HP LaserJet 4345mfp
Software Technical Reference

invent

HP LaserJet 4345mfp

Software Technical Reference

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1 Purpose and scope

Introduction

This chapter introduces the software technical reference (STR), the product models for the HP LaserJet 4345mfp, the printing-system software for the HP LaserJet 4345mfp, and contains the following sections:

- HP LaserJet 4345mfp models
- Printing-system software CD
- Structure and availability of the software CD

This STR provides information about and troubleshooting tips for the printing-system software for the HP LaserJet 4345mfp.

NOTE Information relating to networking functions is specific to product models that have network capabilities.

This STR is prepared in an electronic format to serve as a quick-reference tool for Customer Care Center (CCC) agents, support engineers, system administrators, management information systems (MIS) personnel, and HP LaserJet 4345mfp end users, as appropriate.

NOTE This STR describes drivers that are shipped with the printing-system software CD. This STR does *not* cover drivers that might be released for use by support personnel.

The following information is included in this STR:

- Descriptions of print drivers and operating systems
- Procedures for installing and uninstalling software components
- Descriptions of various topics associated with the HP LaserJet 4345mfp, including engineering details

NOTE An addendum to this STR includes system modification information and descriptions of known software issues and workarounds.

The following table contains descriptions of the HP LaserJet 4345mfp models that are described in this STR. Product configurations might vary among countries/regions.

HP LaserJet 4345mfp models

Table 1-1 Features of the HP LaserJet 4345mfp models

Feature	Model Specifications
Performance	■ 45 pages per minute (ppm) when copying and printing on letter-sized media; 43 ppm when copying and printing on A4-sized media ■ Less than 10 seconds to print the first page ■ 25% to 400% scalability when using the scanner glass ■ 25% to 200% scalability when using the automatic document feeder (ADF) ■ Transmit Once, Raster Image Processing (RIP) ONCE technology
Memory	■ 256 megabytes (MB) of random access memory (RAM) ■ Can be expanded to 512 MB by using industry standard 100-pin double data rate dual inline memory modules (DDR DIMMs) ■ Memory Enhancement technology (MEt) that automatically compresses data to use RAM more efficiently ■ Optional hard-disk drive can be added in an available EIO slot
User interface	■ Graphic display on control panel ■ Enhanced Help with animated graphics ■ Embedded Web server to gain access to support and order supplies (network-connected products) ■ HP toolbox software to provide product status and alerts, show documentation and troubleshooting information, and print internal product information pages
Supported printer personalities	■ PCL 6 ■ PCL 5 ■ PDF ■ XHTML ■ MIME ■ Postscript
Storage features	■ Job storage ■ Personal identification number (PIN) printing (for products that have a hard disk) ■ Fonts and forms
Environmental features	■ PowerSave setting ■ High content of recyclable components and materials

Table 1-1 Features of the HP LaserJet 4345mfp models (continued)

Feature	Model Specifications
	■ Energy Star® compliant ■ Blue Angel compliant
Fonts	■ 80 scalable TrueType fonts installed with typical installation ■ 92 additional postscript fonts available on the installation CD ■ Includes HP Web Jetadmin to support forms and fonts on the disk
Media Handling	■ Prints on media from 76 x 127 mm (3 x 5 inches) to 216 x 356 mm (8.5 x 14.0 inches) in size ■ Prints on media with weights from 60 g/m^2 to 200 g/m^2 (16 lb to 53 lb) ■ Prints on a wide range of media types including labels, transparencies, and envelopes ■ Automatic document feeder (ADF) that holds up to 50 pages ■ 500-sheet tray 2 ■ Optional 500-sheet tray 3; standard on the HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and the HP LaserJet 4345xm mfp models ■ Optional 500-sheet tray 4 ■ Optional 500-sheet tray 5 ■ Optional duplexing unit; standard on the HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and HP LaserJet 4345xm mfp models ■ 250-sheet face-down output bin ■ Optional envelope feeder ■ Optional 3-bin mailbox
Accessories	■ 100-pin DDR memory DIMM (dual inline memory module) ■ Enhanced input/output (EIO) hard disk ■ Optional 500-sheet stapler/stacker output accessory ■ Storage cabinet (recommended for additional optional trays) ■ HP LaserJet analog fax accessory 300
Connectivity	■ HP Jetdirect embedded print server ■ HP Web Jetadmin software ■ Standard bidirectional extended capabilities port (ECP) type-B (IEEE 1284-compliant) parallel connection ■ Foreign Interface Harness (FIH) connection ■ Auxiliary connection for paper handling input devices

Table 1-1 Features of the HP LaserJet 4345mfp models (continued)

Feature	Model Specifications
Supplies	■ The supplies status page contains information on toner level, page count, and estimated pages remaining ■ The product uses a no-shake cartridge design ■ The product checks for authentic HP print cartridges at cartridge installation ■ The product offers Internet-enabled supply-ordering capabilities (by using the embedded Web server or the HP Toolbox software)

Printing-system software CD

This section contains information about the following topics:

- HP LaserJet print drivers
- Software features
- HP LaserJet documentation

HP LaserJet print drivers

HP LaserJet 4345mfp print drivers provide printing features and communication between the computer and the product. The printing-system CD includes software for end users and network administrators who are working in the following operating environments:

- Microsoft® Windows® 98 and Windows Millennium Edition (Me)
- Microsoft Windows NT® 4.0, Windows 2000, Windows XP (32-bit), and Windows Server 2003 (32-bit)
- Apple Mac OS 9.x and later, OS X (V10.1 and later)

NOTE For the latest information about the printing-system software components, view the Readme files on the printing-system software CD. For additional information about installing the printing-system software, view the*HP LaserJet 4345mfp series Printing System Install Notes* on the printing-system software CD.

Table 1-2 Print drivers included with the HP LaserJet 4345mfp

Operating System[1]	PCL 6	PCL 5	PS emulation
Windows 98, Me	X	X	X
Windows NT 4.0	X	X	X
Windows 2000	X	X	X
Windows XP	X	X	X
Windows Server 2003	X	X	X
Macintosh OS			X

1 Not all product features are available from all drivers or operating systems. See the online Help in your driver for information about the features that are available.

NOTE For the Windows NT 4.0 operating system, the print drivers can only be installed by using the Add Printer installation method. For all Windows operating systems, the PCL 5 driver can only be installed by using the Add Printer installation method. For a list of print drivers, updated HP printing-system software, and product support information, go to www.hp.com/support/lj4345mfp.

Software features

This section contains information about the following topics:

- Printing system and installer
- HP LaserJet print drivers
- Driver Autoconfiguration
- Update Now
- HP Driver Preconfiguration

Automatic configuration, driver updates after a new configuration, and preconfiguration features are available with the HP LaserJet 4345mfp.

Printing system and installer

The following sections contain information about the printing-system software and the installer on the software CD that came with the product.

HP LaserJet 4345mfp printing-system software CD for Windows systems

For most Microsoft Windows operating systems (Windows 98, Windows Me, Windows 2000, Windows XP, and Windows Server 2003), the HP LaserJet 4345mfp printing-system software CD provides an interactive software window that you can use not only to install the printer drivers and related components, but also to gain access to online user documentation, a customization utility, and optional HP software. For the Windows NT 4.0 operating system, the print drivers can only be installed by using the Add Printer installation method.

The following illustration shows the main screen of the HP LaserJet 4345mfp printing-system software CD, which appears when you insert the software CD in your CD-ROM drive. If the screen does not appear when you insert the software CD, click **Start**, click **Run**, click **Browse...**, navigate to the root directory of the software CD, and then double-click the SETUP.EXE file to start the installer.

Figure 1-1 Installation software CD main screen

The main screen of the software CD contains installation options in the upper-left panel and documentation options in the lower-left panel. As you move your cursor over each option, a description of the option appears above the product image.

NOTE The options on your product might vary from the illustration.

install printer. This wizard guides you through the installation of your HP LaserJet 4345mfp printing-system software. You are given the choice of performing a Typical Installation, a Minimum Installation, or a Custom Installation. If you select Typical Installation, only the necessary software is installed. If you select Minimum Installation, only the components required for basic printing are installed. If you select Custom Installation, you can select the components that you want to install.

installer customization wizard. Use this wizard to customize the HP LaserJet 4345mfp installer by presetting the installation options in a response file. The installer that you have customized can then be used for silent, unattended installation.

NOTE For the HP Traditional PCL 5 Driver and all Windows NT 4.0 drivers, use HP Web Jetadmin or the HP Driver Preconfiguration utility to create a silent installer.

register product. Use this option to register your product online. Using the Web registration, you can gain access to support and services, manage your profile, and sign up for free support alerts, driver notices, and personalized newsletters.

printer documentation. Use this option to view the HP LaserJet 4345mfp user documentation. The following document options are available when you click this option:

- **user guide (interactive)**
- **user guide (printer friendly)**
- **install notes**
- **hp driver preconfiguraiton user guide**
- **embedded web server guide**
- **hp jetdirect guide**

NOTE If your system does not have Adobe® Acrobat® Reader 4.0 or later installed, clicking any of the links to documentation that is provided in the portable document format (PDF) opens a version of Adobe Acrobat Reader software that runs from the HP LaserJet 4345mfp printing-system software CD. The Adobe Acrobat Reader software is not installed on your computer and can only run while the printing-system software CD is in the CD-ROM drive. Adobe Acrobat Reader is also available at the following URL: www.adobe.com.

support. To increase productivity and get the most use from your HP LaserJet 4345mfp, view a list of optional software programs that are available for installation and links to HP Web sites. The following options are available:

- Click **hp web jetadmin** to download HP Web Jetadmin software from the Web for a browser-based network-management tool.
- Click **supplies** for information about ordering HP LaserJet 4345mfp supplies.
- Click **product information** for HP LaserJet 4345mfp support information and updates.
- Click **HP.com** to go to the HP home Web page for information about products and services, support, drivers, and HP online stores.

Installer features

The common installer is designed to provide a simple and consistent installation method for the product. The common installer is available for the Windows 98, Windows Me, Windows 2000, Windows XP, and Windows Server 2003 operating systems.

The common installer offers the following features:

- The HP LaserJet 4345mfp printing-system software CD features an interactive software interface. See HP LaserJet 4345mfp printing-system software CD for Windows systems.
- Network connection is integrated so that you can install drivers and connect to a networked product in a single process.
- The selection dialog box sets the operating-system language as the default language (for Windows 98, Windows Me, Windows 2000, Windows XP, and Windows Server 2003 only). You can use the installer to select any of the languages on the HP LaserJet 4345mfp printing-system software CD.

The HP LaserJet 4345mfp printing-system software CD also includes the following features:

- The HP LaserJet Uninstaller Utility
- The HP Customization Utility for custom installations
- The HP Toolbox

All of the Windows system components are installed by using the HP LaserJet 4345mfp series printing-system installer. The installer automatically detects your language of choice and your operating system. You can select the type of installation that you prefer: Typical Installation, Minimum Installation, or Custom Installation.

HP LaserJet print drivers

This section provides information about the various installable print drivers that are available either on the HP LaserJet 4345mfp software CD or from the HP Web site.

HP PCL 6, PCL 5, and PS Emulation Drivers

The following drivers are available for the HP LaserJet 4345mfp:

- The HP Traditional PCL 6 Driver for Windows 98, Windows Me, and Windows NT 4.0.
- The HP Traditional PCL 5 Driver for Windows 98, Windows Me, and Windows NT 4.0.

NOTE You must use the Add Printer installation method to install the HP Traditional PCL 5 Driver.

- The HP Traditional PS Emulation Driver for Windows 98, Windows Me, and Windows NT 4.0.
- The HP PCL 6 Unidriver, the HP PCL 5 Unidriver, and the HP PS Emulation Unidriver for Windows 2000, Windows XP, and Windows Server 2003.

NOTE You must use the Add Printer installation method to install the HP PCL 5 Unidriver.

All of the drivers provide access to the media-handling and print-quality features, and are described in chapters 3 and 4 of this STR.

NOTE If you select a Typical Installation during installation of the printing-system software, the HP PCL 6 driver is installed by default.

Print driver version numbers for Windows operating systems

The HP LaserJet 4345mfp PCL 6 and PCL 5 print drivers support Windows 98, Windows Me, Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003 operating systems. The HP LaserJet 4345mfp PS Emulation Driver software provides postscript feature support for the HP LaserJet 4345mfp.

If you are using an HP traditional driver, you can view the print-driver version number by clicking the HP logo in the lower-left corner of the following HP traditional PCL 6 or HP traditional PCL 5 driver tabs:

- **Finishing**
- **Effects**
- **Paper**
- **Job Storage**
- **Basics**

If you are using an HP unidriver in Windows 2000, Windows XP, or Windows Server 2003 operating systems, follow these steps to find driver-version information:

1. Click **Start**.
2. Click **Settings**.
3. Click **Printers** (or **Printers and Faxes** in Windows XP and Windows Server 2003).
4. Right-click the product icon.
5. Click **Properties**.
6. Click the **About** tab.

Macintosh and Macintosh-compatible printing system

The HP LaserJet 4345mfp printing system for Macintosh is composed of the Print Center or Printer Setup Utility for Mac OS X and the Apple LaserWriter driver for Mac OS 9, which are provided with the operating system, and HP-created postscript printer definition (PPD) files and printer dialog extension (PDE) files. The driver uses these files to determine the features and postscript commands that the product supports. Bidirectional support in AppleTalk connections supports software autoconfiguration. The following are installable components:

- The HP LaserJet Installer for Mac OS 9, Mac OS X, and Mac OS X Classic
- The HP LaserJet Screen Fonts Installer.
- SYSTEM/EXTENSIONS/PRODUCT DESCRIPTIONS (for Mac OS 9)
- LIBRARY/PRINTERS/PPDS/CONTENTS/RESOURCES/LANGUAGE.LPROJ (for Mac OS X)
- The HP LaserJet Utility, an HP utility that is installed in the HP LaserJet folder of Mac OS 9. The HP LaserJet Utility provides configuration and management support for postscript
- Online Help, an HTML-based product and utility help that can be viewed through a browser or in the Macintosh OS Help Center (in English only)

- Install notes.

NOTE The HP LaserJet Utility is a standalone utility that is not installed by the installer, but is available on the HP LaserJet 4345mfp printer software CD. It is an HP utility that is installed in the HP LaserJet folder of Mac OS 9 and provides configuration and management support for postscript. It can be found on the CD in a directory called “hp OS 9 LaserJet Utility.”

