you've cropped, you cannot restore the deleted portion of the image. Cachet permanently removes the image data from the image file.

→   *"To crop an image" in the section on "Orientation" in Chapter 1.*

Tools Menu:

Tools that make color correction easier and more accurate

The Tools menu includes several commands that you can use to make color correction easier, including a multiple-choice window for quick visual adjustments, as well as tools for checking for out-of-gamut colors, measuring color values, and specifying PANTONE Colors.

MultiChoice...

Opens a MultiChoice window that displays six variations of your working image. You can display variations for each of the tools in the Exposure & Tone palette and Color palette. If neither of these palettes is open, the MultiChoice command appears dimmed.

The pop-up menu in the lower-left corner of the MultiChoice window lists the tools in whichever palette is opened. The variations show different settings for the selected tool.

Cachet displays six variations of the working image that show different settings for the tool you select.
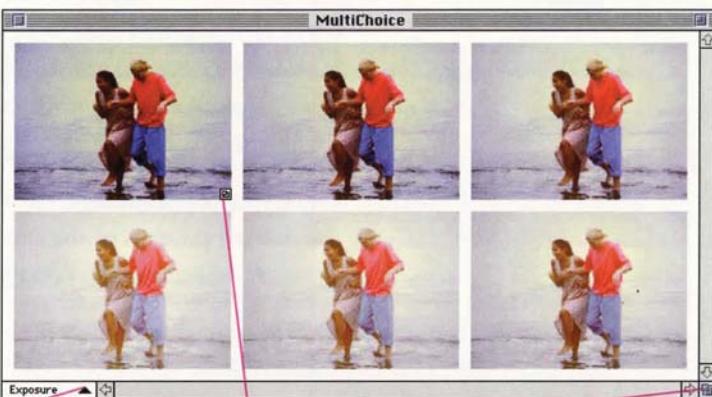
Choose a tool from this menu.

Click and drag to change the size of the images in the MultiChoice window.

Click and drag to change the size of the MultiChoice window itself.

Cachet varies the images differently depending on which tool you select. If you choose Color Filter from the pop-up menu, Cachet gives you six variations as shown here:
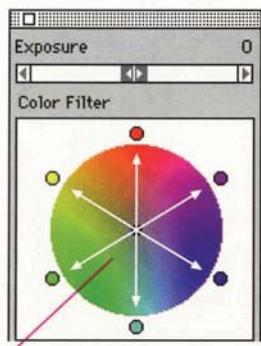
Each variation represents one step toward one of the six color handles.

The current working image is in the center.

When you choose any of the slider tools from the pop-up menu, the MultiChoice window displays three variations in either direction from the current working image. For example:
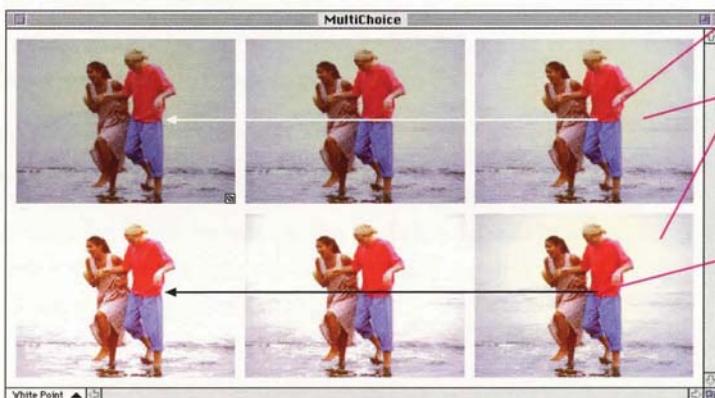
Lower white point settings.

The current working image is between these two images.

Higher white point settings.
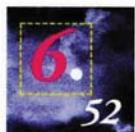
You can make changes with the tools in the tool palette while the MultiChoice window is open. For example, you can make major adjustments with the MultiChoice tool, and then fine-tune using the sliders on the palette. Or, you can see the combined effect of two tools—adjust one in the tool palette, choose the other from the pop-up menu in the MultiChoice window.

