

Module 3– Color Printing Utilities

Overview

In this module, you will practice using the following Macintosh software utilities:

- ColorSync 2.0 software for Macintosh.
- LaserWriter 8 Extension (“printer driver”), version 8.3
- Apple Printer Utility, version 2.0

You will also practice setting the Monitors control panel gamma options to work properly with ColorSync 2.0 color matching. Knowing how to use these utilities and their options will help you troubleshoot users’ printing and color matching problems.

Equipment Needed

To perform the exercises in this module, you will need the following equipment:

- Macintosh computer, 8MB of RAM, System 7.1 or higher (7.1.1 or higher required for Desktop Printer exercises)
- CD-ROM drive
- LaserWriter 8.3 Printer Installer disks (or the CD that contains this course)
- Recommended: Attach your Macintosh to a network containing two or more LaserWriter printers, including (if available) a Color LaserWriter
- Recommended: Color monitor set to 256 or more colors
- Paper and pencil (for exercises)

Skills Checklist

The Skills Checklist (below) lists the skills you should be able to demonstrate by the end of this module; if you think you can already demonstrate the skills, try the Exercises. If you pass the Exercises, you should be able to pass the portion of the course test that covers these skills. (The course test is found on this CD.)

Skill	Where Practiced
Identify the proper steps for setting up a Macintosh computer system for color laser printing	Exercise 1
Identify the functions and locations of ColorSync 2.0 software components	Exercise 1
Identify the features and functions of desktop printer icons	Exercise 2
Create and use desktop printer icons	Exercise 3
Identify the LaserWriter 8.3 color printing options and their features.	Exercise 4
Identify the functions of the Apple Printer Utility, version 2.0	Exercise 5
Given a description of a ColorSync problem, identify possible causes, solutions, and troubleshooting steps	Exercise 6

Printer Software

The Apple Color LaserWriter 12/600 PS Installer installs the following software on your computer's hard disk:

- LaserWriter 8 (version 8.3 or later) printer driver
- ColorSync 2.0 (or later)
- Apple Printer Utility, version 2.0 (or later)
- A selection of TrueType fonts

If you have not already installed the Color LaserWriter 12/600 PS software on your computer's hard disk, do so now. For instructions, refer to the "Installation Instructions" file on the CD that contains this course. Installing the Color LaserWriter software on your Macintosh system will allow you to perform the exercises in the rest of this module.

Note: If your computer is running Macintosh System 7.1, the Desktop Printer extension will not be installed, because it requires System 7.1.1 or greater. Without the Desktop Printer extension, you will not be able use your computer to perform the desktop printer icon exercises in this module.

The LaserWriter 8 driver, version 8.3, should now be installed on your Macintosh. It appears as an item in the Chooser window.

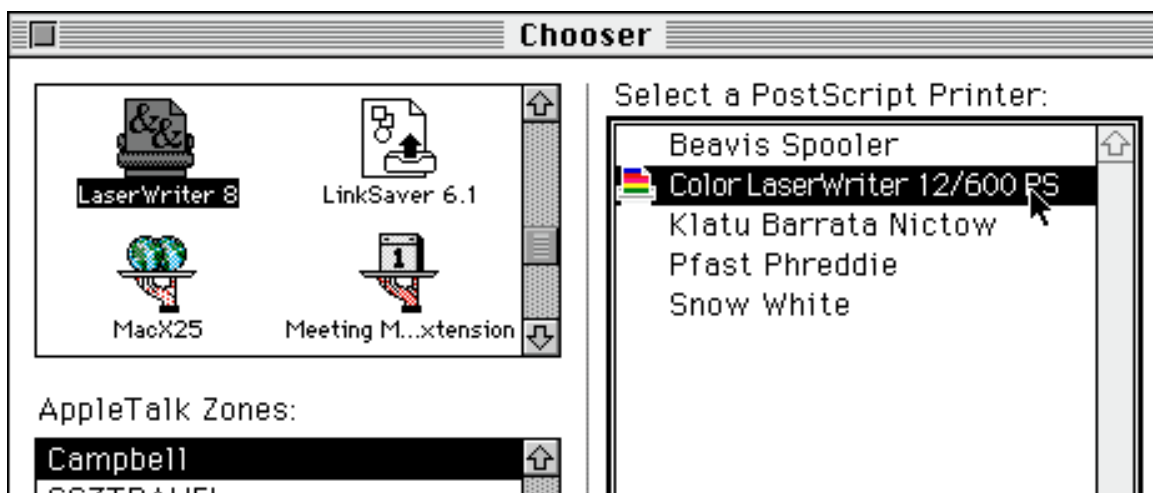


Figure 3-1: Chooser With LaserWriter 8.3 Driver

You have also installed the Apple Printer Utility. It appears in a folder titled “Apple LaserWriter Software” on the topmost level of your hard disk.

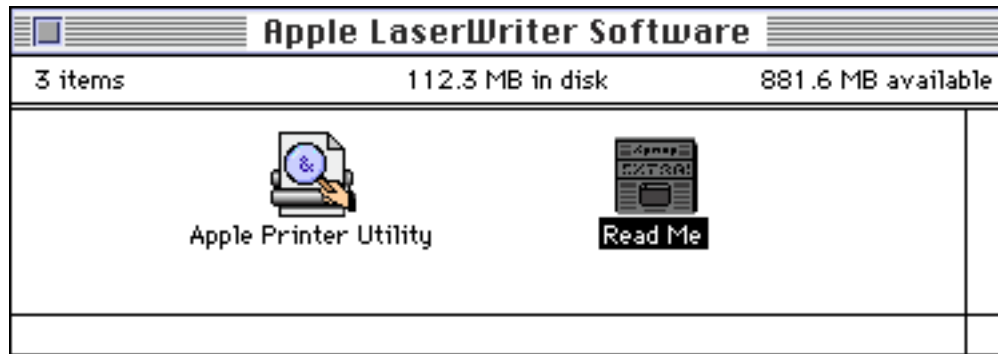


Figure 3-2: Apple LaserWriter Software Folder

And you have also installed ColorSync 2.0 software, which we will look at next.

ColorSync Software and Options Settings

The LaserWriter 8.3 printer software Installer puts the following ColorSync files into the System Folder of your Macintosh computer.

ColorSync

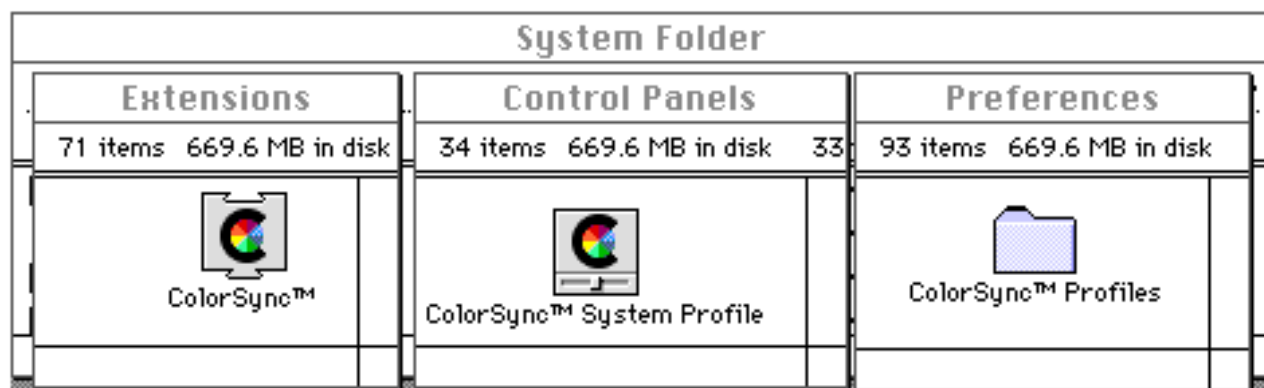
ColorSync: Located in the Extensions folder. This is the fundamental piece of ColorSync software, a system extension which is loaded into the System upon startup.

**ColorSync
System Profile**

ColorSync System Profile: Located in the Control Panels folder. This is a control panel that allows users to select the correct device profile for their monitor.