Additional driver availability

All drivers on the printing-system CD are also available on the Web. The following drivers are only available on the Web:

- HP OpenVMS drivers. For further information, go to h71000.www7.hp.com/openvms/print/.
- HP Install Network Printer Wizard (INPW). For further information, go to www.hp.com/go/inpw_software.
- OS/2 PCL 5/PCL 6 print driver. For further information, go to www.ibm.com.
- OS/2 PS print driver. For further information, go to www.ibm.com.
- UNIX model scripts. For further information about UNIX model scripts, go to www.hp.com/go/unixmodelscripts.
- Tru64 UNIX printing. For further information, go to h30097.www3.hp.com/printing/.
- Linux drivers. For further information, go to www.hp.com/go/linuxprinting.
- SAP printing. For further information, go to www.hp.com/go/sap/print.

NOTE The OS/2 drivers are available from IBM and are packaged with OS/2. They are not available in Traditional Chinese, Simplified Chinese, Korean, or Japanese.

Driver Autoconfiguration

The HP LaserJet PCL 6 driver, PCL 5 driver, and PS Emulation Driver for Windows 2000, Windows XP, and Mac OS X feature automatic discovery and driver configuration for product accessories at the time of installation. Some accessories that can be detected include the duplexing unit, optional trays, and dual inline memory modules (DIMMs).

Update Now

If you have modified the configuration of the HP LaserJet 4345mfp since installation, the driver can be automatically updated with the new configuration in environments that support bidirectional communication. Use the **Update Now** feature to automatically reflect the new configuration in the driver.

NOTE The **Update Now** feature is not supported in environments where shared Windows NT 4.0, Windows 2000, or Windows XP clients are connected to Windows NT 4.0, Windows 2000, or Windows XP hosts.

HP Driver Preconfiguration

HP Driver Preconfiguration is a software architecture and set of tools that permits HP software to be customized and distributed in managed corporate printing environments. Using HP Driver Preconfiguration, information technology (IT) administrators in corporate and enterprise

environments can preconfigure the printing and device defaults for HP printer drivers before installing the drivers in the network environment. For more information, see the *HP Driver Preconfiguration Support Guide*, which is available at www.hp.com/support/lj4345mfp.

Information about HP Driver Preconfiguration is also available by going to www.hp.com/go/hpdpc_sw, and then selecting **Cross operating system (BIOS, Firmware, Diagnostics, etc.)**.

HP LaserJet documentation

This section describes the documentation that is available to users and administrators.

The following illustration shows the printer documentation screen, which appears when you click **printer documentation** on the main screen of the HP LaserJet 4345mfp printing-system software CD.

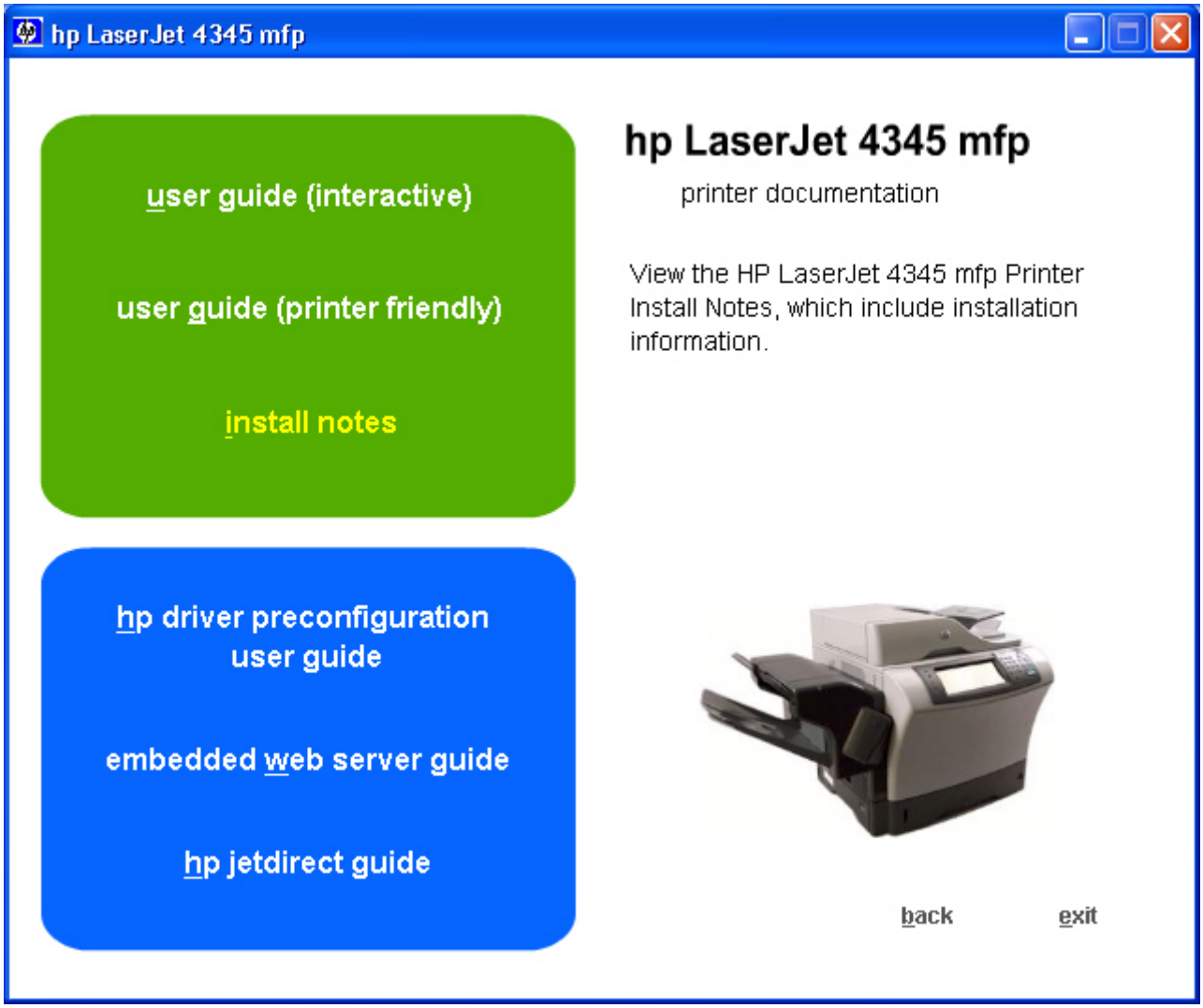

Figure 1-2 Installation software CD printer documentation screen

The following table lists the availability of HP LaserJet 4345mfp printing-system documentation by operating system.

Table 1-3 Documentation availability

Document	Windows 98/Me	Windows NT 4.0	Windows 2000/ XP/Server 2003	Macintosh
HP LaserJet 4345mfp User Guide (.PDF file)	x	x	x	x
HP LaserJet 4345mfp User Guide (.CHM file)	x	x	x	
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	
HP Driver Preconfiguration Support Guide	x	x	x	
HP Embedded Web Server User Guide	x	x	x	x
HP Jetdirect Administrator's Guide	x	x	x	x
HP Device Installer Customization Wizard	x	x	x	

Access to HP LaserJet documents depends on the type of document and its location. Some documents can be opened from the installer CD Browser. Others are found on the software CD and can be opened by navigating to the folder where they reside. Still others are available on the Web through links in the installer CD Browser or CD folders. Documents are available in the following file formats:

- **Portable Document Format (.PDF)**. The HP LaserJet 4345mfp printing-system software CD includes Adobe Acrobat Reader for viewing online documentation. If your system does not have Adobe Acrobat Reader 4.0 or later installed, clicking any of the links to documentation that is provided in the .PDF file format opens a version of Adobe Acrobat Reader software that runs from the HP LaserJet 4345mfp printing-system software CD. The Adobe Acrobat Reader software is not installed on your computer and can only run while the printing-system software CD is in the CD-ROM drive.
- **Compiled HTML (.CHM)**. When you click a documentation link to a .CHM document, a Microsoft HTML Viewer opens the file on your computer screen. The .CHM files can reside either on the printing-system software CD or on the Web.
- **Hypertext Markup (.HTM)**. When you click a documentation link to an .HTM document, a Web browser opens the file on your computer screen. The .HTM files can reside either on the printing-system software CD or on the Web.
- **Rich Text format (.RTF)**. This is a text file. You can navigate to .RTF files and open them in Microsoft Word or Microsoft WordPad.

HP LaserJet 4345mfp User Guide

The *HP LaserJet 4345mfp User Guide* describes the basic features of the product.

To view this guide, click **printer documentation** in the installer CD Browser, and then click **view user guide**. The guide opens as a Windows Help file (.CHM file). This readable, onscreen version of the guide is provided in accordance with the Americans with Disabilities Act (ADA).

The screen-readable version (.CHM) of the User Guide for the HP LaserJet 4345mfp is also available on the HP LaserJet 4345mfp printing-system software CD. To open the *HP LaserJet*

4345mfp User Guide from the software CD, navigate to the **<language>** folder for your language, and then open the **Manuals** folder. In that folder, open the following file:

- LJ4345_USE_XXWW.CHM

NOTE The "XX" in the file name varies for each language. For instance, the file name for the French version of the guide is LJ4345_USE_FRWW.CHM.

To print the User Guide, click **printer documentation** on the installer CD Browser, and then click **print user guide**. The guide is provided as a .PDF file, which you can print.

This document is also available on the printing-system software CD. To open the .PDF version of the guide, navigate to the **<language>** folder for your language, and then open the **Manuals** folder. In that folder, open the following file:

- LJ4345_USE_XXWW.PDF

NOTE The "XX" in the file name varies for each language. For instance, the file name for the French version of the guide is LJ 4345_USE_FRWW.PDF.

When you have the file open, you can click **File** and then click **Save As** to save a copy of the file to another location.

HP LaserJet 4345mfp series Printing System Install Notes

The *HP LaserJet 4345mfp series Printing System Install Notes* is a document (in .HTM format) that contains important information about product features, instructions for installing the printing-system software, and technical assistance.

To view this file from the printing-system software CD, click **printer documentation** on the main screen of the installer CD Browser, and then click **install notes**.

You can also open the *HP LaserJet 4345mfp series Printing System Install Notes* by inserting the software CD into the CD-ROM drive and navigating to **<language>**. In that folder, open the following file:

- LJ4345mfp_INSTALL-NOTE_XXWW.HTM

NOTE The "XX" in the file name varies for each language. For instance, the file name for the French version of the document is LJ4345mfp_INSTALL-NOTE_FRWW.HTM.

When you have the file open in a text editor (such as NotePad or WordPad), you can click **File**, and then click **Save As** to save a copy of the file to another location.

HP Embedded Web Server Guide

The *HP Embedded Web Server User Guide* (in .PDF format) provides information about device status, settings, and networking for the HP LaserJet 4345mfp.

To view this guide, click **printer documentation** on the main screen of the installer CD Browser, and then click **embedded web server guide**.

You can also gain access to the *HP Embedded Web Server User Guide* by inserting the printing-system software CD into the CD-ROM drive, navigating to the **<language>** folder for your language, and then opening the **Manuals** folder. In that folder, open the following file:

- EWS90_USE_XXWW.PDF

NOTE The "XX" in the file name varies for each language. In French, the file name is EWS90_USE_FRWW.HTM.

When you have the file open, you can click **File** and then click **Save As** to save a copy of the file to another location.

HP Driver Preconfiguration Support Guide

The *HP Driver Preconfiguration Support Guide* is a guide (in .PDF format) for preconfiguring drivers in network environments.

To view this guide, insert the printing-system software CD into the CD-ROM drive, navigate to **english**, and then opening the **Manuals** folder. In that folder, open the following file:

- PRECONFIG_SUPPORT_ENWW.PDF

NOTE The *HP Driver Preconfiguration Support Guide* is available only in English on the software CD.

When you have the file open, you can click **File** and then click **Save As** to save a copy of the file to another location.

HP Jetdirect Administrator's Guide

The *HP Jetdirect Administrator's Guide* is a network administrator's guide (in .PDF format) that contains information about connecting the product directly to a network.

To view this guide, click **printer documentation** on the main screen of the installer CD Browser, and then click **hp jetdirect guide**.

You can also gain access to the *HP Jetdirect Administrator's Guide* by inserting the printing-system software CD into the CD-ROM drive, navigating to the **<language>** folder for your language, and then opening the **Manuals** folder. In that folder, open the following file:

- HPJDIAG_XXWW.PDF

NOTE The "XX" in the file name varies for each language. In French, the file name is HPJDIAG_FRWW.PDF.

When you have the file open, you can click **File** and then click **Save As** to save a copy of the file to another location.

HP Device Installer Customization Wizard

The *HP Device Installer Customization Wizard* (in .HTM format) provides network administrators with information about pre-selectable options and installation settings for the Installer Customization Wizard.

You can gain access to the *HP Device Installer Customization Wizard* by inserting the printing-system software CD into the CD-ROM drive and navigating to the **<language>** folder for your language. In that folder, open the following file:

- CUSTOMIZATION_README_XXWW.RTF

NOTE The file name is the same for all languages. The document itself has been localized. To open the French version of the document, for instance, navigate to the **francais** folder.

When you have the file open, you can click **File** and then click **Save As** to save a copy of the file to another location.

Structure and availability of the software CD

This section contains information about the following topics:

- In-box file layout
- Availability and fulfillment

The software CD for the HP LaserJet 4345mfp contains a variety of files for installing the printing-system software on your computer. This section describes the files that are available on the software CD, as well as additional support and fulfillment information.

In-box file layout

The HP LaserJet 4345mfp series printing-system software consists of two partitions: one for installing the product in Windows operating systems, and the other for installing the product in Macintosh operating systems. The files include documentation files and files that are required to install and uninstall the printing-system components.

HP LaserJet software CD, Windows partition

The root directory in the Windows partition of the software CD contains the AUTORUN.EXE file, SETUP.EXE file, and the following directories and support files:

- autorun
- Fonts
- HW
- System32
- Temp
- toolbox
- WebReg
- Language directories for all of the languages that are on the software CD

The printing-system files for each language reside in the following directories:

- Drivers
- Manuals

File layouts differ by language for each regional version of the software CD.

To view the files, insert the HP LaserJet 4345mfp software CD, right-click **Start**, click **Explore**, and then select the CD-ROM drive.