You can vary both the size of the MultiChoice window and the size of the images within the window. The MultiChoice window has a standard Macintosh size box in the lower-right corner. The first image also has its own size box in the lower-right corner. Adjusting the size of the first image adjusts the size of all the images in the MultiChoice window.

➔ *"Multiple Choices" in Chapter 2 for more information about using the MultiChoice window.*

Step...

Determines the amount of variation in the MultiChoice window from one image to the next. The incremental change can be Small, Medium, or Large. You can choose one of these increments from the Step submenu. The default is Medium.

➔ *"To adjust the degree of variation among images" in the section on "Multiple Choices" in Chapter 2.*

```
Tools
  MultiChoice    ⌘M
  Step           ▶
  Layout         ▶   ✓Grid
                      Row
  Gamut Alarm         Column
  Color Meter
  PANTONE® Colors
```
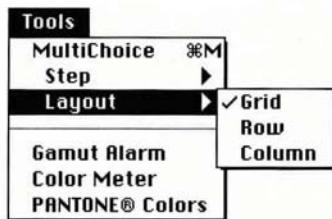
Layout...

Determines the layout of the six images in the MultiChoice window. You can choose one of three layouts from the submenu:

Grid Displays a 2-by-3 grid, with a clockwise progression starting from the upper left. This is the default layout.

Row Displays all six images in a single row, with values increasing from left to right.

Column Displays all six images in a column, with values increasing from top to bottom.

➔ *"To change the layout of MultiChoice images" in the section on "Multiple Choice" in Chapter 2.*

Gamut Alarm

Highlights out-of-gamut colors in the working image.

```
Target Printer: SWOP-Coated      ▼
Sensitivity:  9  ⬍
Turn up the sensitivity to find more of    Check
the colors outside the printer's gamut.    Show
```
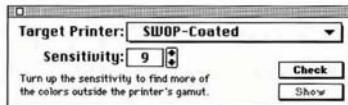
When you choose Gamut Alarm, Cachet opens a window with buttons for checking and showing out-of-gamut colors. Pop-up menus let you specify the target printer and control the overall sensitivity of the gamut alarm.

The Check button analyzes the image and briefly highlights the parts of the image that are out of gamut. You can hold down the Show button or the Shift key to see these areas again. Each time you adjust the image, you'll need to click Check again to re-analyze the image.

You can adjust the sensitivity of the gamut alarm with the Sensitivity setting. You use the up and down arrows to select a setting between 1 and 10. Higher settings are more sensitive and show more out-of-gamut colors.

→ *"Color Checks" in Chapter 5.*

Color Meter...

Displays a window with tools for measuring the value of individual colors in three different color spaces—RGB, LAB (CIELAB), and CMYK (for a specific printer or printing method).

When you open the window, the **color scope** is automatically selected. When you move the pointer into the image area, the cursor becomes a scope. When you click, Cachet reads the values of the color under the scope. It displays the color as a swatch in the Color Meter window and shows its position of on a color map. You can drag to see the color values for different color areas across an image.

You can choose a different color space from the Mode pop-up menu. If you are measuring CMYK values, you must also choose a printer from the Printer pop-up menu.

→ *"To measure color values" in the section "Color Checks" in Chapter 5.*

PANTONE® Colors...

Opens a window from which you can select PANTONE Colors. You can use this window with the tools in the Selective Color palette to specify PANTONE Colors in part of your image. You can also use the PANTONE Colors window to compare colors in your working image to standard PANTONE Colors.

Use the search tool to find a particular color.

Enter a color number here, and then click the Find button.

The first time you open the PANTONE Colors window, it briefly displays some copyright information and then displays a page of PANTONE Colors. You can scroll to see different pages. You can also type the color number for a PANTONE Color and click the Find button to go directly to that color. The Paper pop-up menu lets you specify coated or uncoated stock.