ColorSync Profiles

ColorSync Profiles: Located in the Preferences folder. This folder contains device profiles for Apple color peripherals (including monitors, printers, scanners, etc.). The profiles allow ColorSync to “translate” color definitions from one device to another.



**Figure 3-3: ColorSync 2.0 Files
in System Folder**

**Open the System Folder now and find these files.
Then close the System folder. If these files are not in
your System Folder, reinstall the printer software.**

Setting ColorSync-Related Options

For ColorSync to match colors properly, it must know what devices are being used to display and print the colors, and how their color-related options have been set. There are at least two, and sometimes three, options that need to be set correctly in order for ColorSync to work properly with a monitor:

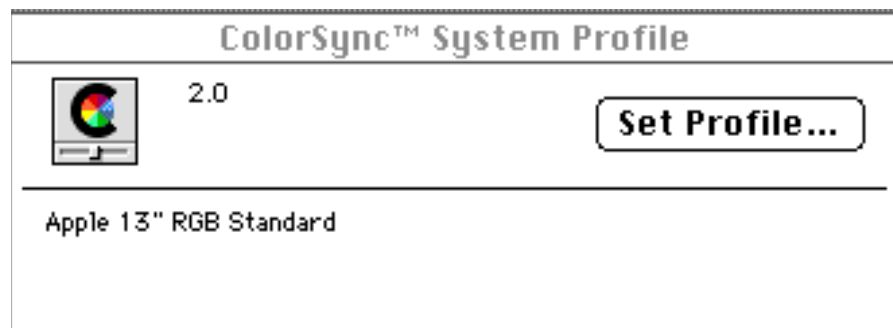
- ColorSync System Profile control panel
- Monitors control panel gamma option
- Monitor color temperature (some newer monitors)

ColorSync System Profile

After the printer software was installed, you may have noticed a dialog box asking you to set your ColorSync System Profile to match your monitor. The ColorSync System Profile is actually a monitor profile, which tells ColorSync which monitor you are viewing colors on, and (for later model monitors) how its white level has been set. Since each monitor differs in its color characteristics, it is important to set this profile correctly. We'll practice that now.

To set the profile:

1. **Open the ColorSync System Profile control panel (control panels are under the Apple menu).** The window shown in Figure 3-4 appears.



**Figure 3-4: ColorSync System Profile
Control Panel**

2. **Click the Set Profile button.** A dialog box appears, showing all available monitor profiles (see Figure 3-5).

Note: This dialog box shows the monitor profiles stored in the ColorSync Profiles folder (inside the System/Preferences folder). The folder also contains profiles for printers and other devices, but only monitor profiles are shown in this dialog box, because only a monitor can be chosen as a “System Profile.” Printer profiles appear in the Print Options dialog box, discussed later in this module.

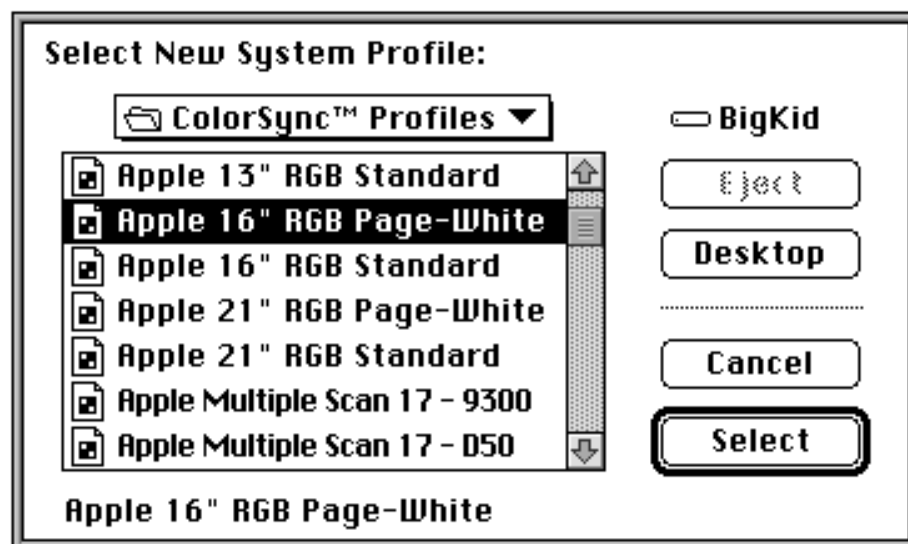


Figure 3-5: ColorSync 2.0
“Set Profile” Dialog Box

3. **Choose the proper monitor profile for your monitor.** If your monitor is not listed, choose Default System Profile, which sets the profile at "Apple 13-inch RGB Standard."

Important: If a Page-White or D50 profile is available for your monitor, choose it. This will provide the best color matching when printing.

Setting the Monitor Gamma

When you set the ColorSync System Profile to a Page-White or D50 option, you must also set your monitor's gamma to "Page White gamma" to match it. Otherwise, ColorSync will be misled as to the white level of the monitor. (A gamma is a color correction table for a monitor. It allows the system software to adjust its color output signals to the hardware characteristics of the particular monitor being used, so that the signals produce the desired standard colors.)

The default gamma of Apple monitors is normally optimized for screen display: It produces a "white" that is different from the white of printer paper. When you choose the Page-White gamma, on the other hand, the white of the screen will be corrected to match the white of a printed page, so that the user will be better able to predict printed colors from screen colors.

To set a monitor's gamma option:

1. Open the Monitors control panel. The window shown in Figure 3-6 appears.
2. If you have more than one monitor attached to your computer, click the icon of the monitor you wish to adjust.

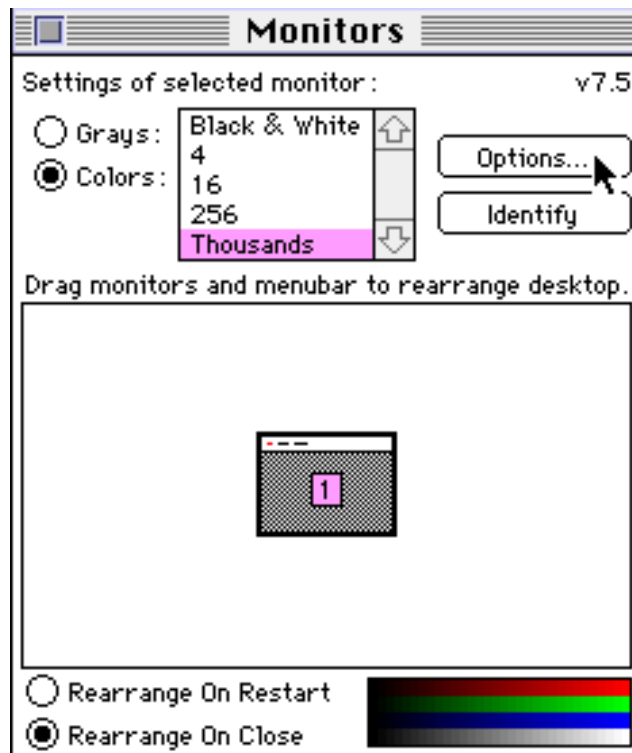


Figure 3-6: Monitors Control Panel

3. **Hold down the Option key while clicking the "Options..." button.** The options dialog box appears (Figure 3-7).
4. **If available, click the Use Special Gamma box** (see Figure 3-7). The options beneath that check box become selectable.
5. **If available, select the Page-White Gamma option by clicking it so that it highlights.** If a Page-White gamma is not available, click Cancel.

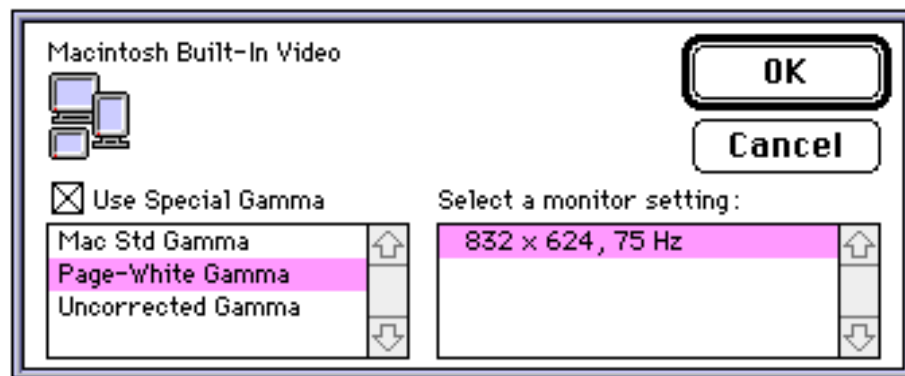


Figure 3-7: Monitors Options Dialog Box

6. **Click OK.** Your gamma selection is accepted and the Monitors control panel window reappears.
7. **Click the close box at the upper left corner of the Monitors control panel window.**

If you are using an Apple Multiple Scan monitor, you must also set the color temperature of the display, as described next.