HP LaserJet software CD, Macintosh partition

The files contained in the Macintosh partition of the HP LaserJet software CD are grouped by language and reside in the following directories and folders:

- Root directory
- HP LASERJET INSTALLERS (for Macintosh operating systems)
- PDF (contains guides and manuals in .PDF format)

File layouts differ by language for each regional version of the software CD.

Availability and fulfillment

This section provides information about the availability of the HP LaserJet 4345mfp printing-system software and related software and firmware. Printing-system software on a CD is available from HP fulfillment centers.

In-box CDs

The HP LaserJet 4345mfp printing-system software CD is available in five versions. The following list shows the five versions of the software CD and the languages that they support:

- **CD AM - Americas and Europe:**
  - DE = German (Deutsch)
  - EN = English
  - ES = Spanish (Español)
  - FR = French (Français)
  - IT = Italian (Italiano)
  - NL = Dutch (Nederland)
  - PT = Brazilian Portuguese (Português)
- **CD WE- Western Europe and Arabic:**
  - AR = Arabic
  - DN = Danish (Dansk)
  - EN = English
  - FR = French (Français)
- **CD NE- Northern Europe and Russian:**
  - EN = English
  - FI = Finnish (Suomi)
  - NO = Norwegian (Norsk)
  - RU = Russian (Russ)

- SV = Swedish (Svenska)
- TR = Turkish (Turkçe)

- **CD EE - Eastern Europe:**
  - CZ = Czech (Cesky)
  - EL = Greek
  - EN = English
  - HE = Hebrew
  - HU = Hungarian (Magyar)
  - PL = Polish (Polski)
- **CD AS - Asia:**
  - EN = English
  - JA = Japanese
  - KO = Korean
  - TH = Thai
  - ZHCN = Simplified Chinese
  - ZHTW = Traditional Chinese

NOTE Drivers for various languages do not necessarily correspond to geographic countries/ regions. European languages, for instance, are distributed on three CDs.

The following tables show the printing-system components that are supported in each language.

Table 1-4 CD AM - Americas and Europe

Component	DE	EN	ES	FR	IT	NL	PT
HP Traditional PCL 6 Driver	x	x	x	x	x	x	x
HP Traditional PCL 5 Driver	x	x	x	x	x	x	x
HP Traditional Postscript 3 Emulation Driver	x	x	x	x	x	x	x
HP PCL 6 Unidriver	x	x	x	x	x	x	x
HP PCL 5 Unidriverr	x	x	x	x	x	x	x
HP Postscript 3 Emulation Unidriver	x	x	x	x	x	x	x
Common Windows Installer	x	x	x	x	x	x	x
Add Printer Wizard Installer	x	x	x	x	x	x	x
Customization Utility Wizard	x	x	x	x	x	x	x
CD Browser	x	x	x	x	x	x	x

Table 1-4 CD AM - Americas and Europe (continued)

Component	DE	EN	ES	FR	IT	NL	PT
HP Driver Preconfiguration Support Guide		x					
HP LaserJet 4345mfp User Guide (PDF)	x	x	x	x	x	x	x
HP LaserJet 4345mfp User Guide (CHM)	x	x	x	x	x	x	x
HP Jetdirect Administrator's Guide	x	x	x	x	x	x	x
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	x	x	x	x
HP Embedded Web Server User Guide	x	x	x	x	x	x	
HP Device Installer Customization Wizard	x	x	x	x	x	x	x
HP Toolbox	x	x	x	x	x	x	x

Table 1-5 CD WE - Western Europe and Arabic

Component	AR	DN	EN	FR
HP Traditional PCL 6 Driver		x	x	
HP Traditional PCL 5 Driver	x	x	x	x
HP Traditional Postscript 3 Emulation Driver	x	x	x	x
HP PCL 6 Unidriver	x	x	x	x
HP PCL 5 Unidriverr	x	x	x	x
HP Postscript 3 Emulation Unidriver	x	x	x	x
Common Windows Installer	x	x	x	x
Add Printer Wizard Installer	x	x	x	x
Customization Utility Wizard	x	x	x	
CD Browser	x	x	x	
HP Driver Preconfiguration Support Guide			x	
HP LaserJet 4345mfp User Guide (PDF)	x	x	x	x
HP LaserJet 4345mfp User Guide (CHM)	x	x	x	x
HP Jetdirect Administrator's Guide		x	x	x
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	x
HP Embedded Web Server User Guide		x	x	x
HP Device Installer Customization Wizard	x	x	x	x
HP Toolbox		x	x	x

Table 1-6 CD NE - Northern Europe and Russian

Component	EN	FI	NO	RU	SV	TR
HP Traditional PCL 6 Driver	x	x	x	x	x	x
HP Traditional PCL 5 Driver	x	x	x	x	x	x
HP Traditional Postscript 3 Emulation Driver	x	x	x	x	x	x
HP PCL 6 Unidriver	x	x	x	x	x	x
HP PCL 5 Unidriverr	x	x	x	x	x	x
HP Postscript 3 Emulation Unidriver	x	x	x	x	x	x
Common Windows Installer	x	x	x	x	x	x
Add Printer Wizard Installer	x	x	x	x	x	x
Customization Utility Wizard	x	x	x	x	x	x
CD Browser	x	x	x	x	x	x

Table 1-6 CD NE - Northern Europe and Russian (continued)

Component	EN	FI	NO	RU	SV	TR
HP Driver Preconfiguration Support Guide	x					
HP LaserJet 4345mfp User Guide (PDF)	x	x	x	x	x	x
HP LaserJet 4345mfp User Guide (CHM)	x	x	x	x	x	x
HP Jetdirect Administrator's Guide	x	x	x	x	x	x
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	x	x	x
HP Embedded Web Server User Guide	x	x	x		x	x
HP Device Installer Customization Wizard	x	x	x	x	x	x
HP Toolbox	x	x	x		x	

Table 1-7 CD EE - Eastern Europe

Component	CZ	EL	EN	HE	HU	PL
HP Traditional PCL 6 Driver	x	x	x	x	x	x
HP Traditional PCL 5 Driver	x	x	x	x	x	x
HP Traditional Postscript 3 Emulation Driver	x		x	x	x	x
HP PCL 6 Unidriver	x	x	x	x	x	x
HP PCL 5 Unidriverr	x	x	x	x	x	x
HP Postscript 3 Emulation Unidriver	x		x	x	x	x
Common Windows Installer	x	x	x	x	x	x
Add Printer Wizard Installer	x	x	x	x	x	x
Customization Utility Wizard	x	x	x	x	x	x
CD Browser	x	x	x	x	x	x
HP Driver Preconfiguration Support Guide			x			
HP LaserJet 4345mfp User Guide (PDF)	x	x	x	x	x	x
HP LaserJet 4345mfp User Guide (CHM)	x	x	x	x	x	x
HP Jetdirect Administrator's Guide	x		x		x	x
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	x	x	x

Table 1-7 CD EE - Eastern Europe (continued)

Component	CZ	EL	EN	HE	HU	PL
HP Device Installer Customization Wizard	x	x	x	x	x	x
HP Toolbox			x			

Table 1-8 CD AS - Asia

Component	EN	JA	KO	TH	ZHCN	ZHTW
HP Traditional PCL 6 Driver	x	x	x	x	x	x
HP Traditional PCL 5 Driver	x					
HP Traditional Postscript 3 Emulation Driver	x	x	x	x	x	x
HP PCL 6 Unidriver	x	x	x	x	x	x
HP PCL 5 Unidriverr	x					
HP Postscript 3 Emulation Unidriver	x	x	x	x	x	x
Common Windows Installer	x	x	x	x	x	x
Add Printer Wizard Installer	x	x	x	x	x	x
Customization Utility Wizard	x	x	x	x	x	x
CD Browser	x	x	x	x	x	x
HP Driver Preconfiguration Support Guide	x					
HP LaserJet 4345mfp User Guide (PDF)	x	x	x	x	x	x
HP LaserJet 4345mfp User Guide (CHM)	x	x	x	x	x	x
HP Jetdirect Administrator's Guide	x	x	x		x	x
HP LaserJet 4345mfp series Printing System Install Notes	x	x	x	x	x	x
HP Device Installer Customization Wizard	x	x	x	x	x	x
HP Toolbox	x					

Web deployment

All software that is contained on the installation CD is also available on the Web.

Web deployment is the preferred method for obtaining the latest software. The Web site offers a notification option for automatic e-mail notification about new software releases.

Printing-system software

The HP LaserJet 4345mfp printing-system software is available for download from www.hp.com/go/lj4345mfp_software.

The printing-system software is supported in the following operating systems:

NOTE Only 32-bit printer drivers are available on the printing-system software CD. If your computer is running a 64-bit operating system, you must install a 64-bit printer driver. 64-bit printer drivers for Windows XP and Windows Server 2003 are available on the Web at www.hp.com/support/lj4345mfp.

For more information about installing printer drivers for Windows, see Installing the Windows printing-system components.

- Windows 98 and Windows Me
- Windows XP Professional (32-bit)
- Windows XP Home Edition
- Windows 2000 (32-bit)
- Windows Server 2003 (32-bit)

Standalone drivers

The HP PCL 6, HP PCL 5, and HP PS emulation drivers and unidrivers are available individually to support the following operating systems:

- Windows 98 and Windows Me
- Windows NT 4.0
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows Server 2003 (32-bit and 64-bit)
- Mac 9.*x*
- Mac OS X (V10.1 or later)

Other operating systems

Drivers and related software are available for these additional operating systems:

- UNIX
- Linux
- OS/2
- HP Open VMS

Software component availability

The following table lists the availability of HP LaserJet software components by operating system.

NOTE In the following table, "98/Me" refers to Windows 98 and Windows Me; "2K" refers to Windows 2000; "4.0" refers to Windows NT 4.0; "XP" refers to Windows XP; and "Mac" refers to Macintosh operating systems.

Table 1-9 Software component availability for HP LaserJet 4345mfp

Component	98/Me	4.0	2K/XP[1]	XP64	Mac	UNIX	Linux
Drivers							
HP traditional PCL 6 and PCL 5 drivers	x	x					
HP Traditional Postscript 3 Emulation Driver	x	x					
HP PCL 6 and PCL 5 unidrivers			x	x			
HP Postscript 3 Emulation Unidriver			x	x			
Macintosh PPD/PDE					x		
UNIX Model Script						x	
Linux printing drivers and model script							x
HP Preconfiguration	x	x	x	x			
Installers							
Common Windows Installer	x		x	x			
Customization Utility Wizard	x		x	x			
Macintosh Installer for OS 9					x		
Macintosh Installer for OS X					x		
CD Browser	x		x	x			
Add Printer Wizard install	x	x	x	x			
Web Registration	x	x	x	x			

[1] This information also applies to Windows Server 2003.

2 Software description

Introduction

The HP LaserJet 4345mfp comes with software and installers for Microsoft® Windows® and Apple Computer, Inc., Macintosh systems. Linux and UNIX® systems are supported, and software is available on the Web. For information about specific system installers, drivers, and components, see the section that corresponds to that operating system.

This chapter contains information about the following topics:

- Supported operating systems
- Technology background information

Supported operating systems

The support for Windows operating systems (OSs) offers a full-featured configuration of the HP LaserJet 4345mfp. Support for OSs that are not described in this document offer varying levels of functionality. The HP LaserJet 4345mfp printing-system software, including PCL 6, PCL 5, and PS emulation drivers, supports the following OSs.

- Windows 98
- Windows Millennium Edition (Windows Me)
- Windows NT 4.0 (Service packs 3 through 6)

NOTE For the Windows NT 4.0 operating system, the print drivers can only be installed by using the Add Printer installation method.

- Windows 2000 (Service packs 1 and 2)
- Windows XP Home Edition
- Windows XP Professional (Service pack 1 and greater)
- Windows Server 2003

NOTE Throughout this manual, Windows XP is used to denote Windows XP Home Edition, Windows XP Professional, and Windows Server 2003, unless noted otherwise.

The HP LaserJet 4345mfp is also supported in the following operating systems:

- Mac OS 9 and Mac OS X (V10.1 or later)
- Linux (available at www.hp.com/go/linuxprinting)
- UNIX (available at www.hp.com/go/jetdirectunix_software)
- Windows Terminal Server
- Citrix Terminal Server
- Windows Cluster Server 8
- HP OpenVMS (available at h71000.www7.hp.com/openvms/print/)
- Tru64 UNIX printing. For further information, go to h30097.www3.hp.com/printing/.
- SAP printing. For further information, go to www.hp.com/go/sap/print.
- OS/2 printing. For further information, go to www.ibm.com.

For more information about the HP LaserJet 4345mfp, go to www.hp.com/support/lj4345mfp.

Technology background information

This section contains information about the following topics:

- Driver Configuration
- HP Driver Preconfiguration
- HP Driver Diagnostic Printer Check tool
- HP Printer Access Tool
- Euro character
- HP Embedded Web Server and HP Toolbox
- HP Embedded Web Server
- HP Toolbox
- HP Web Jetadmin
- HP Digital Sending Software
- Foreign Interface Harness
- Bluetooth
- Remote firmware update
- Printing print-ready documents from a command line
- Driver-feature comparison in various operating systems

Driver Configuration

The HP LaserJet 4345mfp print drivers feature bidirectional communication technology which, in supported environments, provides automatic discovery and driver configuration for product accessories. Some accessories that are automatically discovered and configured are the optional 500-sheet trays (tray 3, tray 4, and tray 5), the duplexing unit for automatic two-sided printing, the optional envelope feeder, the product memory, the product hard disk, and the job-storage feature.

Automatic discovery and driver configuration through bidirectional communication occurs in the following circumstances:

- Upon every installation of a print driver, when using Enterprise Autoconfiguration (EAC)
- When using the **Update Now** feature for a driver that is already installed

Bidirectional communication

In environments that support bidirectional communication, the computer communicates with the product during installation, determines the physical configuration, and then configures the driver accordingly.

Bidirectional communication is the capability of the product to respond to data inquiries from the computer and report back information, such as what type of print media is available or what accessories are connected to the product. If the connection does not have this capability (that is, if it

has no bidirectional mode), it can only accept commands from the host and cannot report information back to the host computer.

Bidirectional communication depends on your network operating system and on the type of connection that you have between your computer and your HP LaserJet 4345mfp.

When you install the HP Toolbox, bidirectional communication is always enabled. Installing the HP Toolbox activates the HP Network Registry Agent (HPNRA) to ensure constant communication between your computer and the product. When you install a driver without installing the HP Toolbox at the same time, bidirectional communication is enabled only to configure the driver, and is then disabled unless the **Update Now** feature is used to update the driver.