You can also use the search tool (the eye) to compare colors in your working image to PANTONE Colors. When the search tool is selected, you can click a color in the working image. Cachet then finds a range of PANTONE colors close to the color you selected and displays them in the PANTONE window, with the closest color outlined.

You can use the dropper in the Selective Color palette to pick up a color from the PANTONE colors window and apply it to pixels you've selected with the wand.

➔ *"PANTONE Colors" in Chapter 3.*

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Snapshots and scripts for keeping track of color changes you like

Cachet has two ways to track color changes as you work. Snapshots are temporary records of changes you make to an image. Scripts are more permanent records of a sequence of changes that you can apply again and again to similar images. The commands for working with snapshots and scripts are in the Playback menu.

Take Snapshot...

Records the current state of the working image and saves it temporarily with a name you provide. This command also displays a list of snapshots you have taken previously.

When you choose this command, Cachet asks you to name the snapshot. If you don't type a name, Cachet automatically assigns a number to the snapshot. When you click Snap, the current version is saved temporarily.

Snapshots are temporary. When you save changes, Cachet discards all the snapshots you've taken.

➔ *"To take a snapshot" in the section on "Snapshots" in Chapter 4.*

Restore Snapshot...

Displays a dialog box that you can use to select a snapshot to replace the current working image. You also use this dialog box to view snapshots, rename them, and delete them.

When you choose Restore Snapshot, a dialog box lists all the snapshots you have saved. When you select a snapshot and click the Restore button, Cachet adjusts the working image to match the appearance of the snapshot you select.

You can use the Preview button to view a snapshot without losing the current working image. When you preview, the snapshot temporarily replaces the working image, and the dialog box remains open so you can preview another snapshot. If you choose Cancel, the working image is restored. If you choose Restore, the snapshot replaces the working image and the dialog box closes.

The Rename button prompts you for a new name for the selected Snapshot.

The Delete button displays a dialog box that asks you to confirm that you want to delete the selected snapshot. If you click OK, the snapshot is removed from memory and no longer appears in the list of snapshots.

➜ *"Snapshots" in Chapter 4.*

Save Script...

Creates a permanent record of all the operations you have performed on the working image since you last saved it. The script is saved as a file, and you can use it to apply the same operations to other images.

When you choose Save Script, Cachet asks you to name the script. When you click the Save button, the script is saved in a file with that name.

→ *"To create a script" in the "Scripts" section in Chapter 4.*

Apply Script...

Applies a script created with the Save Script command to the current working image.

When you choose this command, Cachet lists the scripts you have previously saved. When you select a script and click the Apply button, Cachet performs the operations in that file on the current working image. If the script includes changes made with the Orientation palette or with the constraint tools in the Selective Color palette, Cachet asks if you want to apply these changes when you apply the script.

→ *"To apply a script" in the section on "Scripts" in Chapter 4.*

Windows Menu:

Manage your windows and find the one you want in a hurry

The Windows menu lists commands that you can use to manage windows. Zoom commands give you an alternative to the zoom tools when you are busy at work with another tool. Detail commands change the amount of detail you see in the window by telling Cachet to use more data or less data from your image file. And the Windows menu also lists all the open image windows for quick access when the window you want is buried under several others.

Zoom In and Zoom Out

Zoom In enlarges the image in the active window. Zoom Out reduces it. These commands have the same effect as the zoom-in and zoom-out tools in the tool palettes.

You can choose Zoom In or Zoom Out repeatedly to change the magnification. You can control how much the image is enlarged or reduced each time you choose the command by setting the Main preferences in the Preferences dialog box.

➔ *"To zoom in or out" in the section on "The View Through the Window" in Chapter 1.*

Zoom

Magnifies or reduces an image by the amount you specify. A submenu lists a variety of possible magnifications and reductions. You can also use the zoom-in and zoom-out tools to achieve a wider range of magnification and reduction.