Setting Color Temperature

Some Apple Multiple Scan monitors allow you to adjust the color temperature (white point) of their display. At higher color temperatures, white appears as a slightly cooler white with more of a blue tint, while at lower color temperature, white is slightly warmer (more reddish). This setting is usually controlled by pushbuttons on the monitor chassis.

When setting up a multiscan monitor for use with ColorSync 2.0 and an Apple Color LaserWriter printer, make sure that the color temperature, or intensity, is set to 9300K (the default setting). ("9300K" refers to the color of white light produced when iron is heated to a temperature of 9300 degrees Kelvin.) If the Page-White Gamma option is selected in the Monitors control panel but the color temperature setting is other than 9300K, the multiscan monitor's colors could look too red or too blue compared to printer colors.

For instructions on setting the color temperature for a specific monitor, see the user's manual for the monitor, or refer to Service Source.

Important: Some other color devices (such as scanners) may have option settings that could also affect ColorSync color matching. When setting up or troubleshooting a color system, refer to the user manual for each device for information about using the device with ColorSync.

Possible User Errors

When a user installs the LaserWriter 8.3 software, the ColorSync System Profile is set to Apple 13" RGB Standard as a default. If the user forgets to select a ColorSync System Profile after installing the printer software, his System Profile may not match his monitor. Many users will also be unaware of the gamma and color temperature options we have just discussed.

Important: When a user complains that printed pages do not match the colors on his monitor, always check the control panel settings and device options discussed in this section before performing any further troubleshooting.

Exercise 1: ColorSync Software and Option Settings

If you are reading these exercises on screen, get a piece of paper and a pencil. Try to answer the following questions from memory. The answers are given at the end of the exercise.

Choose the item that best fits the description or missing portion of the statement.

1. Where are ColorSync device profiles stored?
 - A. In the Control Panels folder
 - B. In the Extensions folder
 - C. In the Monitors folder
 - D. In the Preferences folder
2. What monitors require color temperature adjustment during ColorSync setup?
 - A. All Apple monitors
 - B. All monitors
 - C. Only multiple scan monitors
 - D. Only third-party monitors
3. You need to set the ColorSync System Profile to identify the _____ being used.
 - A. Drive
 - B. Monitor
 - C. Printer
 - D. Scanner
4. Users with Apple Multiple Scan monitors need to adjust the _____ of their display.
 - A. Brightness
 - B. Color temperature
 - C. Contrast
 - D. None of the above

5. A color correction table for a monitor is a
 - A. Color map
 - B. Color table
 - C. Gamma
 - D. Monitor controls panel

6. These monitor profiles usually provide the best color matching when printing. (Choose 2)
 - A. D50
 - B. Standard
 - C. Page-White
 - D. Custom

7. When using a Page-White or D50 ColorSync Profile with a multiscan monitor, you should set the monitor's color temperature to
 - A. 5000K
 - B. 6500K
 - C. 9300K
 - D. 9500K

8. The default ColorSync System Profile monitor setting is
 - A. Apple 13" RGB Standard
 - B. Apple 16" RGB Standard
 - C. Apple 16" RGB Page-White
 - D. Apple 21" RGB Page-White

Answers to Exercise 1

1. Where are ColorSync device profiles stored?
D. In the Preferences folder
2. What monitors require color temperature adjustment during ColorSync setup?
C. Only multiple scan monitors
3. You need to set the ColorSync System Profile to identify the _____ being used.
B. Monitor
4. Users with Apple Multiple Scan monitors need to adjust the _____ of their display.
B. Color temperature
5. A color correction table for a monitor is a
C. Gamma
6. These monitor profiles usually provide the best color matching when printing. (Choose 2)
A. D50
C. Page-White
7. When using a Page-White or D50 ColorSync Profile with a multiscan monitor, you should set the monitor's color temperature to
C. 9300K
8. The default ColorSync System Profile monitor setting is
A. Apple 13" RGB Standard

Desktop Printer Icons

Desktop Printer icons and their associated features replace the PrintMonitor utility found in previous LaserWriter drivers. They allow the user more flexibility in choosing printers, and are easier to use than the Chooser and PrintMonitor. LaserWriter driver 8.3 desktop printer icons are very similar to those created by QuickDraw GX. However, some features of QuickDraw GX printer icons—including portable digital documents and previewing—are not available with LaserWriter 8.3 driver icons.

What Is a Desktop Printer Icon?

With the LaserWriter 8.3 driver, when you select a printer in the Chooser, the driver creates a desktop printer icon for that printer, as shown in Figure 3-8:



Figure 3-8: Desktop Printer Icon

The desktop printer icon appears on your Macintosh desktop. By selecting additional printers in the Chooser, you can create several desktop printer icons, if there are several printers available on your network (see Figure 3-9).



Figure 3-9: Multiple Printer Icons

In previous versions of the LaserWriter driver, you could have only one printer selected at a time. With desktop printer icons, you can print simultaneously to two or more printers, and you can select the printer you want to use without accessing the Chooser.

Printer Status

You can tell the status of a printer by looking at its desktop icon:

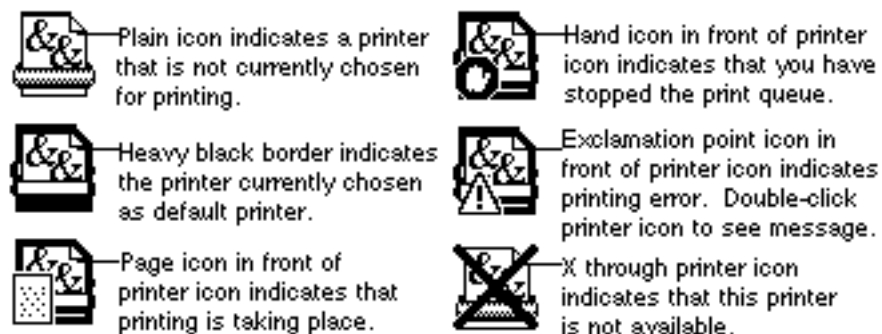


Figure 3-10: Printer Status Icons

As you perform the exercises on the following pages, notice how the icons change as you create and work with them.

Creating and Working With Desktop Printer Icons

For the following exercises, your computer must be connected to a network with at least one LaserWriter printer available (two or more LaserWriters would be preferable).

Creating a Desktop Printer Icon

To create a desktop printer icon:

1. **Select Chooser from the Apple menu.**
2. **Select LaserWriter 8 from the top left window within the Chooser window.**

If you don't see the LaserWriter 8 icon, use the scroll bar to find it.

When you select LaserWriter 8, the names of the shared printers appear in the selection window at the right of the Chooser window.