Enterprise AutoConfiguration

Enterprise AutoConfiguration (EAC) uses bidirectional communication to provide autoconfiguration functionality for installation of the print driver over a network, whether you use the installer on your printing-system software CD or the Add Printer wizard to install the driver. Driver installation that includes EAC is configured with the same settings as the physical configuration of the product. Configuration occurs without user interaction. If bidirectional-communication software has been installed previously, EAC is not activated, and the pre-existing bidirectional-communication software is used to configure the print driver.

If bidirectional communication software has not been installed, EAC installs bidirectional-communication software that allows it to communicate with the product and automatically match the print driver with the actual product configuration. EAC is activated during installation of the driver or whenever the **Update Now** feature is used.

If the configuration of the HP LaserJet 4345mfp changes after installation, the driver can be automatically updated with the new configuration in environments that support bidirectional communication by using the **Update Now** feature. For example, if the HP LaserJet 4345mfp is installed and an optional media-handling accessory is added later, you can use the **Update Now** feature to query the product and update the settings to match the product configuration.

The **Update Now** feature triggers the driver to check the registry for new information. The feature automatically updates the registry and changes the configuration information that appears on the **Configure** tab if you are using an HP Traditional PCL 6 or PCL 5 driver, and on the **Device Settings** tab if you are using an HP PCL 6, HP PCL 5, or HP PS Emulation Driver.

NOTE If you are using an HP PCL or PS emulation unidriver, you must select **Update Now** through the **Automatic Configuration** setting on the **Device Settings** tab. If you are using an HP traditional PCL 6 or PCL 5 driver, you must click the **Update Now** button on the **Configure** tab. The **Update Now** feature is not available with the HP Traditional PS Emulation Driver.

The following tables show the availability of EAC for various operating systems and network environments that support bidirectional communication.

Table 2-1 EAC availability in Microsoft Windows and Microsoft Share

Method	Connection type			Microsoft Windows					Microsoft Share[1]	
				98	Me	NT 4.0	2000	XP	2000/XP host with 2000/XP client	NT 4.0 host with NT 4.0 client
Installer	Direct connect	Parallel					x	x		
		USB								
	Network	Jetdirect	TCP/IP	x	x		x	x	x	x[2]
			IPX/SPX	x	x		x	x	x	x[2]
		Standard	TCP/IP (HP)	x	x		x	x	x	x[2]
			TCP/IP (MS)	x	x		x	x	x	x[2]
			IPX/SPX (HP)	x	x		x	x	x	x[2]
Add Printer	Direct connect	Parallel				x				
		USB								
	Network	Jetdirect	TCP/IP	x	x	x	x	x	x	
			IPX/SPX	x	x	x	x	x	x	x[2]
		Standard	TCP/IP (HP)	x	x	x	x	x	x	x[2]
			TCP/IP (MS)				x	x	x	x[2]
			IPX/SPX (HP)	x	x	x	x	x	x	x[2]

[1] This column represents the following Microsoft Share configurations: 1. Windows 2000, Windows XP, or Windows Server 2003 Server host with Windows NT 4.0, Windows 98, or Windows Me client; 2. Windows NT 4.0 host with Windows 2000, Windows XP, Windows Server 2003, Windows 98, or Windows Me client; 3. Windows 98 or Windows Me host with any client.

[2] In this environment, client machines use Point and Print to download the configured driver from the host.

Table 2-2 EAC availability in Novell Netware environments

Method	Connection type			Novell			
				Netware 4.x		Netware 5.x	
				Bindery queue	NDS queue	Bindery queue	NT 4.0
Installer	Direct connect	Parallel					
		USB					
	Network	Jetdirect	TCP/IP	x	x	x	x
			IPX/SPX				

Table 2-2 EAC availability in Novell Netware environments (continued)

Method	Connection type		Novell			
			Netware 4.x		Netware 5.x	
			Bindery queue	NDS queue	Bindery queue	NT 4.0
	Standard	TCP/IP (HP)				
		TCP/IP (MS[1])				
		IPX/SPX (HP)				

[1] Bidirectional functionality is supported only with the client software from Novell. It is not supported with Microsoft (MS) Client Service for NetWare.

HP Driver Preconfiguration

HP Driver Preconfiguration is a software architecture and set of tools that permits HP printing-system software to be customized and distributed in managed corporate printing environments. Using HP Driver Preconfiguration, information technology (IT) administrators in corporate and enterprise environments can preconfigure the printing and device defaults for HP print drivers before installing the drivers in the network environment.

HP Driver Preconfiguration is most beneficial when configuring print drivers for multiple workstations or print servers for print queues that share the same configuration. Two types of features can be configured: device settings and printing-preferences settings. The driver is configured to match the product hardware so that gaining access to all of the product accessories through the driver is enabled correctly (for example, for duplexing units and additional trays). Most driver feature settings can also be configured.

HP Preconfiguration configures the driver to match the accessories installed on the product, or to match the settings that IT administrators make in the configuration (.CFG) file (for example, optional trays, total amount of memory, job-storage settings, or mopier settings).

The preconfiguration process consists of three basic steps: driver acquisition, driver preconfiguration, and driver installation and deployment. These steps can be accomplished in different ways, depending on the tool that is being used to define the configuration.

The configuration process for driver preconfiguration is supported through three distinct tools. All three are designed with the same basic user interface (UI) controls for interacting with the configuration (.CFG) file, but are packaged differently, either to support established product

installation workflows or to leave the deployment and installation of the driver entirely up to the user. The following tools support driver preconfiguration:

- **HP Driver Configuration Editor**. The HP Driver Configuration Editor is a small, standalone Windows software program that the administrator can use to open the .CFG file that is associated with a particular driver and make modifications that are applied when that driver is installed on the target computer. It is intended for use in environments that have an established process for deploying drivers. This is the preconfiguration tool of choice to support any Novell or HP Print Server Appliance (PSA) Point and Print environments. It is used in the way that any ordinary Windows software program is used.

  The HP Driver Configuration Editor is available from www.hp.com/go/hpdpc_sw.

- **The HP Web Jetadmin Driver Configuration Plugin**. HP Web Jetadmin provides a queue creation program that can be used to create printer queues on any Windows NT 4.0, Windows 2000, Windows XP, or Windows Server 2003 workstation. The HP Web Jetadmin Driver Configuration Plugin adds a number of screens to the existing queue creation workflow. Use these screens to customize the drivers that are being installed for the queues. The plug-in is limited to Internet Explorer browsers. Netscape Navigator (TM) is not supported.

  The HP Web Jetadmin Driver Configuration Plugin is available from www.hp.com/sbso/tpm/web_jetadminplugin.html.

- **HP Customization Utility/Silent Installer**. The Customization Utility features an install-time mode of HP Driver Preconfiguration. IT administrators can use the utility to preconfigure the drivers for a printing-system software driver installation that uses the silent installer.

Detailed information about gaining access to and installing these tools can be found in the *HP Driver Preconfiguration Support Guide*, which is available on the printing-system software CD.

Lockable features

The following driver features can be locked to prevent end-users from changing settings:

- **Print on Both Sides (Duplex)**
- **Media Type**
- **Paper Source**

When a feature is locked, the selected default option is the only option that is available to users. Generally, the feature is unavailable in the driver UI after it has been installed.

HP Driver Diagnostic Printer Check tool

NOTE This tool will become available after product release.

The HP Driver Diagnostic Printer Check tool is a Web-based diagnostic software that enables you to determine whether you are using the correct and most current print driver for your HP LaserJet 4345mfp. To gain access to the HP Driver Diagnostic Printer Check tool, go to www.hp.com/go/drivercheck, or go to the HP Business Support Center (BSC) at www.hp.com/go/bsc, select the **self-help resources** link on the left navigation bar, and then select **automatic driver checker** to run the HP Driver Diagnostic Printer Check tool.

When you run the HP Driver Diagnostic Printer Check tool, you are presented with a list of products that are currently installed on your computer. Select the HP product that you would like to check and

the HP Driver Diagnostic Printer Check tool gathers information about your product, drivers, and system setup. The data gathered is used for diagnosing your software driver configuration and for checking your print driver update needs. The tool will then either verify that you are already using the latest driver, or inform you if you are using an incorrect driver and let you know if there is an updated driver version available for your product. If there is an update available, the tool enables you to download and install the latest driver version by clicking on it.

The data gathered by the HP Driver Diagnostic Printer Check tool is stored anonymously for analysis and continuous improvement of HP diagnostic tools. No private data is needed or accessed on your computer.

HP Printer Access Tool

NOTE This tool will become available after product release.

The HP Printer Access Tool is a Web-based application that provides a single point of access to the embedded Web server pages for each networked product in the user's local print folder, making it easy to remotely manage the products in an unmanaged network environment without affecting performance or reliability. For more information about the HP Embedded Web Server, see the HP Embedded Web Server section of this guide.

To gain access to the HP Printer Access Tool, follow these steps:

NOTE The HP Printer Access Tool must be selected during installation to be available.

1. Select **Start**.
2. Select **Programs**.
3. Select HP LaserJet 4345mfp, and then select **HP Printer Access Tool**.
4. Click on the appropriate product name to access the EWS pages for that product.

Euro character

The euro is the name for the currency of the European Union (EU). This unit was launched on January 1, 1999. The euro has changed the way business is conducted in Europe and has affected every company and industry in the world. It is vital that companies understand and prepare for the changes that the euro brings.

The HP LaserJet 4345mfp includes euro characters for each of the internal fonts. The product can print the euro character in the Windows 98, Windows Me, Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003 operating systems. Hewlett-Packard is committed to maximizing document portability through supporting and promoting euro-symbol standards.

HP Embedded Web Server and HP Toolbox

The HP Embedded Web Server (HP EWS) and the HP Toolbox are both tools that can be used to remotely configure products on a network. Both HP EWS and HP Toolbox are used with a Web

browser and they have a similar look and feel. Many of the pages in HP EWS are nearly identical to HP Toolbox pages. However, there are several key differences between the two utilities:

- HP Toolbox is used to manage the products that are installed on the client machine where Toolbox is installed. Toolbox gets the address of the products from the registry entry of the port that the product is using.
- HP Toolbox can also be used to manage locally connected products.
- To gain access to HP EWS the user just needs to know the TCP/IP address of the products. No software needs to be installed on the user's computer.
- For most products, HP EWS can only be directly accessed when both the product and the computer are equipped with network cards, or some form of network connection. In theses cases the Web browser directly addresses the product's TCP/IP address. The only Web pages available are those that are served from the product.
- HP Toolbox supports network and direct connect forms of product connectivity. The browser directs itself to a locally hosted TCP/IP service that monitors the printing port, be it network or direct connect. HP Toolbox Web pages are generated through a combination of locally installed Web content and data that is retrieved from the product. These web pages also facilitate product control. On some products, HP Toolbox provides a link to the product's HP EWS page, but these are not accessed directly through the browser, but rather through the locally hosted TCP/IP service.
- HP Toolbox provides the **Select Device** page, which is used to choose which of the locally installed devices to manage if more than one has been installed.

The HP EWS and HP Toolbox utilities are described in detail in the following sections.

HP Embedded Web Server

The HP EWS is a standard feature for the HP LaserJet 4345mfp.

The HP EWS provides a simple, easy-to-use solution for one-to-one product management. In offices that have a limited number of products, remote management of printing devices can be accomplished without installing any management software, such as HP Web Jetadmin. The only requirement is that the management console must have a supported Web browser.

In environments with a larger number of products, where one-to-one management is impractical, the HP Embedded Web Server and HP Web Jetadmin work together to provide scalable remote product management. Use HP Web Jetadmin for consolidated management tasks when you want to perform operations on a selected set of products instead of on individual products. For such environments, HP provides hooks between the HP Embedded Web Server and HP Web Jetadmin so that you can configure HP Embedded Web Server features on multiple products in one operation. For example, you can set the security password for the HP Embedded Web Server simultaneously on a population of products.

For additional information and a copy of the *HP Embedded Web Server User Guide*, go to www.hp.com/support/lj4345mfp.

To view information about the product by using the HP Embedded Web Server, open a supported Web browser and type in the product transmission control protocol/internet protocol (TCP/IP) address or host name. To find the TCP/IP address, look for **IP Address** on the enhanced input/output (EIO) Jetdirect page, in the **TCP/IP** section. To find the host name of the product, look for **Host Name** in the **TCP/IP** section.

You also can view information about an installed HP Jetdirect print server by clicking the **Networking** tab in the HP Embedded Web Server window.

To print a copy of the configuration page and the EIO Jetdirect page from the control-panel display, follow these steps:

1. Press MENU.
2. Touch **INFORMATION**.
3. Scroll to, and then touch **PRINT CONFIGURATION**. The configuration page and the EIO Jetdirect page automatically print.
4. Look on the EIO Jetdirect page section marked "TCP/IP" for the TCP/IP address.

The HP EWS frame

Each screen in the HP EWS has a frame that contains a top banner, four category tabs, a left-aligned navigation menu bar, and a main-content area. Selecting one of the category tabs causes the corresponding left-aligned navigation bar to appear. The left-aligned navigation menu includes links to content that is appropriate for that tab. The main-content area shows information and opens options in response to navigation tab selections and menu bar selections.

See the following sections for more information about each tab or area:

- Information tab
- Settings tab
- Digital Sending tab
- Networking tab

Information tab

The following information is available on the HP EWS **Information** tab. To view the information, click the menu items on the left side of the HP EWS **Information** tab.

NOTE If an HP EWS password has been set, the **Information** tab is the only tab that is visible until the user logs in. See Security for more information.

Not all of the screens on the tab are shown in this document. For more information, see the *HP Embedded Web Server User Guide*.

- **Device Status**. This screen provides current status information about the product.
- **Configuration Page**. This screen provides information about the configuration of the product.
- **Supplies Status**. This screen provides information about the print cartridge and the total number of pages that have been printed, and the serial number of the product.
- **Event log**. This screen provides information about reported printer errors.
- **Usage page**. This screen provides a page count for each size of media that has passed through the device, as well as the number of duplexed pages.

- **Device Information**. This screen shows device information, such as the product TCP/IP address and serial number.
- **Control Panel**. This screen shows the product control panel.
- **Print**. Use this screen to print documents that are print-ready, such as those generated by a "print to file" driver option, .PCL documents, .PS documents, .PDF files, and text (.TXT) files.

Links to off-product solutions

Links on the HP EWS screens provide an easy way to locate information or complete tasks.