➔ *"To zoom in or out" in the section "The View Through the Window" in Chapter 1.*

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Standard Detail

Displays the working image using the default size of the internal model. The standard internal model is a subsampled version of the image file. When you choose Standard Detail, Cachet uses the standard internal model to display the working image.

→ *"To get more or less detail" in the section on "The View Through the Window" in Chapter 1.*

File Detail

Rebuilds the internal model using all data in the image file, and then displays the working image using all this data. While this command improves the resolution of the image on the screen and gives you finer control over selective color correction, it requires more disk space and reduces Cachet's speed in some operations. (If your image file is relatively small, Cachet automatically uses all the image data, regardless of whether you select Standard Detail or File Detail.)

→ *"To get more or less detail" in the section on "The View Through the Window" in Chapter 1.*

Zoom Detail

Rebuilds the internal model to provide the best resolution possible at the current magnification. If you zoom in and then choose Zoom Detail, Cachet creates a new internal model using more of the data from the image file to provide greater detail. If you zoom out and then choose Zoom Detail, Cachet uses less data from the image file and therefore improves performance.

If you zoom in or out after choosing Zoom Detail, the internal model will still be optimized for the previous magnification level. Therefore, to maintain optimum resolution, you may want to choose Zoom Detail again after you zoom in or out.

→ *"To get more or less detail" in the section on "The View Through the Window" in Chapter 1.*

List of Windows

In addition to the Windows commands, the Windows menu lists the open windows by name, so you can quickly select the one you want. Windows are listed in the order in which you opened them. Cachet labels windows with reference images.

When you select a window from the Windows menu, it moves to the front and becomes the active window.

→ *"To select a window" in the section on "The View Through the Window" in Chapter 1.*

Glossary/Index

8-bit color   A method of representing colors using 8 bits per pixel. If you use an 8-bit color monitor and display card, you can simultaneously display up to 256 colors.

24-bit color   A method of representing colors using 24 bits per pixel. If you use a 24-bit color monitor and display card and you have 32-bit QuickDraw, you can simultaneously display over 16 million colors.

additive color system   A system in which color is produced by combining primary lights additively. In an additive color system, the primaries are red, green, and blue. When added together in proper amounts, these colors produce white. For example, an RGB video monitor is an additive color system. *See also* RGB color space, subtractive color.

black point   The point along the range of tones in an image after which dark tones appear black.

black point tool   A slider in the Exposure & Tone palette that increases or decreases the black point of an image.

chrominance   A measure of the combined hue and saturation of a color. Chrominance is a measure of a color without reference to luminance. *See also* luminance.

CIE   Abbreviation of Commission Internationale de l'Eclairage (International Committee for Color). Many color standards were recommended by this committee.

CIELAB color space   A standard color space recommended by the CIE in which colors are specified by a lightness coordinate (L*) and two chrominance coordinates (a* for green-red and b* for blue-yellow). In the CIELAB color space, equal distances represent color differences of roughly equal visual magnitudes.

clipping   *See* tone clipping.

CMYK color space   A standard way of representing color for reproduction in a subtractive system such as a printing press. In this color space, colors are represented as combinations of four colorants: Cyan, Magenta, Yellow, and blacK (CMYK). *See also* subtractive color system.

color balance   The relationship of red, green, and blue tones in an image. An image is color balanced if tones that appear gray or neutral in the original scene appear gray or neutral in the image.

color cast   A tint that results from shifting the overall chrominance (hue and saturation) of every pixel in an image.

color cast tool   A tool you use to change the color cast of an image. This tool can be used to create a special mood or feeling in an image. The color cast tool is in the Color and Selective Color palettes.

color filter   A tool in the Exposure & Tone palette that you use to correct the color balance of an image.

color indicator   A donut-shaped marker that you use to specify color changes with the color filter and color cast tools.

color handles   The six small, circular markers along the outside of the color filter that indicate primary colors. You can click a color handle to shift the color balance in that direction.

color meter   A tool that you use to measure the color values of a color you select in an image. You can measure values in RGB, CIELAB or CMYK (for a specific output device and GCR level). The color meter is in the Tools menu.