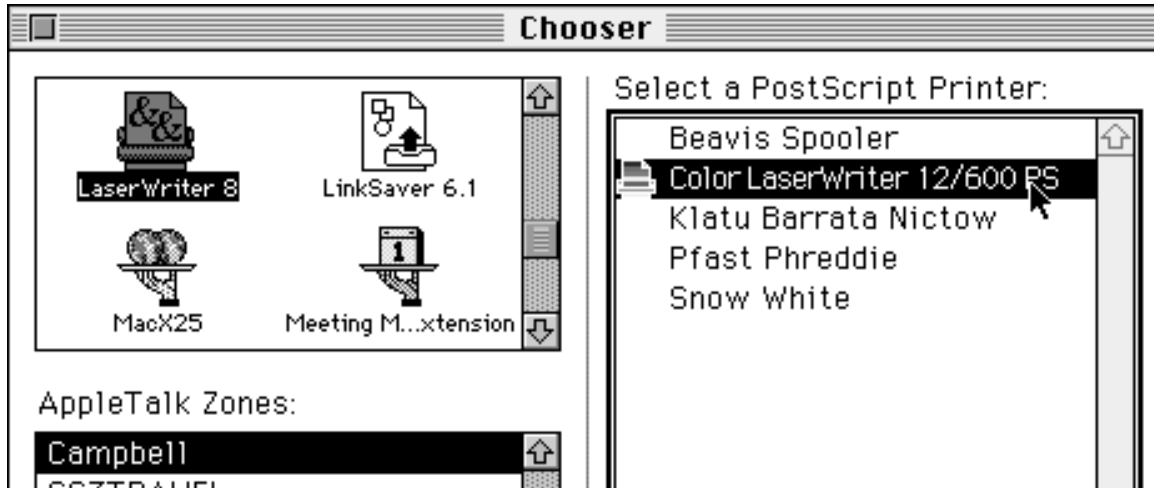


Figure 3-11: Chooser

3. **Select one of the available zones, if any.**
4. **Select one of the available printers.**
5. **Click the Setup button (in version 8.4, the Create button).** (You only need to do this the first time you select each printer.) When you click Setup, the Chooser

queries the printer to find out what model it is; it also looks in the System Folder/ Extensions/ Printer Descriptions folder for any PPD (PostScript Printer Description) files that match the printer's type.

PPD files are installed by the LaserWriter 8.3 software installer. They contain important information about each printer's available options (for example, whether the printer has a sheet feeder). The PPD filename indicates the printer model and its version of PostScript.

If the driver finds more than one PPD file that could describe the printer, it asks the user to choose the correct one. If you don't know which one to select, click "Other PPD...". A new dialog box will appear, showing all the installed PPD's. In this dialog box, click the button Use Generic, which will set up the printer with a generic PPD file that works with all LaserWriter printers.

When the driver has found the PPD file and has communicated with the printer, a small printer icon appears next to the printer's name in the right-hand Chooser window (see Figure 3-11).

6. **If the dialog box shown in Figure 3-12 appears, click Auto Setup.** The correct PPD file for your printer is automatically selected. **Then click OK to close the dialog box.**

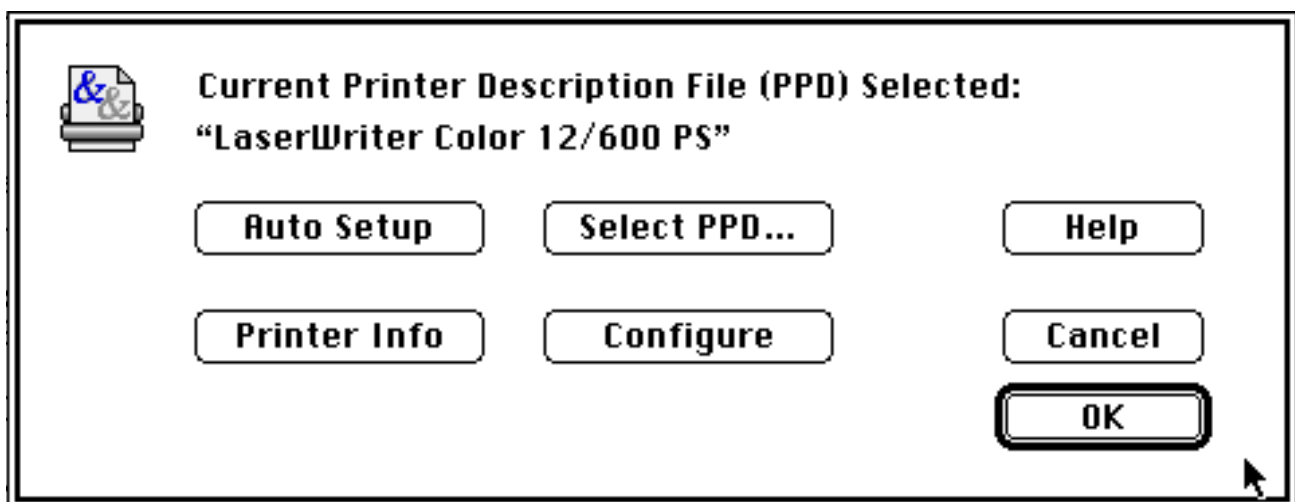


Figure 3-12: Printer Setup Dialog Box

7. Close the Chooser.

This creates a desktop printer icon on the Macintosh desktop, with the same name as the printer (see Figure 3-13).



Figure 3-13: Printer Icon

You will notice that the icon has a thick black border: The border indicates that this is the current default printer. When you choose “Print...” from any application’s file menu, it will print to the current default printer. Every time you select a printer in the Chooser, that printer is designated the current default printer.

If several printers are available on your network, follow the steps above to create two or three printer icons on your desktop.



Figure 3-14: Multiple Printer Icons

“ Drag and Drop” Printing

When you choose “Print...” from an application’s File menu, it always prints to your default printer. But you can also print by the drag-and-drop method, using any printer you have made an icon for.

To print using the drag-and-drop method:

- 1. Use SimpleText to create a sample text file. Name it “Test File.”**
- 2. In the Finder, drag the icon of Test File onto any printer icon.** You will see the “Print...” dialog box appear, with the name of that printer in the upper left corner. The document will be printed on that printer, and the printer will automatically become the default printer.

Note: Not all applications support drag-and-drop printing.

Setting the Default Printer

In addition to the drag-and-drop method you have just used, there are two other ways to designate a printer as the default printer.

The first way is:

- **Open Chooser, select LaserWriter 8 from the top left window, and select the printer you want from the top right window** (see Figure 3-15). If you already have a desktop icon for that printer, it becomes the default printer (the thick black outline appears around it) as soon as you close the Chooser.

If you do not already have a desktop icon for that printer, LW 8.3 creates one and makes it the default printer. (If you are creating a new desktop printer icon, remember to click Setup, so that the correct PPD is selected for the printer.)

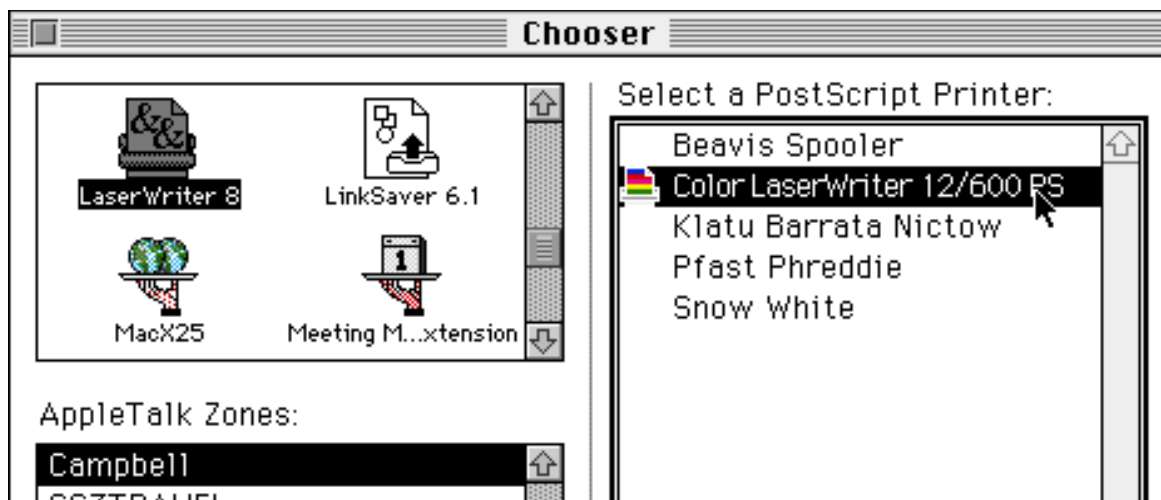


Figure 3-15: Chooser Window

The second way is:

1. **Click a printer icon on your desktop to highlight it** (select one that is not already the default printer). This causes the Printing menu (Figure 3-16) to appear to the right of the Special menu on the Macintosh Desktop menu bar:



Figure 3-16: Finder Menu Bar

2. **From the Printing menu, choose Set Default Printer.** The black border will appear around the printer icon you have chosen.