- **hp instant support**. This link connects you to a set of dynamic Web resources that help you solve specific problems and determine additional services that might be available for your product. Specific status and configuration information about the product is retained and directed to the "Solve a Problem" Web site. This site offers targeted support content and messages to help resolve problems as quickly as possible.
- **Order Supplies**. This link connects you to an HP product supplies screen from which you can order genuine HP supplies for your product.
- **Product Support**. This link connects to an HP product-support screen from which you can search for information, contact the HP customer care home page, or find additional resources for your product.

Device Status

Status information, such as whether the product is online or the toner is low, is available through your Web browser on a computer that is linked directly to the product. You can view this information without physically going to the product to identify the status. The following illustration shows how this information is presented on the product Web page.

Figure 2-1 **Device Status** screen on the **Information** tab

Configuration Page

You can gain access to the HP LaserJet 4345mfp configuration page remotely through the HP Embedded Web Server. The HP EWS Configuration Page screen provides configuration information about the product in the same way as the configuration page that is printed from the product. The following illustration shows an example of a configuration page viewed remotely through the HP EWS.

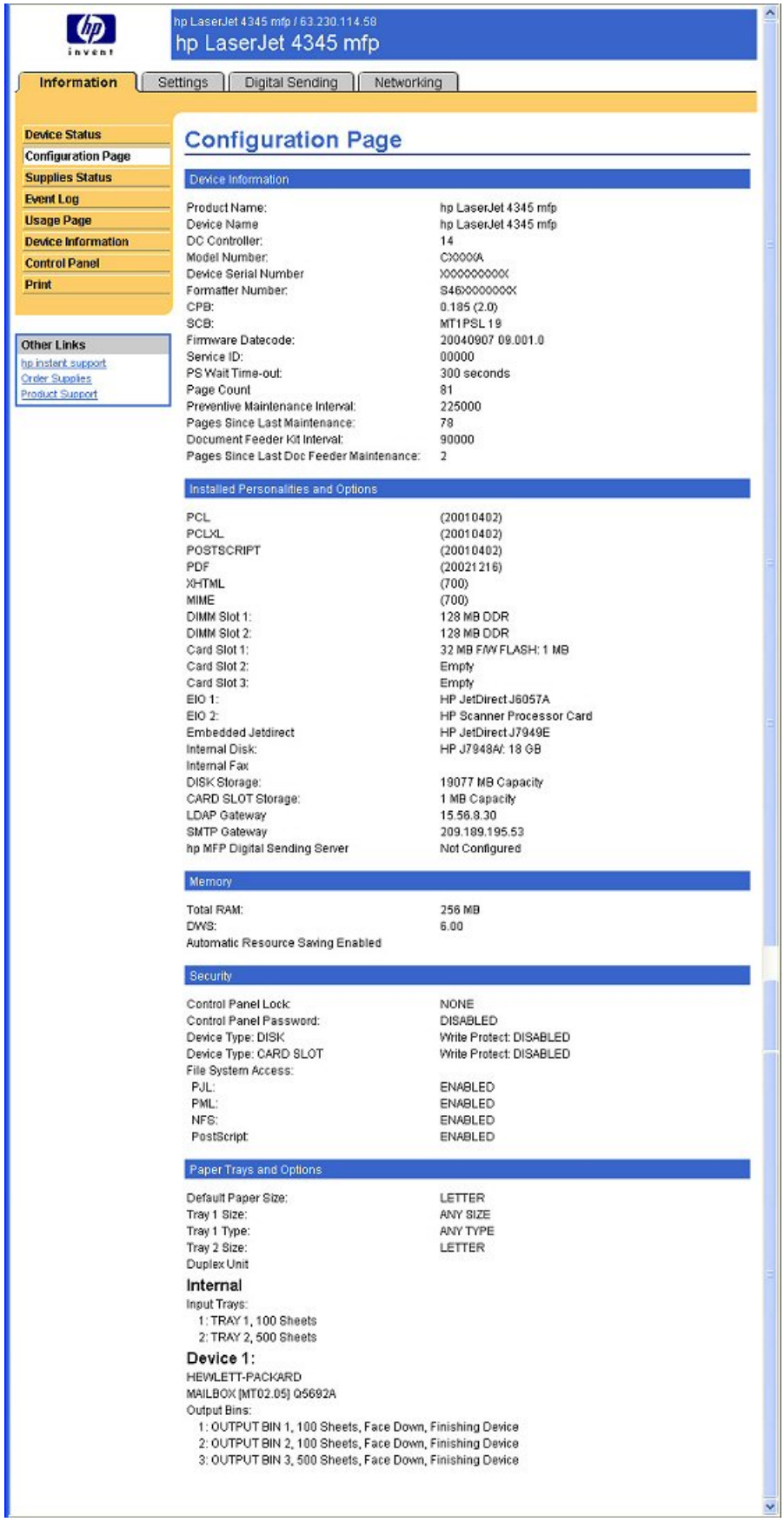

Figure 2-2 Configuration Page on **Information** tab

Settings tab

The following information is available on the HP EWS **Settings** tab. To view the information, click the menu items on the left side of the HP EWS **Settings** tab. The **Settings** tab is shown in the Configure device section.

Not all of the screens on the tab are shown in this document. For more information, see the *HP Embedded Web Server User Guide*.

- **Configure Device**. Use the **Configure Device** screen to print product information pages and configure the product remotely.
- **E-mail Server**. Use the **E-mail Server** screen to configure e-mail settings for outgoing e-mail.
- **Alerts**. IT administrators can set up the product to send alerts to anyone through e-mail messages.
- **AutoSend**. Use the **AutoSend** screen to send product configuration and supplies-usage information periodically to your service provider.
- **Security**. Use the **Security** screen to manage security on the product.
- **Edit Other Links**. Use the **Edit Other Links** screen to add or customize up to five links to the Web sites of your choice.
- **Device Information**. Use the **Device Information** screen to provide a name of your choice for the product, assign an asset number, and configure the company name, the person to contact about the product, and the physical location of the product.
- **Language**. Use the **Language** screen to select the language in which the HP EWS screens appear.
- **Date & Time**. Use the **Date & Time** screen to set the correct date and time for the product.
- **Wake Time**. Use the **Wake Time** screen setting to wake the product up at a certain time on a daily basis. There can only be one wake time setting per day; however, each day can have a different wake time. The sleep mode delay can also be set on this screen.

Configure device

You can obtain product configuration information through a Web browser by opening the HP EWS screen and changing any of the basic configuration information on the **Settings** tab. Security and password controls give management information system managers the level of control that they require within their environments. The following illustration shows an example of product options that can be configured remotely.

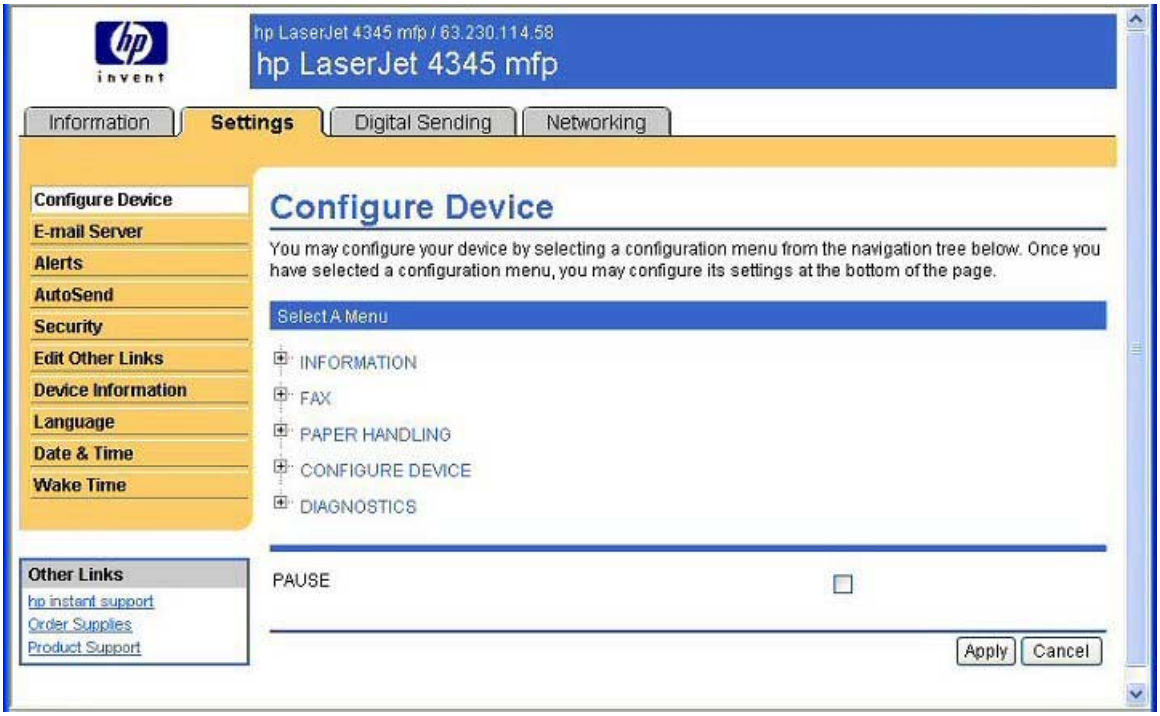

Figure 2-3 **Settings** tab - **Configure Device**

Alerts

The product can automatically send e-mail alerts about printing problems or job status to specified e-mail addresses. For example, if toner is low, the product can notify the person who is responsible for ordering or changing the toner bottle. If a product failure occurs, the product can send an e-mail alert directly to the person who is responsible for fixing the problem. These e-mail alerts can be configured to be sent to any device that can accept e-mail, such as digital phones, pagers, and personal digital assistants (PDAs). In large environments, administrators can route e-mail addresses to list-servers or uniform resource locators (URLs) for expanded notification.

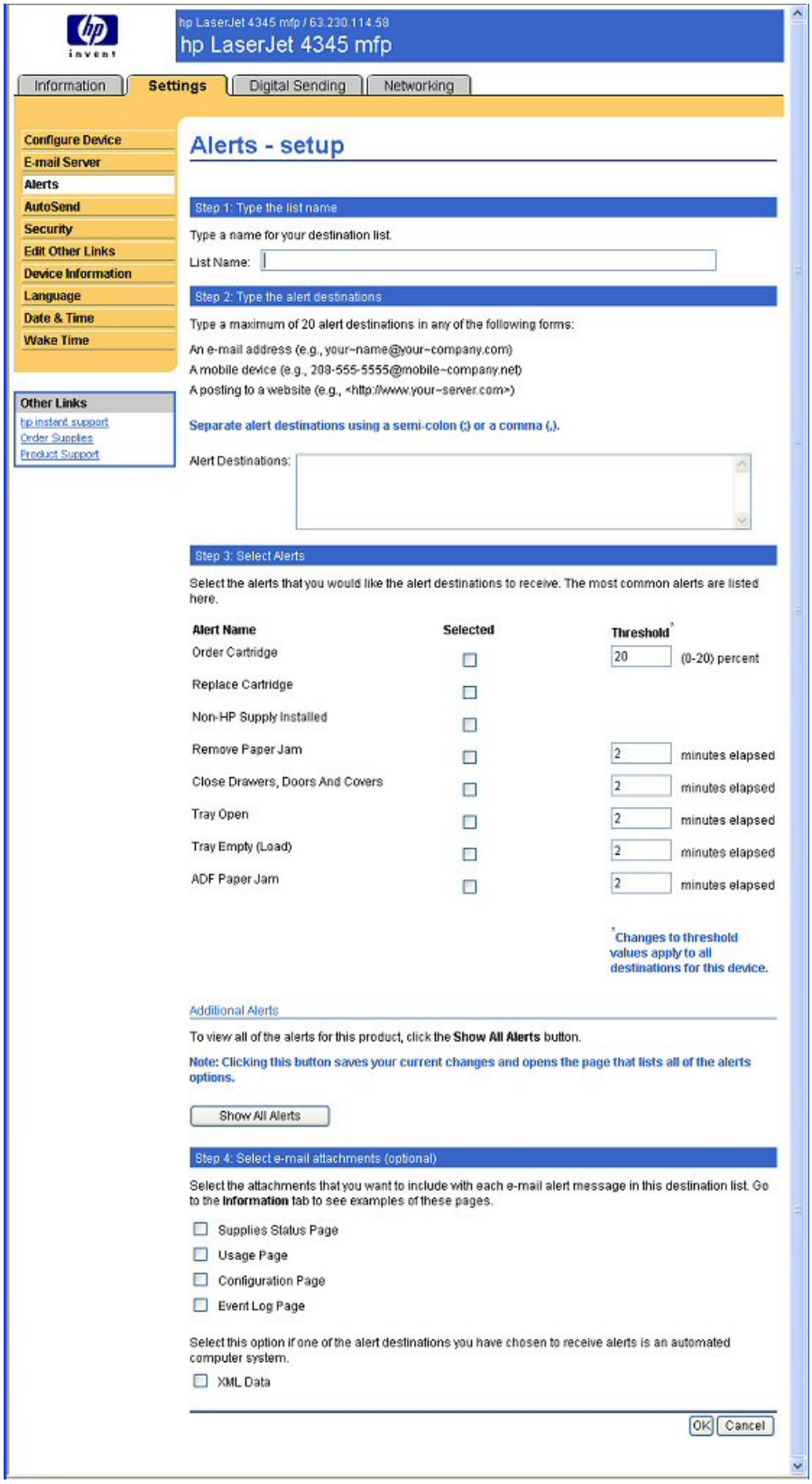

Figure 2-4 **Settings** tab - **Alerts - setup** screen

Security

The HP EWS screens that appear, and the settings on them, vary according to how you gain access to the HP EWS: as a general user, as an information technology (IT) administrator, or as a service provider. To control access to the HP EWS screens, a password can be set on the **Security** page.