Color palette   A palette of tools you use to adjust the overall color appearance of an image. The Color palette includes the color cast, saturation, and lightness tools. The Color palette is available from the Image menu.

color scope   The crosshairs in the color meter that you use to select the color you want to measure.

color separation   The process of separating a color image into the primary color components for printing—generally cyan, magenta, yellow, and black. Also used to refer to the four pieces of film that result from the process of separating a color image.

color space   A model for representing color in terms of measurable values, such as the amount of red, green, and blue in an image. Cachet works with three standard color spaces: RGB, CIELAB, and CMYK.

constraint tools   The rectangular marquee, circular marquee, and lasso. You use the constraint tools to define a mask when using the Selective Color palette.

contrast   The ratio between the light tones and the dark tones in an image. Adjusting the contrast compensates for the effects of undesirable lighting—for example, too harsh or too diffused—in the original image.

contrast tool   A slider in the Exposure & Tone palette that you use to increase or decrease the overall contrast in an image.

crop tool   A tool in the Orientation palette that you use to redefine the borders of the working image.

cropping ruler   A tool in the Orientation palette that you use to see the size of the region of an image you have selected with the crop tool.

Desktop Color Separation (DCS) files   A group of five files that make up a color separated image. A variant of EPS, DCS separates cyan, magenta, yellow, and black data into four files, linked together by a smaller, fifth file. DCS files are used for outputting high-resolution separations to imagesetters, often in conjunction with a page layout application like Quark XPress. *See also* Encapsulated PostScript (EPS).

device profile   A collection of information stored in the EfiColor database that describes a particular device or combination of devices used in the printing process. Cachet uses the device profile to calculate the appropriate values when reproducing a color image.

dot shape   The type of dot used in the halftoning process. Cachet offers pre-defined dot shapes, as well as user-defined and custom dots. *See also* halftoning.

dropper   A tool in the Selective Color palette that you use to pick up a color and apply it to selected pixels in the working image.

elliptical marquee   A constraint tool in the Selective Color palette. You use the elliptical marquee to constrain selective color changes to a circular or elliptical region.

Encapsulated PostScript (EPS)   An industry-standard format for saving files containing PostScript images and graphics. EPS files can be read by many Macintosh, MS-DOS, and Unix application programs, including word processing, graphics, and page layout applications. EPS files optionally include a screen preview so you can see the graphic or image on the screen when you import it into another application. Cachet also supports DCS, a file format based on EPS but that pre-separates files for imagesetters. *See also* Desktop Color Separation (DCS) files.

end points   The white point and black point together are called the end points.

exposure   A measure of the amount of light that passes through a camera lens and is recorded on film. Exposure affects the overall brightness of an image. In the photographic process, exposure is controlled by aperture (f-stop) and shutter speed.

Exposure & Tone palette
A palette of tools for correcting problems that generally occur as a result of improper exposure, lighting conditions, films, and filters in the original photography. This palette is available from the Image menu.

exposure tool   A slider in the Exposure & Tone palette that you can use to compensate for errors in exposure in the original photograph.

flip tools   A pair of icons in the Orientation palette that you can use to mirror an image (left to right or top to bottom).

gamut   A range of colors. A *device gamut* is the range of colors that a device, such as a printer, can produce. An *image gamut* is the range of colors in a particular image. *See also* out-of-gamut colors.

gamut alarm   A tool you can use to check for colors that are out of the gamut of the printer or printing method you plan to use. The gamut alarm is available from the Tools menu. *See also* out-of-gamut colors.

gray component replacement (GCR)   A technique for removing from the color separations some or all of the cyan, magenta, and yellow content that produces gray and replacing them with an appropriate amount of black.