Using the Print Queue Status Window

When you double-click a printer icon, a print queue status window appears. You can change the order of the items in the print queue—or postpone a print job—simply by dragging a document icon to a new location in the queue. You can also transfer print jobs to other printers by dragging document icons from one print queue window to another. (These print management functions replace PrintMonitor.)

Follow these steps to experiment with the features of the print queue status window:

1. **Click a desktop printer icon to select it.**
2. **Pull down the Printing menu and choose Stop Print Queue.** This will allow you to experiment without wasting paper. The “Hand” icon appears on top of the printer icon, to indicate that the print queue is stopped.
3. **Drag the icon of your Test File document to the printer icon you selected in step 1.**
4. **When the Print dialog box appears, choose Print.**
5. **Repeat steps 3 and 4 two more times,** so that three items are in the print queue.

6. **Double-click the desktop printer icon.** A print queue status window appears (Figure 3-17), showing the documents in the queue:

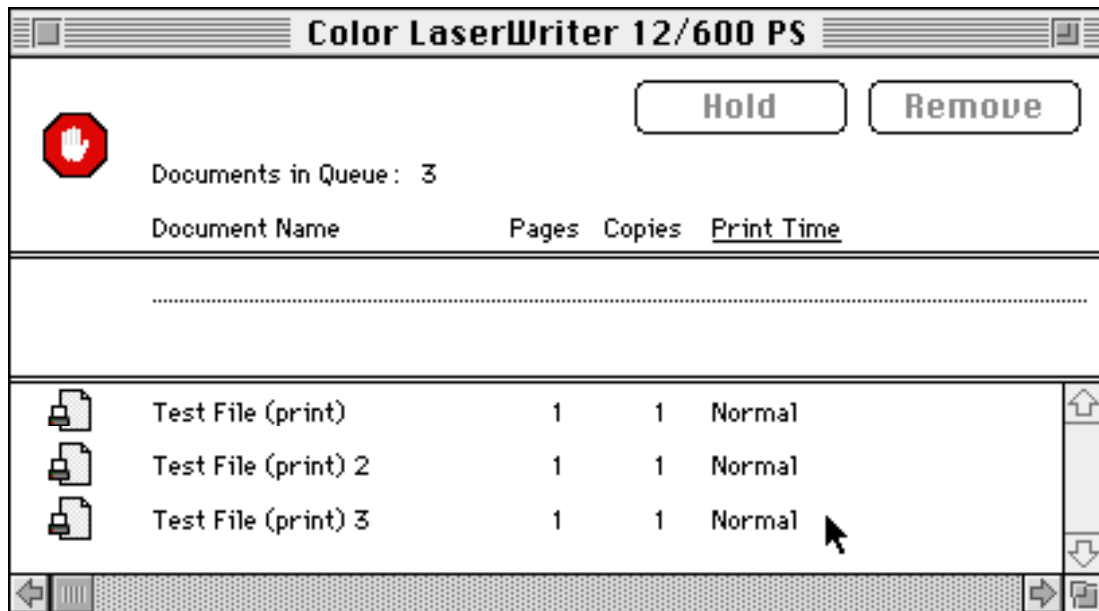


Figure 3-17: Print Queue Status Window

Note: In version 8.4.1 of the LaserWriter driver, the Hold and Remove buttons are replaced by "pause" and "trash can" icons at the top left of the window.

7. **Click the Test File (print) icon in the status window to highlight it. Then click the Hold button.** The word in the "Print Time" column changes from "Normal" to "Hold."
8. **Click and drag the Test File (print) icon to the bottom of the list of documents.** This is one way to set the order of printing.
9. **Drag the Test File (print) icon off the Print Queue window and onto the desktop icon of another printer.** The icon disappears from the Print Queue window.

Note: If this step does not work, it may be because the two printers are not of the same type. The printer software won't let you move a print job to an incompatible printer.

- 10. Double-click the printer icon onto which you dragged the Test File (print) icon.**

You will see that the icon is now in the print queue for the other printer.

Canceling a Print Job

There are two ways to cancel a print job: Dragging the print job to the Trash, or simply clicking the Remove button (in version 8.4.1, the "trash can" icon). Try them now by following the steps below.

To cancel a print job:

- 1. Open the print queue by double-clicking the desktop printer icon for the printer used in the previous exercise.**
- 2. Drag one of the print jobs into the Trash.** The print job disappear from the queue and appear in the Trash.
- 3. Select another print job and click the Remove button.** The print job disappear from the queue.
- 4. Close the print queue.**

Exercise 2: Desktop Printer Icon Questions

If you are reading these exercises on screen, get a piece of paper and a pencil. Try to answer the following questions from memory. The answers are given at the end of the exercise.

Matching Questions

After each of the status descriptions below, write the letter of the appropriate printer icon.



A



B



C



D



E



F

1. The printer is not currently chosen for printing
2. The printer is not available
3. A printing error has occurred
4. The print queue has been stopped
5. Printing is currently taking place
6. This printer is the current default printer

Fill-In Questions

Fill in the blanks below with the correct term.

1. When you select a new printer in the Chooser, using the LaserWriter 8.3 extension, you should click _____ before leaving the Chooser.
2. To change the default printer, you can use any of these three methods:
 - a) _____
 - b) _____
 - c) _____

True/False Question

Is the following statement TRUE or FALSE?

- With the LaserWriter 8.3 driver, you can print to several printers at the same time.

TRUE

FALSE

Answers to Exercise 2

Matching Questions

1. The printer is not currently chosen for printing.
(Icon A)
2. The printer is not available
(Icon F)
3. A printing error has occurred
(Icon E)
4. The print queue has been stopped
(Icon D)
5. Printing is currently taking place
(Icon C)
6. This printer is the current default printer
(Icon B)

Fill-In Questions

1. When you select a new printer in the Chooser, using the LaserWriter 8.3 extension, you should click Setup before leaving the Chooser.
2. To change the default printer, you can use any of these three methods:
 - a) Select a printer in the Chooser.
 - b) Click a printer icon, pull down the Printing menu, and select Set Default Printer.
 - c) Drag a document icon to the new printer.

True/False Question

- With the LaserWriter 8.3 driver, you can print to several printers at the same time.
(TRUE—You can drag document icons to different desktop printer icons.)

Exercise 3, Desktop Printer Icons

Hands-On

Test your understanding of the skills covered in this section by performing the tasks listed below on your computer, without looking at the instructions. If you are reading this exercise on screen, use paper and pencil to write responses, where instructed.

The answers (given after this exercise) will tell you how to check that you performed the tasks correctly.

1. Create two printer icons on your desktop.
2. Write the name of your current default printer below.

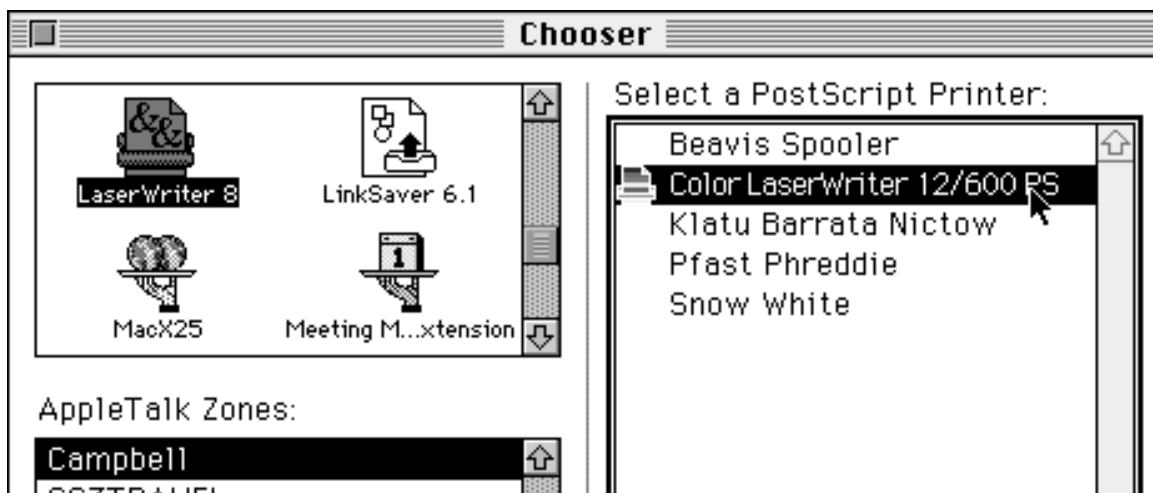
3. Change your default printer to another available printer. Write the name of your new default printer below.