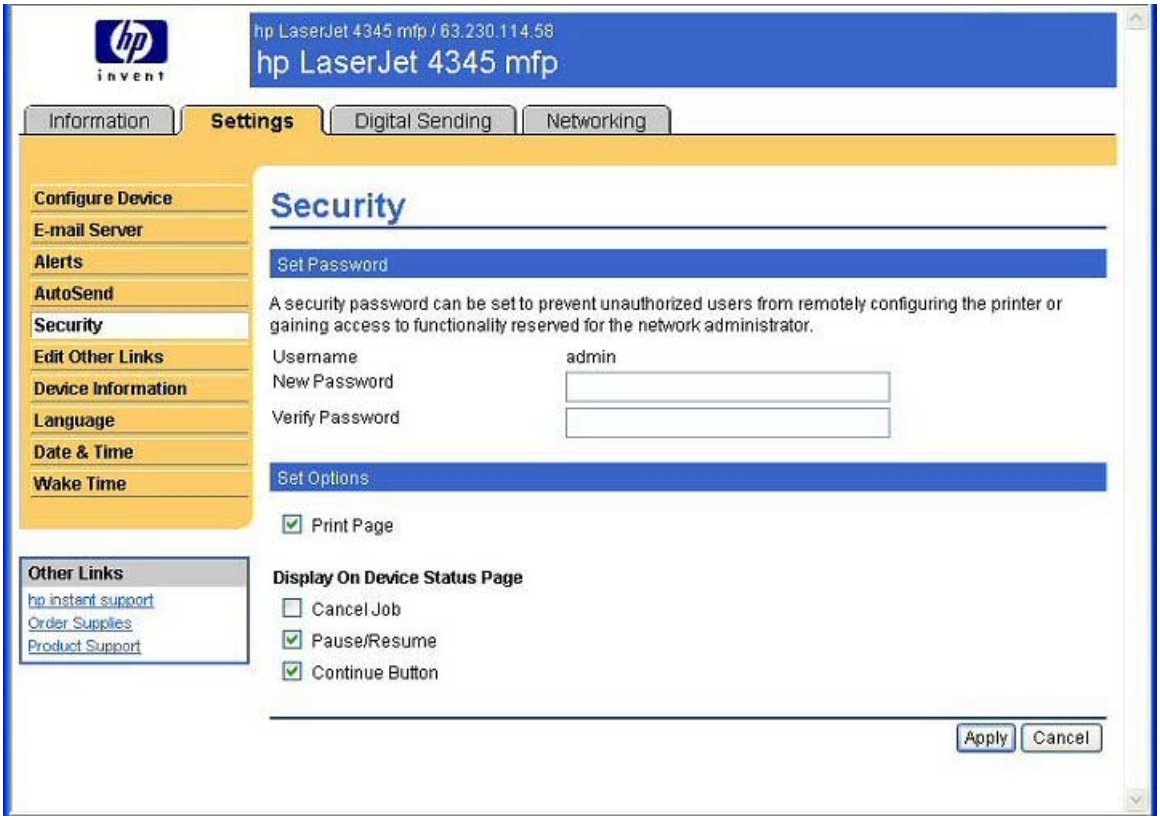

Figure 2-5 **Security** screen on the **Settings** tab

In a password-protected HP EWS, only the **Information** tab is available to users who do not log in by using the password. If no password has been set, which is the default, then all of the tabs are visible.

If a password has been set, you must log on as an IT administrator or a service provider to gain access to the protected HP EWS tabs (**Settings**, **Digital Sending**, and **Networking**).

Digital Sending tab

The following options are available on the HP Embedded Web Server **Digital Sending** tab.

Not all of the screens on the tab are shown in this document. For more information, see the *HP Embedded Web Server User Guide*.

Use the menu on the left side of the screen to control the digital-sending features offered by the HP LaserJet 4345mfp.

General

Use the **General Settings** screen to set digital-sending administrator information. For more information, see the *HP Embedded Web Server User Guide*.

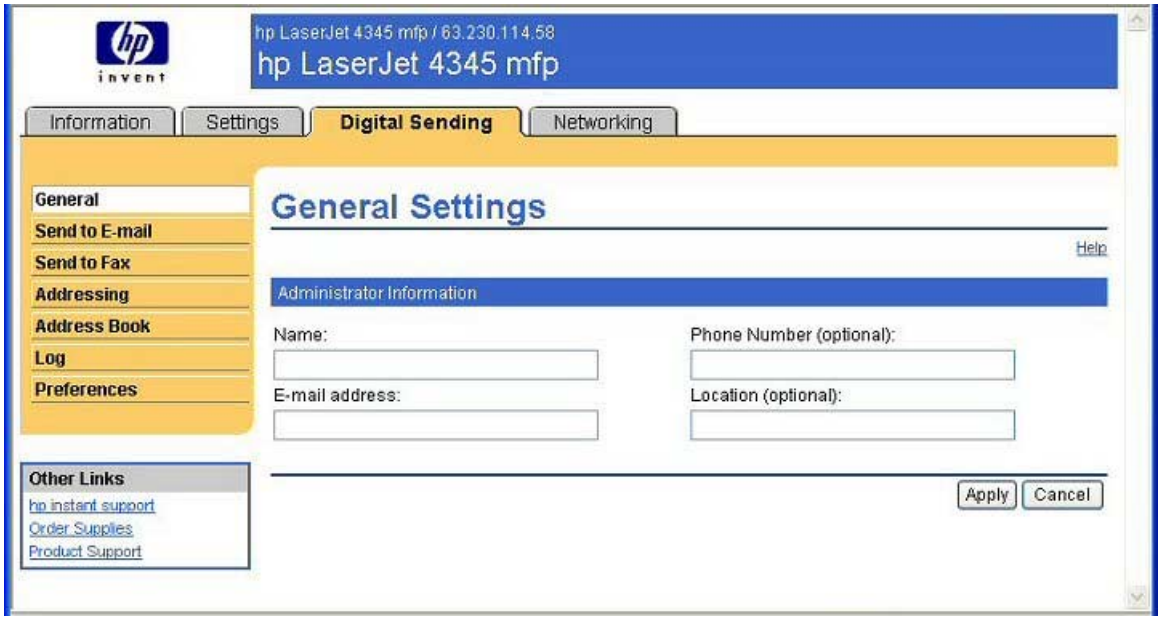

Figure 2-6 **General Settings** screen on the **Digital Sending** tab

Send to E-mail

The HP LaserJet 4345mfp requires a Simple Mail Transfer Protocol (SMTP) Gateway server to forward e-mail messages to destination e-mail addresses. Use the **E-mail Settings** screen to configure SMTP settings, set the maximum e-mail attachment size, and set the default e-mail address for the product. You can also set a default subject for all e-mail messages that the product sends.

For more information, see the *HP Embedded Web Server User Guide*.

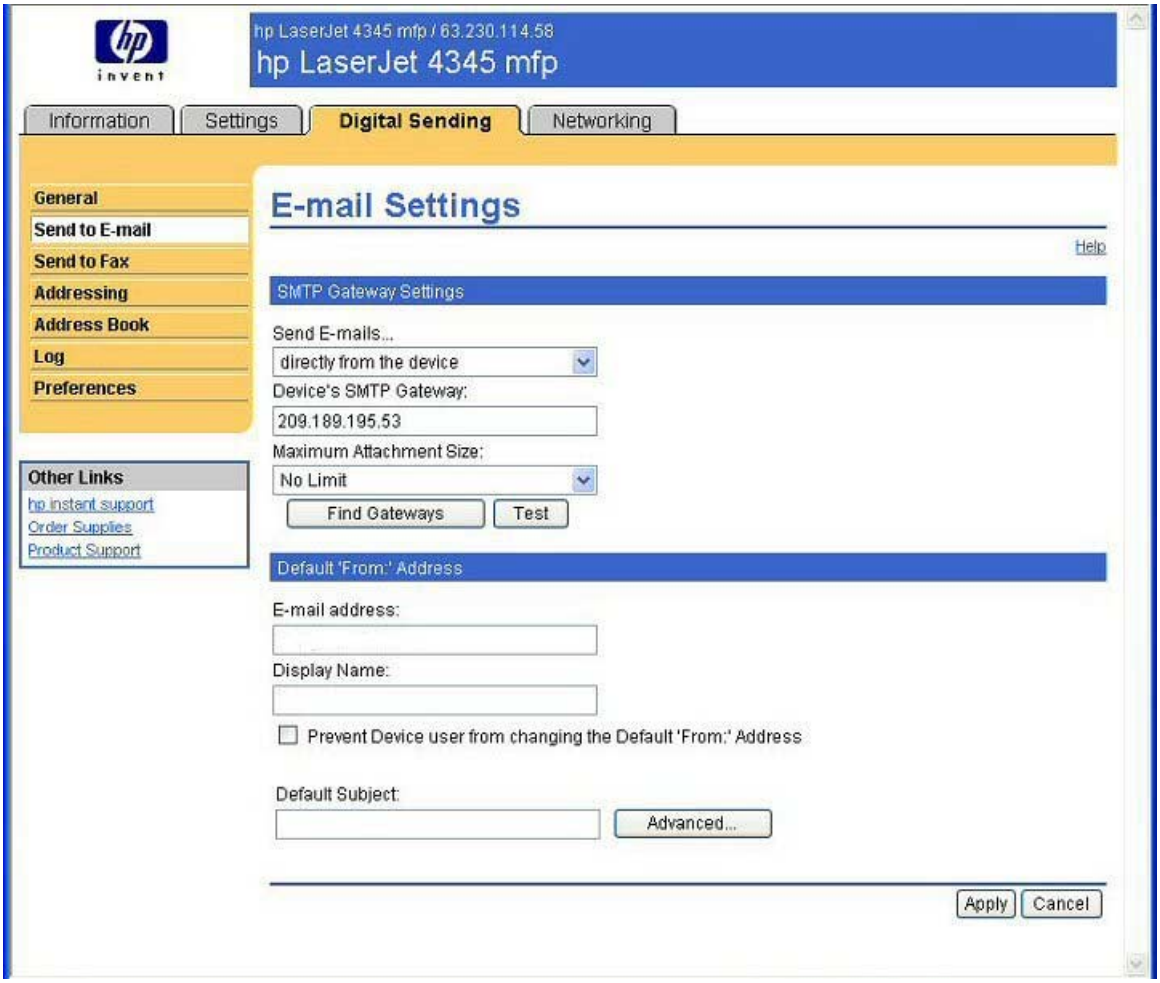

Figure 2-7 **E-mail Settings** screen on the **Digital Sending** tab

Send to Fax

The HP LaserJet 4345mfp can send scanned documents to a fax number to simulate the sending capabilities of a fax machine. If the product is equipped with a fax modem, it can also be set up to process incoming faxes. Use the **Fax Settings** screen to configure the Send-to-Fax features for the product.

For more information, see the *HP Embedded Web Server User Guide*.

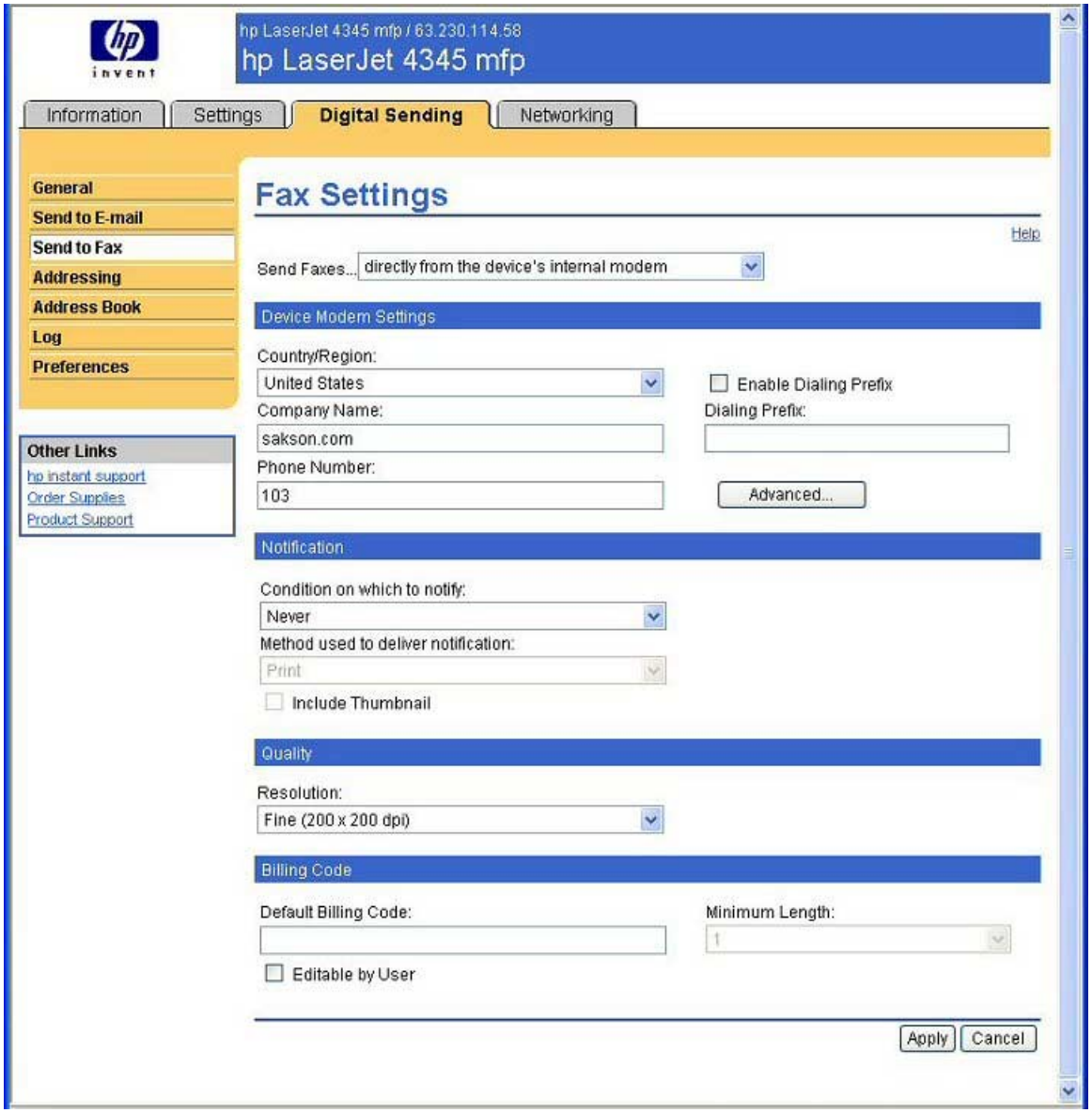

Figure 2-8 **Fax Settings** screen on the **Digital Sending** tab

Addressing

To send scanned documents with the HP LaserJet 4345mfp, you must provide e-mail addresses. The product addressing feature simplifies this process by searching for destination e-mail addresses.

Use the **Addressing Settings** screen to set features that allow the product to get e-mail addresses directly from the database of a Lightweight Directory Access Protocol (LDAP) server instead of from a replicated LDAP Address Book. Using the LDAP Address Book directly guarantees that the latest addresses are used.