gray scale   A graduated sequence of gray tones from white to black.

halftoning   A method that uses dots of various sizes to represent an original continuous tone image. The pattern is determined by the line frequency, screen angle, and dot shape. *See also* line frequency, screen angle, dot shape.

hand tool   A tool in all the palettes that you can use to scroll through an image that is too big to fit in its window.

highlights   The light tones in an image. In a printed halftone image, highlights are produced with the smallest printed dots.

highlights tool   A slider in the Exposure & Tone palette that you can use to increase or decrease brightness primarily in the highlights of a working image.

hue   The attribute of a color that gives the color its name—for example, purple, red, orange, or green.

image file   A file that contains image data in any of several graphic formats. Cachet image files may be in one of the following formats: TIFF, PICT, Adobe Photoshop, or Raw.

imagesetter   A high-resolution device for generating graphic output on film or photographic paper.

internal model   A subsampled version of the working image. Whenever Standard Detail is checked in the Windows menu, you are actually working with the internal model rather than with the actual data stored in the image file. However, if you choose File Detail or Zoom Detail from the Windows menu, Cachet does not use the internal model.

JPEG   Abbreviation for Joint Photographic Experts Group. Also a set of image compression standards developed by this group. The reference images supplied with Cachet are in JPEG format.

lasso   A constraint tool in the Selective Color palette. You can use this tool to draw a freeform mask that constrains selective color changes. *See also* Selective Color palette.

lightness　The brightness of an area judged relative to the brightness of a similarly illuminated area that appears to be white. A measure of the human response to luminance. *See also* luminance.

lightness tool　A slider in the Color palette that you can use to increase or decrease the lightness of an image. The lightness tool is also available in the Selective Color palette.

line frequency (lpi)　A measure of the frequency of the halftone dot pattern. High line frequencies (more lines per inch) provide higher resolution than low line frequencies. Line frequency is sometimes referred to as screen frequency or screen ruling.

luminance　An objective, physical measure of the amount of light reflected from a surface.

mask　A method of constraining selective color changes to a selected region in an image. With Cachet, you outline the areas you want to change with the lasso, rectangular marquee, and circular marquee on the Selective Color palette. Everything outside the selected area is masked and will not be affected by changes you make with the Selective Color Palette.

midtones　The middle part of the range of tones in an image (the range between highlights and shadows).

midtones tool　A slider in the Exposure & Tone palette that you can use to adjust the brightness of the working image, primarily in the midtones.

MultiChoice window　A window that displays six variations of the working image. The variations correspond to the tool you select— six variations for the color filter, for example, or six variations for saturation. When you click one of the variations, the associated correction is applied to the working image. The MultiChoice window is available from the Tools menu.

Orientation palette　A palette of tools for cropping an image or changing its orientation, including flipping and rotating. This palette is available from the Image menu.

out-of-gamut colors　Colors in an image that are not within the gamut of the target printer, proofing system, or other reproduction device. *See also* gamut, gamut alarm.

PANTONE® color　A color that is specified in the PANTONE MATCHING SYSTEM®. This system provides a standard for describing printed colors using specific inks.

PANTONE® tool　A tool you use to apply a simulated PANTONE color to a region of an image.

PICT format　A standard Macintosh graphic file format.

pixel　Abbreviation of "picture element." The smallest element of a digital image.

Raw format　A simple file format for image files.

rectangular marquee　A constraint tool in the Selective Color palette. You use the rectangular marquee to constrain selective color changes to a rectangular region. *See also* Selective Color palette.

lightness　The brightness of an area judged relative to the brightness of a similarly illuminated area that appears to be white. A measure of the human response to luminance. *See also* luminance.

reference image   A digital image that has been color corrected in Cachet and printed with color separations created by Cachet. You use a reference image as a guide to correcting the color in your working image. You can display one or more reference images next to your working image as you work. You can also match individual colors in your working image to individual colors in a reference image.

resampling   Changing the resolution of an image by adding or removing pixels, with a corresponding change in file size. Resampling reduces the sharpness of an image and permanently alters the information it contains.

resizing   Changing the dimensions and resolution of an image without adding or removing pixels. Resizing maintains the original ratios of height and width to dpi. Resizing does not permanently alter the contents of an image file.

resolution   The measure of how detailed and fine an image is. Resolution is generally measured as a number of pixels per unit length, for example 72 dots per inch.