4. Create two or three text file document icons on your desktop. Drag and drop all of the text file icons to your current default printer icon on your desktop.
5. Check the status of the print queue.
6. Stop the print queue.
7. Change the order of the print jobs in the queue so that the last print job becomes the first.
8. Transfer one of the print jobs from the default printer to the another printer icon on your desktop.

Answers to Exercise 3

1. Create two printer icons on your desktop.

Self-check: To create the icons, you must use the Chooser. To check that you created them correctly, open the Chooser, select LaserWriter 8 and the proper zone, and check that a small printer icon has appeared next to the name of each printer you chose (see the icon next to “Color LaserWriter 12/600 PS” in the figure below). If there is no printer icon next to the printer name, you forgot to click Setup before closing the Chooser, and the desktop printer icon may not be configured with the correct PPD file.



2. Write the name of your current default printer below.

Self-check: The default printer icon has a thick black border.

3. Change your default printer to another available printer. Write the name of your new default printer below.

Self-check: You can use the Printing menu or the Chooser to change the default printer. The icon of the new default printer should have the thick border.

4. Create two or three text file document icons on your desktop. Drag and drop all of the text file icons to your current default printer icon on your desktop.

Self-check: The page icon should appear on top of the printer icon to show that printing is taking place

5. Check the status of the print queue

Self-check: To check the status of the print queue, you double-click on the desktop printer icon. The print queue window should appear, showing the document icons.

6. Stop the print queue.

Self-check: With the status window open, you use the Printing menu to stop the Print Queue. The hand icon should appear in the upper left corner of the print queue window.

7. Change the order of the print jobs in the queue so that the last print job becomes the first.

Self-check: You should click the last print job and drag it to the top of the queue.

8. Transfer one of the print jobs from the default printer to the another printer icon on your desktop.

Self-check: After you transfer a print job to a new printer, the new printer icon's border darkens indicating that it is now the default printer. Also, the page icon should appear on top of the new default printer icon.

Print Options

When you print a file from any application, a Print dialog box appears. If you click the Options button in the Print dialog box when you are printing to a Color LaserWriter printer, a Print Options dialog box like the one shown in Figure 3-18 appears.

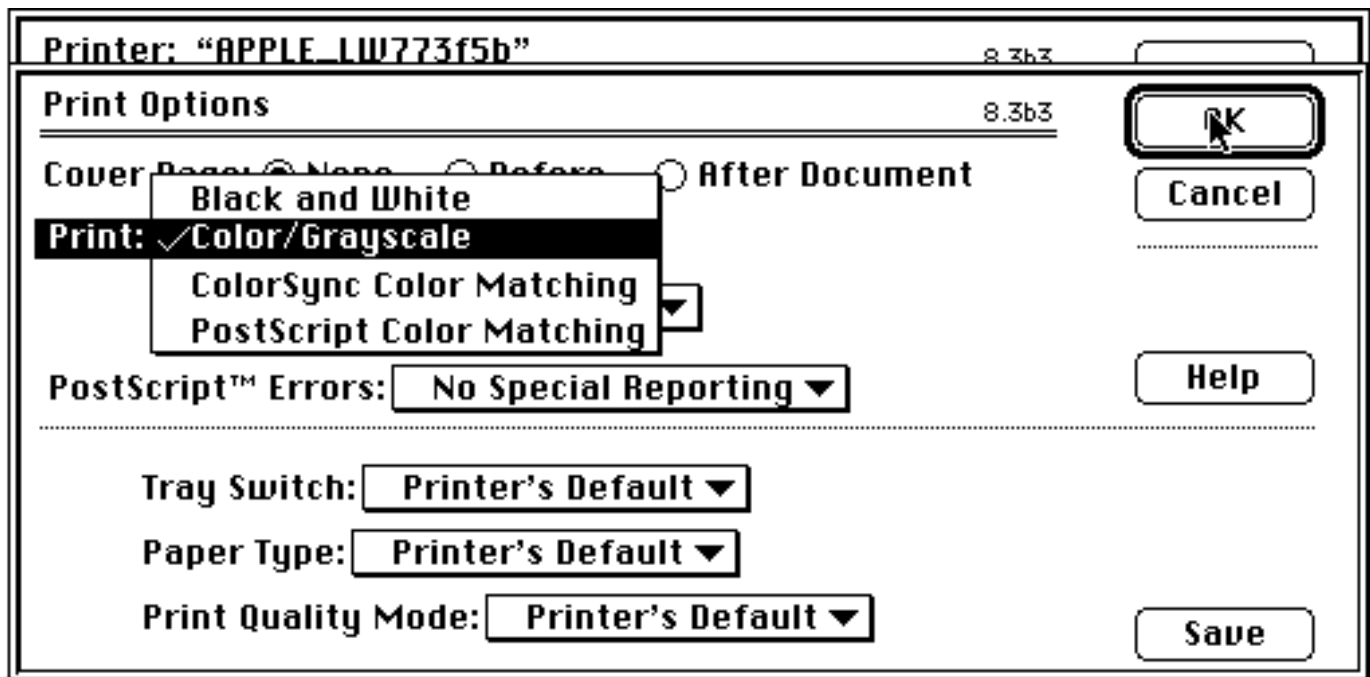


Figure 3-18: Print Options Dialog Box

The "Print" options in this dialog box give you a choice of color matching options, described below. (In version 8.4.1, Color Matching options are available from a pop-up menu on the main Print dialog box.)

Black and White

This option increases printing speed but sacrifices color and image quality. It is useful for plain text jobs where speed is important and color is not needed.

Color/Grayscale

When this option is chosen, RGB-to-CMYK transformations are performed entirely by the printer, using the printer's own built-in color tables. This method produces excellent results in most situations, but it does not have the extended color matching capabilities of ColorSync 2.0.

ColorSync Color Matching

With this option, all color matching is processed on the host computer, using ColorSync 2.0 software as described in Module 1. ColorSync uses the System (monitor) Profile, any embedded profiles in the file to be printed, and the Printer Profile chosen in the pop-up menu in the Print Options dialog box to convert the file's colors for the specified printer.

This option is recommended when a profile for the printer is available in the Printer Profile pop-up menu and when the host computer is relatively powerful compared to the printer (any Power Macintosh CPU or faster Quadra models).

Note: To be displayed in the pop-up menu, the printer's profile must be contained in the ColorSync Profiles folder.

PostScript Color Matching

This option is recommended for files containing JPEG compressed images. It also can be faster than ColorSync Color Matching for some situations (especially with earlier, less powerful Macintosh computers), because it uses the printer instead of the host computer for most of the processing work.

When PostScript Color Matching is chosen, the host computer uses ColorSync to transform the monitor and printer profiles to their PostScript equivalents (a Color Space Array and Color Rendering Dictionary) and sends them, with the print job, to the printer. From there, the printer handles the color conversion, leaving the host computer free for other tasks.

For files that contain JPEG compressed images, PostScript Color Matching is the method of choice: To retain the advantages of JPEG compression (shorter transmission time over the network), the image must be sent in its compressed form to the printer, where PostScript performs the color matching operation. (ColorSync would have to decompress the image on the host computer before sending it to the printer, and the decompressed data would require much more transmission time. For this reason, ColorSync does not perform color matching for JPEG compressed images.)

PostScript Color Matching does not have all the functionality of ColorSync 2.0. PostScript does not perform gamut mapping, nor can it use the information in embedded profiles, as of this writing (June, 1995).

However, with applications that do not take advantage of ColorSync's capabilities, PostScript Color Matching may be a convenient alternative to ColorSync Color Matching, since it requires less time from the host computer.