For more information, see the *HP Embedded Web Server User Guide*.

Figure 2-9 **Addressing Settings** screen on the **Digital Sending** tab.

Address Book

Use the **Address Book** screen to add a predefined list of e-mail addresses, in the form of a Comma-Separated Value (.CVS) file, to be imported into the product internal address book. The .CSV file is a plain-text file (in UTF-8 encoding) that contains each e-mail address entry on a separate line. An entry consists of an alias, which is the name that appears, followed by a comma and an e-mail address. The aliases and e-mail addresses cannot contain any commas. For example:

- name1, name1@your.company.com
- name2, name2@your.company.com

On the product control panel, use the alias name to search for e-mail addresses. For more information, see the *HP Embedded Web Server User Guide*.

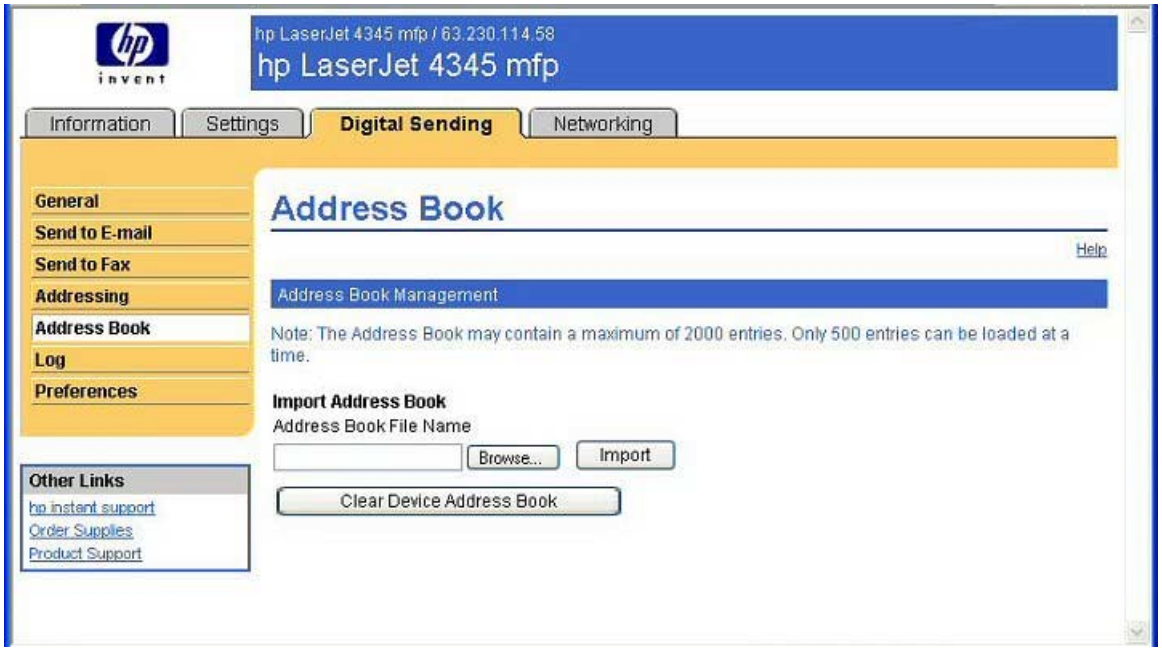

Figure 2-10 **Address Book** screen on the **Digital Sending** tab

Log

Use the **Activity Log** screen to view digital sending job information, including any errors that occur. For more information, see the *HP Embedded Web Server User Guide*.

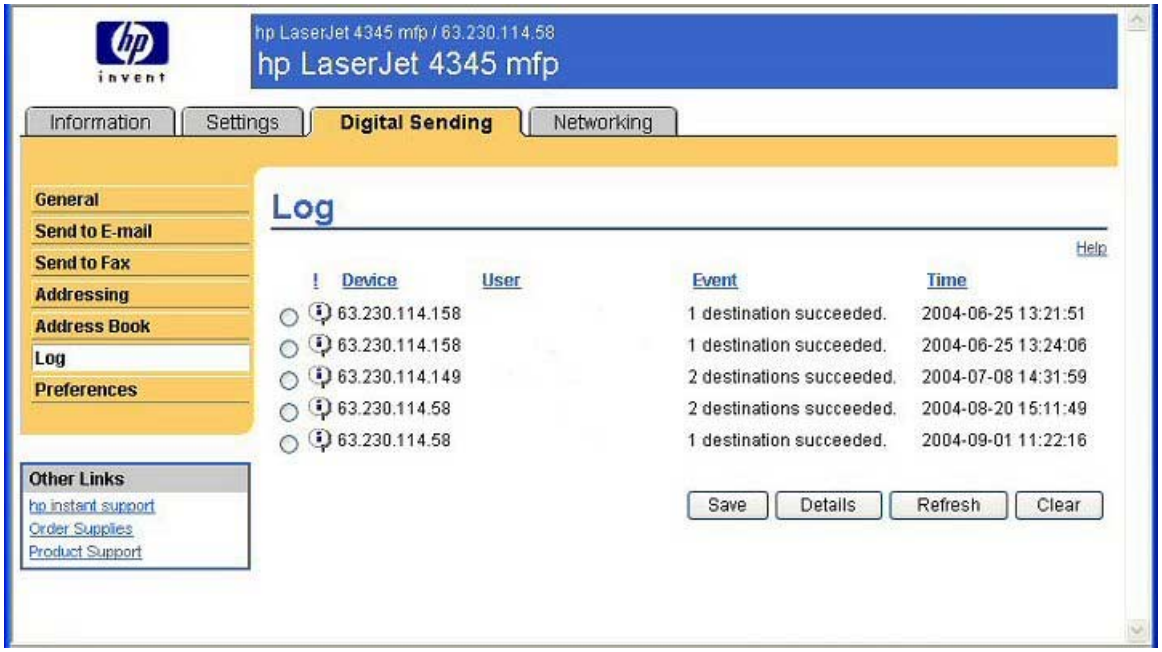

Figure 2-11 **Activity Log** screen on the **Digital Sending** tab

Preferences

Use the **Preferences Settings** screen to configure general settings for the digital-sending features. For more information, see the *HP Embedded Web Server User Guide*.

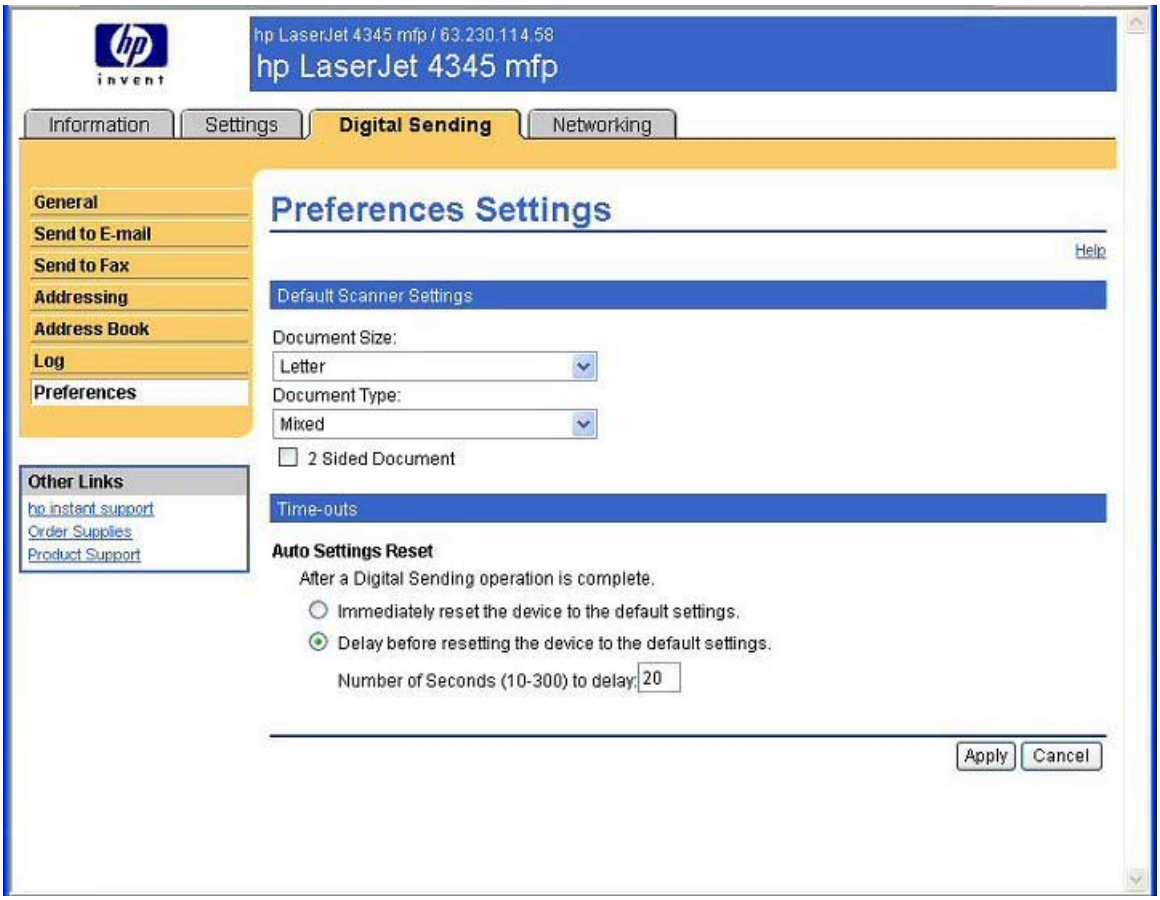

Figure 2-12 **Preferences Settings** screen on the **Digital Sending** tab

Networking tab

The following options are available on the HP EWS **Networking** tab.

Not all of the screens on the tab are shown in this document. For more information, see the *HP Embedded Web Server User Guide*.

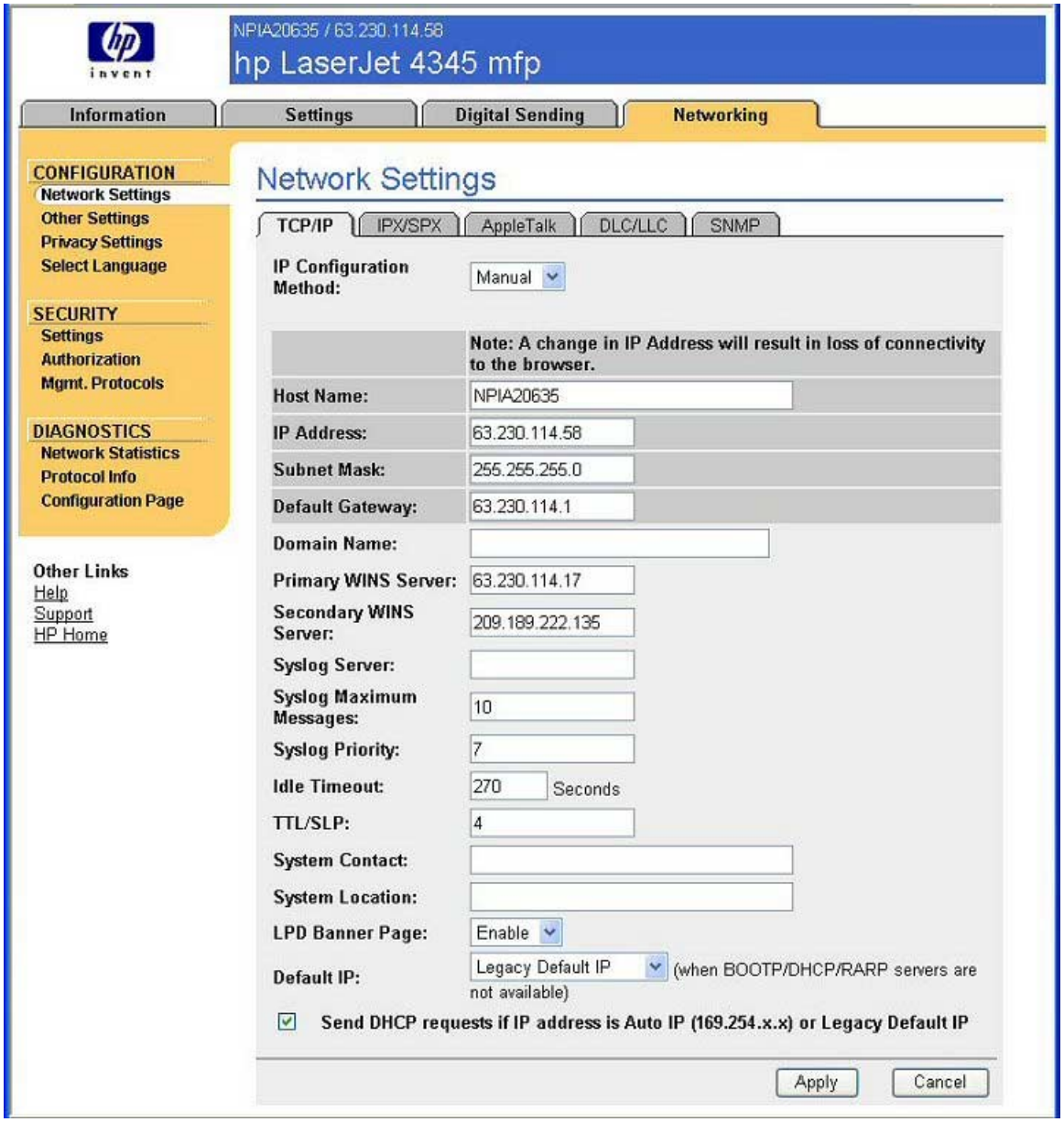

Figure 2-13 **Networking** tab - Configuration section

The menu on the left side of the screen contains other networking options under three categories: configuration, security, and diagnostics. For more information, see the *HP Jetdirect Administrator's Guide*.

Configuration section

- Network Settings
- Other Settings
- Privacy Settings
- Select Language

Security section

- Settings
- Authorization
- Mgmt. Protocols

Diagnostics section

- Network Statistics
- Protocol Info
- Configuration Page

Network settings

From the **Networking** tab, you can enable and configure the following network protocols:

- TCP/IP
- Internetwork packet exchange/Sequenced packet exchange (IPX/SPX)
- AppleTalk
- Data link control/logical link control (DLC/LLC)
- Simple network management protocol (SNMP)

HP Toolbox

The HP Toolbox is a series of Web pages and a supporting Windows-based software program that provide access to the HP LaserJet 4345mfp embedded Web servers and other firmware functions, making them available on a browser-driven user interface where product properties can be viewed and manipulated.