RGB color space   An additive color system typically used to represent color on video screens.

rotation tools   Tools in the Orientation palette that you use to rotate an image 90° to the right, 90° to the left, and 180°. *See also* Orientation palette.

saturation   The purity of a color. Saturation determines whether colors in an image appear pure (high saturation) or diluted with gray (low saturation).

saturation tool   A slider in the Color palette that you can use to increase or decrease the saturation of colors in an image. The saturation tool is also available in the Selective Color palette.

screen   The pattern of dots used for halftoning. *See also* halftoning.

screen angle   The angle at which the screen is placed for each color separation film. Typically, different angles are used for each color to minimize interference patterns (called *moiré*) that result from overlapping screens.

script   A file recording the editing changes you have applied to an image. You can use this file to apply the same changes to other images.

selective color correction   Changes that you make to selected colors in an image or region of an image. *See also* mask, Selective Color palette.

Selective Color palette   A palette of tools that you use to make selective color corrections. These tools include the wand and dropper for matching colors automatically; constraint tools to limit changes to certain areas of an image; and the color cast, saturation, and lightness tools for adjusting selected colors manually. This palette is available from the Image menu.

separation   Short way of referring to "color separation." *See* color separation.

shadows   The dark tones in an image. In a printed halftone image, shadows are produced with the largest printed dots.

shadows tool   A slider in the Exposure & Tone palette that you can use to increase or decrease brightness only in the shadows of an image.

sharpening   A process of image enhancement that produces a "crisper" looking image.

slider   A control provided by many of the tools you use in Cachet.

snapshot   A temporary record of your working image. You can use snapshots to record intermediate versions that you like while you continue to experiment with additional changes. *See also* script.

subsampling   Reducing the number of pixels in an image by resampling the image.

subtractive color system
A system where color is represented by combining subtractive colorants such as paint, inks, or dyes. Typical primaries are cyan, magenta, yellow, and black. When combined, they produce dark colors. For example, a printing press is a subtractive color system. *See also* CMYK color space, additive color system.

TIFF   A standard graphics file format for representing gray-scale and color images. TIFF files can be exchanged among several environments, including Macintosh, MS-DOS, and Unix. TIFF is an abbreviation of Tag Image File Format.

tone clipping   The loss of detail in the highlights and shadows of the image. You can use the Check and Show buttons in the Exposure & Tone palette to check for tone clipping.

wand   A tool in the Selective Color palette that you use to select colors you want to change.

working image   The image you want to color correct. In Cachet, you work with one working image at a time.

white point   The point along the range of tones in an image after which light tones appear white.

white point tool   A slider in the Exposure & Tone palette that you can use to increase or decrease the white point of an image.

zoom-in tool   A tool that you can use to magnify the view of an image in a window. The zoom-in tool is available in all the tool palettes and is equivalent to the Zoom In command in the Windows menu.

zoom-out tool   A tool that you can use to reduce the view of an image in a window. The zoom-out tool is available in all the tool palettes and is equivalent to the Zoom Out command.

This book, Learning Cachet, and the Reference Image Guide were produced disk-to-film, using Microsoft Word, Quark Xpress, Adobe Photoshop, and EFI Cachet.

The color images were color corrected in Cachet, output on the Agfa SelectSet 5000 and printed on a Heidelberg Speedmaster 102S press, on a 28"x40" sheet of Patina matte book paper, with a 150 lpi screen using Cachet separations, with the SWOP-Coated profile.