Print Option Issues

As a service technician, you may have to deal with the following situation: A Color LaserWriter 12/600 PS user creates a color image and decides to experiment with different color matching options—Black and White, Color/Grayscale, ColorSync Color Matching, and PostScript Color Matching. He prints the image once using each option. When he looks at the output, he is confused: All the prints look identical. Even the “Black and White” print is in color, and it has the same colors as the others! What’s wrong?

What’s wrong is simply that the user is printing from a specialized graphics or page layout application that bypasses the LaserWriter driver’s print options—but leaves the Print Options dialog box available instead of “graying it out”! This situation should be remedied in future versions of these applications, but current versions, written before the LaserWriter 8.3 driver, may exhibit this behavior.

Here’s what’s happening: For most applications, the LaserWriter driver converts any file to be printed into a PostScript language file, which it then sends to the printer. However, some specialized graphics or page layout applications create their own PostScript files, using options and settings contained within the application’s own menus and dialog boxes. Then they use the LaserWriter driver simply to send the already processed PostScript file to the printer. In such a case, the print options dialog box should not be available, since it will have no effect on the printing. The fact that it is available may cause confusion.

Applications That Create Their Own PostScript Files

The following is an incomplete and provisional list of popular Macintosh applications that create their own PostScript files, usually using preferences that the user sets in dialog boxes and menus within the application. These applications do not use the color matching options set in the Print Options dialog box of the LaserWriter 8.3 printer driver, even if those options appear to be selectable.

Adobe Illustrator 5.5

Adobe Photoshop 3.0

Adobe Acrobat Reader 2.0.1

PageMaker 5.0

Freehand 4.0

FrameMaker 5.0

QuarkXPress 3.3

Note: This information is current as of 6/1/95. These applications may support ColorSync 2.0 in future versions, either by using the Apple LaserWriter driver or by incorporating ColorSync support into their own code.

Exercise 4: Print Options

If you are reading these exercises on screen, get a piece of paper and a pencil. Try to answer the following questions from memory. The answers are given at the end of the exercise.

Multiple Choice Questions

Choose the item that best fits the description.

1. When this print option is used, all color matching is processed on the host computer.
 - A. Black/White
 - B. Color/Grayscale
 - C. ColorSync Color Matching
 - D. PostScript Color Matching
2. This option performs color transformations entirely on the printer, using the printer's own built-in color tables.
 - A. Black and White
 - B. Color/Grayscale
 - C. ColorSync Color Matching
 - D. PostScript Color Matching
3. If the Printer Profile is available and you have a host computer that is more powerful than the printer, this option is probably the best one to use.
 - A. Black and White
 - B. Color/Grayscale
 - C. ColorSync Color Matching
 - D. PostScript Color Matching
4. If you are printing a document that contains JPEG compressed images, you should use this print option.
 - A. Black and White
 - B. Color/Grayscale
 - C. ColorSync Color Matching
 - D. PostScript Color Matching

Answers to Exercise 4

1. When this print option is used, all color matching is processed on the host computer.
C. ColorSync Color Matching
2. This option performs color transformations entirely on the printer, using the printer's own built-in color tables.
B. Color/Grayscale
3. If the Printer Profile is available and you have a host computer that is more powerful than the printer, this option is probably the best one to use.
C. ColorSync Color Matching
4. If you are printing a document that contains JPEG compressed images, you should use this print option.
D. PostScript Color Matching

Using the Apple Printer Utility

The other print options shown at the bottom of the print options dialog box in Figure 3-18 (Tray Switch, Paper Type, and Print Quality Mode) can be changed by the user, but their default setting is “Printer’s Default”—and the printer’s defaults are set by using the Apple Printer Utility.

When any user changes printer defaults by using the Apple Printer Utility, the changes affect all users of the printer. For that reason alone, you should familiarize yourself with the Apple Printer Utility, just in case you come across a situation where misset defaults are causing a problem. For instance, if a user accidentally turns off the printer’s Ethernet port using the Apple Printer Utility, it may look like a network problem or a problem with the printer’s I/O board. It could save you a lot of time and trouble to check the Apple Printer Utility setting for that port as a first step in troubleshooting.

To use the Apple Printer Utility, version 2.0, follow these steps (users of later versions may also follow these steps, but you may notice some differences in screens and names):

- 1. On your hard disk, locate the Apple Printer Utility (inside the folder Apple LaserWriter Software).**

2. **Double-click the Apple Printer Utility icon.**
The window shown in Figure 3-19 appears.



**Figure 3-19: Apple Printer Utility,
Printer Selector Window**

3. **Choose a printer (a Color LaserWriter printer, if possible) and click the Open Printer button.**
The printer features window (shown in Figure 3-20) appears.

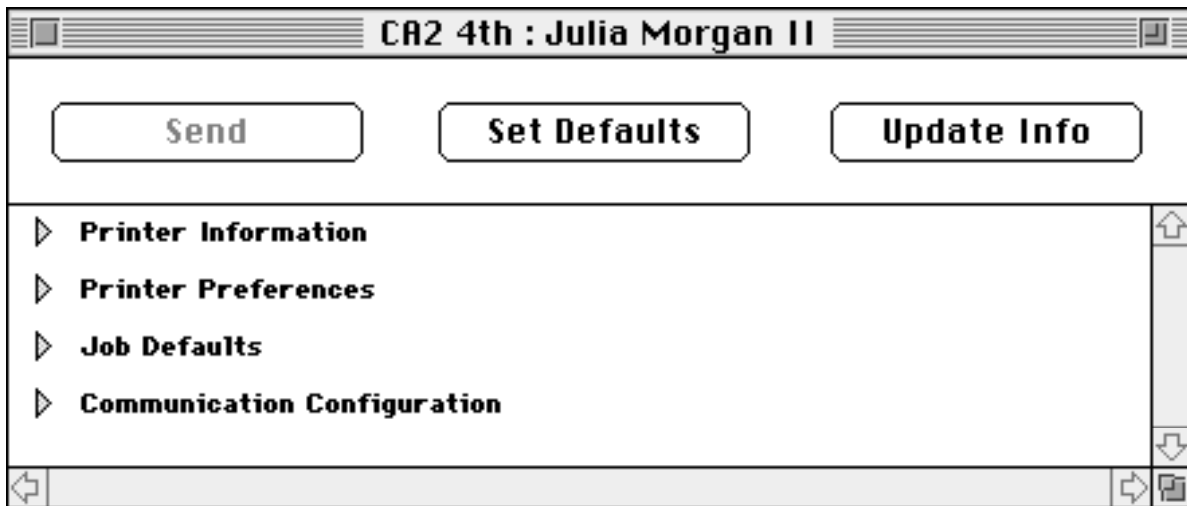


Figure 3-20: Printer Features Window

4. **Click the triangle next to the category Job Defaults.** The category expands to show more choices. (If "Job Defaults" does not appear on the list, you are using a newer version of the Utility; skip to the next step.)

5. **Click the triangle next to Imaging Options.** The category expands into the window shown in Figure 3-21.

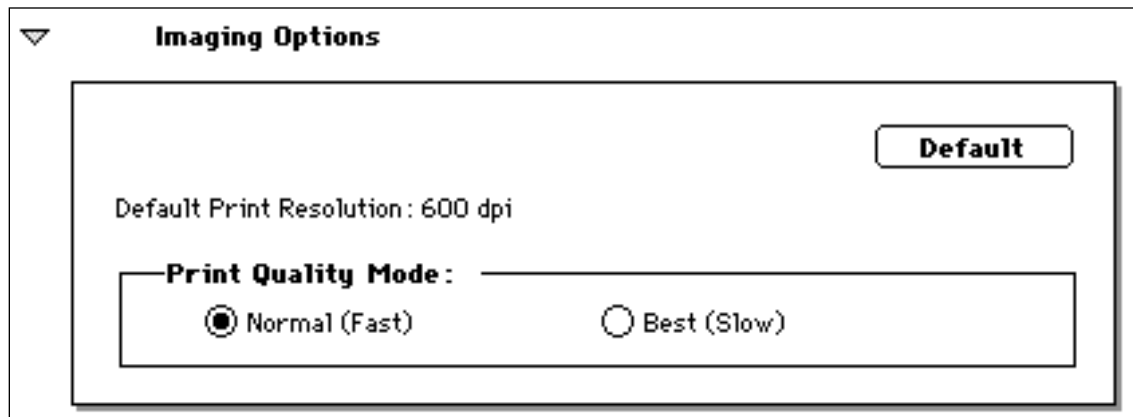


Figure 3-21: Imaging Options

To change the printer's default, you need only choose the Print Quality Mode you prefer and then click Send—but do not click Send now. Only the Printer Administrator should set the printer's defaults.

6. **Explore the other categories in the Apple Printer Utility by clicking on triangles to expand them. Do not send any changes to the printer.**
7. **When you are finished exploring, choose Quit from the File menu.**

Apple Printer Utility Features

The Apple Printer Utility allows users to

- View information about the printer, including the number of pages it has printed.
- Turn printer startup and demonstration pages on or off.
- Set the default time for Energy Saving mode.
- Rename the printer.
- Set paper-handling options.
- Set the default Print Quality Mode (Best or Normal).
- Set the printer's network configuration preferences, including Zone, Ethernet address, NetWare configuration, TCP/IP configuration, and port configurations.

For more information about the Apple Printer Utility, see the User's Manual for the Color LaserWriter 12/600 PS, which is included on this CD in the "Articles of Interest" folder.

Exercise 5: Apple Printer Utility

If you are reading these exercises on screen, get a piece of paper and a pencil. Try to answer the following questions from memory. The answers are given at the end of the exercise.

1. The Apple Printer Utility allows users to (choose all that apply)
 - A. Set the printer's device profile
 - B. Set paper handling options
 - C. View information about the printer
 - D. Create a desktop printer icon
 - E. Rename the printer
2. When any user changes printer defaults using the Apple Printer Utility, they affect the "Printer's Defaults" shown in the
 - A. Print Options dialog box
 - B. ColorSync System Profile dialog box
 - C. Print dialog box
 - D. Chooser
3. When a user changes printer defaults using the Apple Printer Utility, the changes affect
 - A. Only the current print job
 - B. Only that user
 - C. All users of the printer
 - D. All printers on the network

Answers to Exercise 5

1. The Apple Printer Utility allows users to (choose all that apply)
 - B. Set paper handling options
 - C. View information about the printer
 - E. Rename the printer
2. When any user changes printer defaults using the Apple Printer Utility, they affect the “Printer’s Defaults” shown in the
 - A. Print Options dialog box
3. When a user changes printer defaults using the Apple Printer Utility, the changes affect
 - C. All users of the printer

ColorSync Q & A

As of this writing (June, 1995), ColorSync 2.0 is brand new, and applications that support it (except for the LaserWriter 8.3 driver) have not yet reached the market. Here are some common questions about ColorSync 2.0.

Compatibility

How can I tell if an application is ColorSync 2.0-compatible?

To tell whether an application supports the extended features of ColorSync 2.0, such as embedded profiles, you must consult the application's user's manual. As of this writing (July 1995), the first third-party applications that support these features are expected to ship in Fall 1995.

However, most Macintosh applications—including PowerPoint, Persuasion, Microsoft Word, and Excel, among many others—can be considered ColorSync 2.0-compatible because they use the Apple LaserWriter driver to convert their files to PostScript before sending them to the printer. For that reason, if you choose different color printing options in the Print Options dialog box (ColorSync Color Matching, Color/Grayscale), you will find color differences in the prints produced by the Color LaserWriter 12/600 PS. Later versions of such applications may add more ColorSync functionality, such as support for embedded profiles, than is available in them now.

For best results with such “normal” applications, just make sure that the ColorSync System Profile, the Monitor gamma, and (on multiscan monitors) the color temperature are set correctly. This will ensure WYSIWIG color matching between the monitor and the printer.

Incompatible Applications

As mentioned earlier in this module, some high-end publishing applications (such as Adobe Photoshop, PageMaker, and QuarkXpress) create their own PostScript files, and they call upon the LaserWriter driver only to send the already converted files to the printer. At present, these

applications are not ColorSync-compatible for two reasons:

- They do not use the LaserWriter 8.3 driver to convert their files to PostScript, so the color printing options in the driver have no effect on them.
- They do not support ColorSync 2.0 internally.

Such applications may add ColorSync support in future versions either by supporting ColorSync internally or by using the LaserWriter driver for file conversion.

If users complain about color matching problems in using these applications with a Color LaserWriter printer, refer the user to the options available within the application, and/or to the application's manufacturer.

To see whether an application creates its own PostScript files, look on the list of Applications That Create Their Own Postscript Files (earlier in this module), and/or consult the application's user's guide.

Troubleshooting Color Matching Problems

What steps should I take if a customer complains about color matching problems?

If a user complains about color matching problems, try the following steps:

1. Ask if the problem occurs with only one file or one application. If so, find out which application is being used. Make sure the user knows how to use the different color management options that the application provides before attempting other solutions.
2. Check that the application is ColorSync 2.0-compatible. If it is not, inform the user and tell the user to contact the manufacturer for advice or upgraded software.

If the problem occurs with all applications, do the following:

1. Make sure that version 8.3 (or later) of the LaserWriter driver is installed. Open the Extensions folder (inside the System folder), find and highlight the LaserWriter 8 extension, choose “Get Info” from the File menu. Make sure the version listed is 8.3.
2. Make sure ColorSync 2.0 software is installed. Choose “Find” from the File menu to search for “ColorSync”. Make sure that the ColorSync 2.0 extension is in the Extensions folder, the ColorSync Profiles folder is in the Preferences folder, and the ColorSync System Profile control panel is in the Control Panels folder.
3. Check the ColorSync control panel. Make sure the proper monitor profile is specified.
4. Check the Monitors control panel. Make sure the proper gamma is specified.
5. If a multiscan monitor is involved, make sure the color temperature is set to 9300K. An Apple multiscan monitor’s color temperature is usually controlled by buttons on the front panel of the monitor. For instructions, see the user’s guide for the monitor.
6. Determine what options are selected in the Print Options dialog box. Make sure the proper Print option and the proper Printer Profile (if applicable) are selected.

Note: Some intense, highly saturated monitor colors cannot be reproduced on the Color LaserWriter 12/600 PS — they are simply outside the printer’s color gamut. ColorSync will perform gamut-matching to attempt to match the monitor colors, but users should be informed that some colors cannot be exactly reproduced. If you think the user’s complain is caused by an out-of-gamut situation, escalate the call to your technical support group.

Exercise 6: Troubleshooting ColorSync and Color Matching Problems

1. If a user complains about color matching problems, you should always
 - A. Install new toner cartridges
 - B. Perform color density adjustments
 - C. Adjust the color temperature of the user's monitor
 - D. Ask if the problem occurs with all applications
2. A user complains that no matter what print option she chooses in the Print Option dialog box, the page she prints from her application program comes out with exactly the same colors. What is the most probable cause of this problem?
 - A. The wrong system profile is selected
 - B. The printer profile is not selected
 - C. The application creates its own PostScript file
 - D. The printer needs more RAM
3. If a screen color is outside the printer's color gamut, ColorSync software will
 - A. Notify the user that the color is out-of-gamut
 - B. Notify the user to change toner cartridges
 - C. Choose a matching color within the printer's gamut
 - D. Change the screen color to match the printer's gamut
4. In troubleshooting a color matching complaint, you should check that the following options are set properly (choose all that apply)
 - A. The ColorSync System Profile
 - B. The monitor's color gamut
 - C. The monitor's color temperature
 - D. The monitor's gamma
 - E. The printer's color gamut
 - F. The print options in the Print Options dialog box

Answers to Exercise 6

1. If a user complains about color matching problems, you should always
 - D. Ask if the problem occurs with all applications
2. A user complains that no matter what print option she chooses in the Print Option dialog box, the page she prints from her application program comes out with exactly the same colors. What is the most probable cause of this problem?
 - C. The application creates its own PostScript file
3. If a screen color is outside the printer's color gamut, ColorSync software will
 - C. Choose a matching color within the printer's gamut
4. In troubleshooting a color matching complaint, you should check that the following options are set properly (choose all that apply)
 - A. The ColorSync System Profile
 - C. The monitor's color temperature
 - D. The monitor's gamma
 - F. The print options in the Print Options dialog box

[Click here to go to Module 4,
Color Print Quality Problems](#)