The HP Toolbox provides links to product status information, help information, and tools for diagnosing and solving problems. The HP Toolbox also provides product status and settings information from the embedded Web server, by clicking the **Device Settings** button in the upper-right corner of each of the two tabs.

HP Toolbox requirements

The HP Toolbox requires one of these recent Internet browsers in order to show embedded Web server pages:

- Microsoft Internet Explorer 5.5 or later (Internet Explorer 5.2 and later for Macintosh)
- Netscape Navigator 7.0 or later (Netscape Navigator 7.0 and later for Macintosh)
- Opera Software ASA Opera 7.0 for Windows
- Safari 1.0 for Macintosh

These browser requirements are not necessarily minimum standards, but they are the minimum tested environments. Other, untested browsers might also provide access to the HP Toolbox screens.

The HP Toolbox is supported only for Windows 98 and later operating systems (Windows Me, Windows 2000, Windows XP, and Windows Server 2003). You must have performed a complete software installation in order to use the HP Toolbox.

When the HP LaserJet 4345mfp is connected both through a network using an HP Jetdirect card and through a local parallel connection, the network connection takes precedence. On a network connection, bidirectional communication is supported through a TCP/IP or an IPX/SPX connection.

Installing HP Toolbox

To install HP Toolbox, perform a custom installation and select **hp LaserJet toolbox** from the Setup dialog.

NOTE It is necessary to install HP Toolbox for each product, even when HP Toolbox is currently in use for other products.

To view the HP Toolbox

To open the HP LaserJet 4345mfp Toolbox, on the **Start** menu, point to **Programs**, point to **hp LaserJet 4345**, and then click **hp LaserJet toolbox**.

The HP Toolbox opens in your Web browser. The HP Toolbox software contains two tabs:

- **Status** tab
- **Alerts** tab

These tabs are on local browser screens that are installed when you install the printing-system software, and you do not need an Internet service provider to view them.

The HP Toolbox also contains an area with links to the HP Web site. While you do not need to have Internet access to open and use the HP Toolbox, you must have Internet access in order to gain access to the sites that are associated with the links in the Other Links area.

If your computer is connected to the HP LaserJet 4345mfp through a network, you can bookmark the URL of the HP Toolbox so that you can return to it quickly in the future.

The HP Toolbox Frame

Each screen in the HP Toolbox has a frame that contains a top banner, category tabs, a left-aligned navigation menu bar, and a main-content area. Selecting one of the category tabs causes the corresponding left-aligned navigation bar to appear. The left-aligned navigation menu includes links to the content that is appropriate for that tab. The main-content area shows information and options in response to selections that you make on an HP Toolbox screen.

See the following sections for more information about each tab or area:

- Top banner
- Status tab
- Alerts tab
- Linking to the HP Embedded Web Server

- Other Links

Top banner

The top banner has an HP logo. Next to the HP logo, the title of the page appears followed by the product name and a copyright notice. The top banner is the same for all of the HP Toolbox Web pages. The HP logo contains a link to the HP Web site (www.hp.com).

Status tab

The **Status** tab, with the **Device Status** setting selected, is shown in the following illustration.

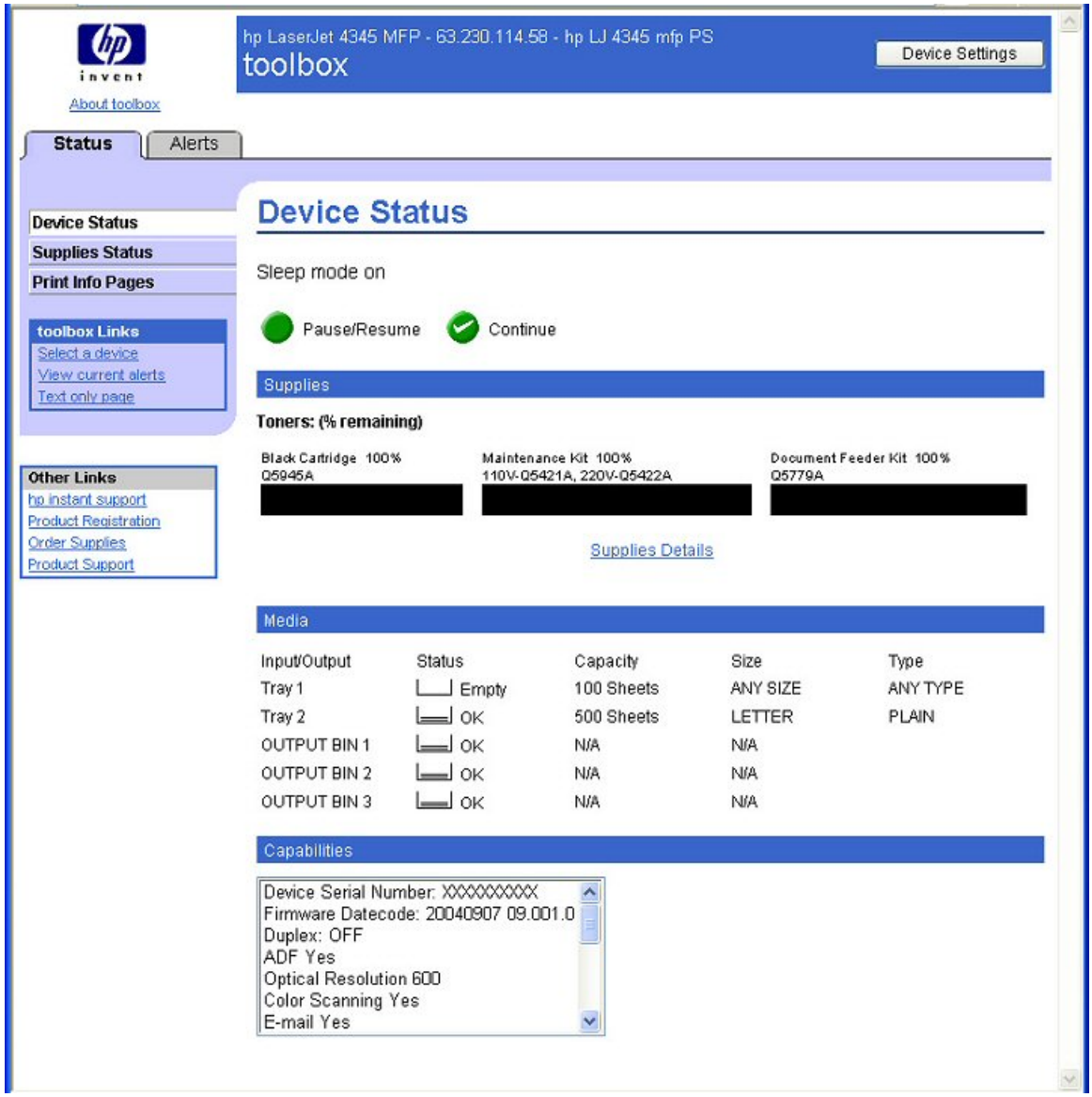

Figure 2-14 Toolbox **Device Status** tab

The **Status** tab provides the following options:

- **Device Status**. This screen shows the percentage of life remaining for each consumable, the status and configuration information for the trays and output bins, and the accessories that are installed on the product.
- **Supplies Status**. This screen shows the levels remaining for all consumables and the HP part numbers for each consumable. It is helpful to have the part numbers available when it is time to order supplies.
- **Print Info Pages**. Print the configuration page and various other information pages that are available for the product, such as the Supplies Status page, the Demo page, and Menu Map.
- **toolbox Links**. Select a device, view current alerts, or view the HP Toolbox Web site in text-only format (without graphics).
- **Other Links**. For information about these links, see Links to off-product solutions in the HP Embedded Web Server section of this guide.

Alerts tab

The **Alerts** tab is shown in the following illustration.

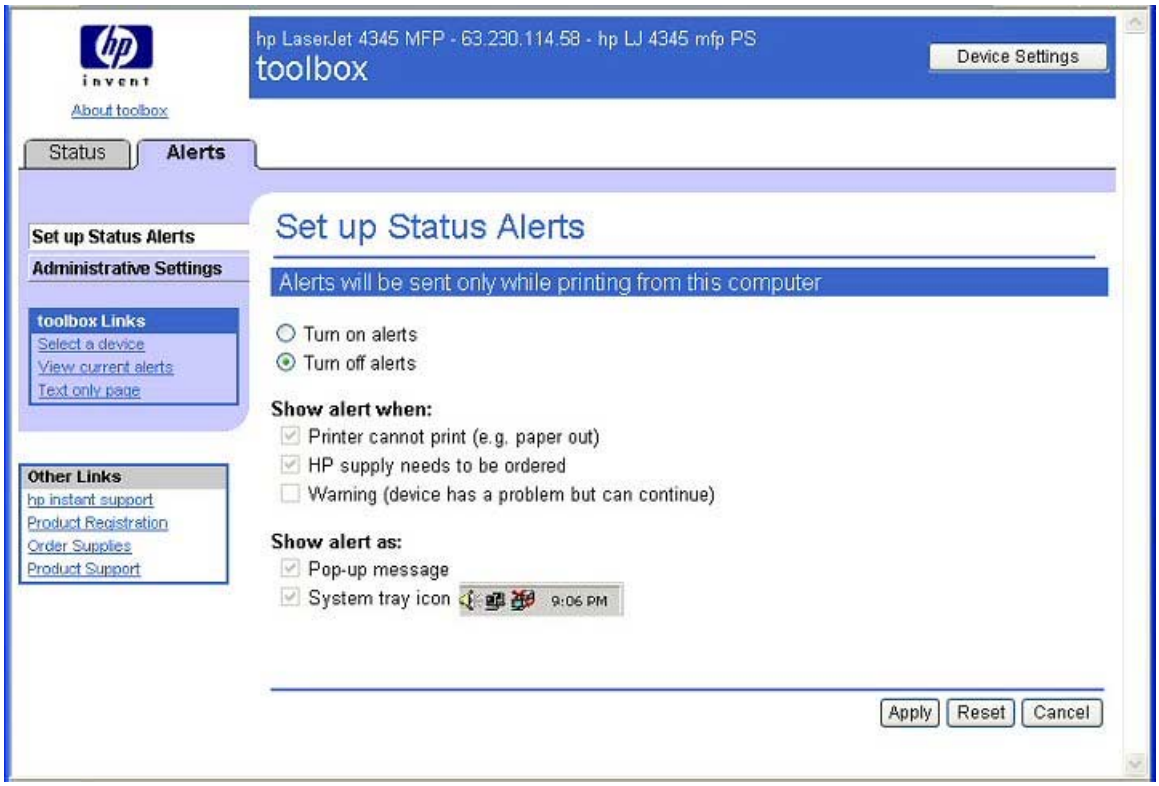

Figure 2-15 Alerts tab

The navigation bar on the **Alerts** tab contains links to the information pages for the product. Some of these pages are also available from other sources, such as the HP Embedded Web Server or the product itself. From this section, you can view the following screens:

- **Set up Status Alerts**
- **Administrative Settings**

The **Administrative Settings** screen, which is shown in the following illustration, allows you to change the rate at which the product is checked for alerts.

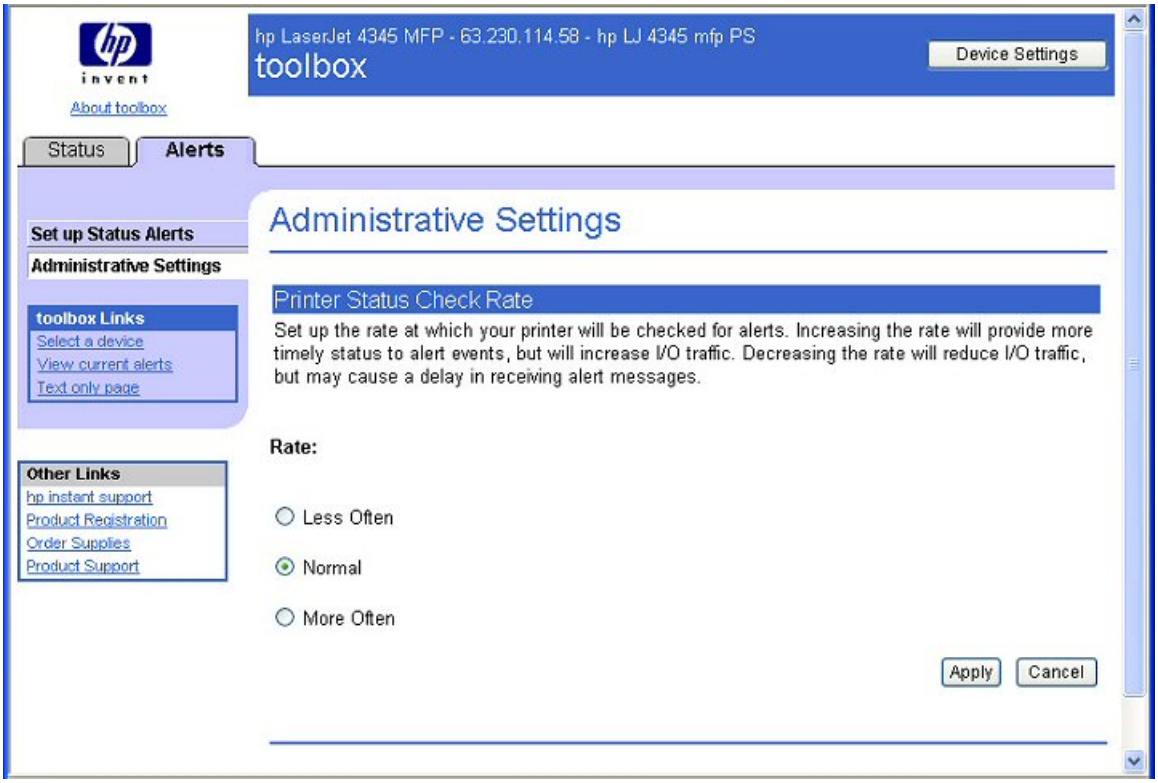

Figure 2-16 Administrative Settings

Linking to the HP Embedded Web Server

To gain access to the HP Embedded Web Server, click the **Device Settings** button in the upper-right of any HP Toolbox screen. You can also open a browser window and type in the HP Jetdirect TCP/IP address.

The HP Toolbox **Device Settings** option on the **Status** tab is shown in the following illustration.

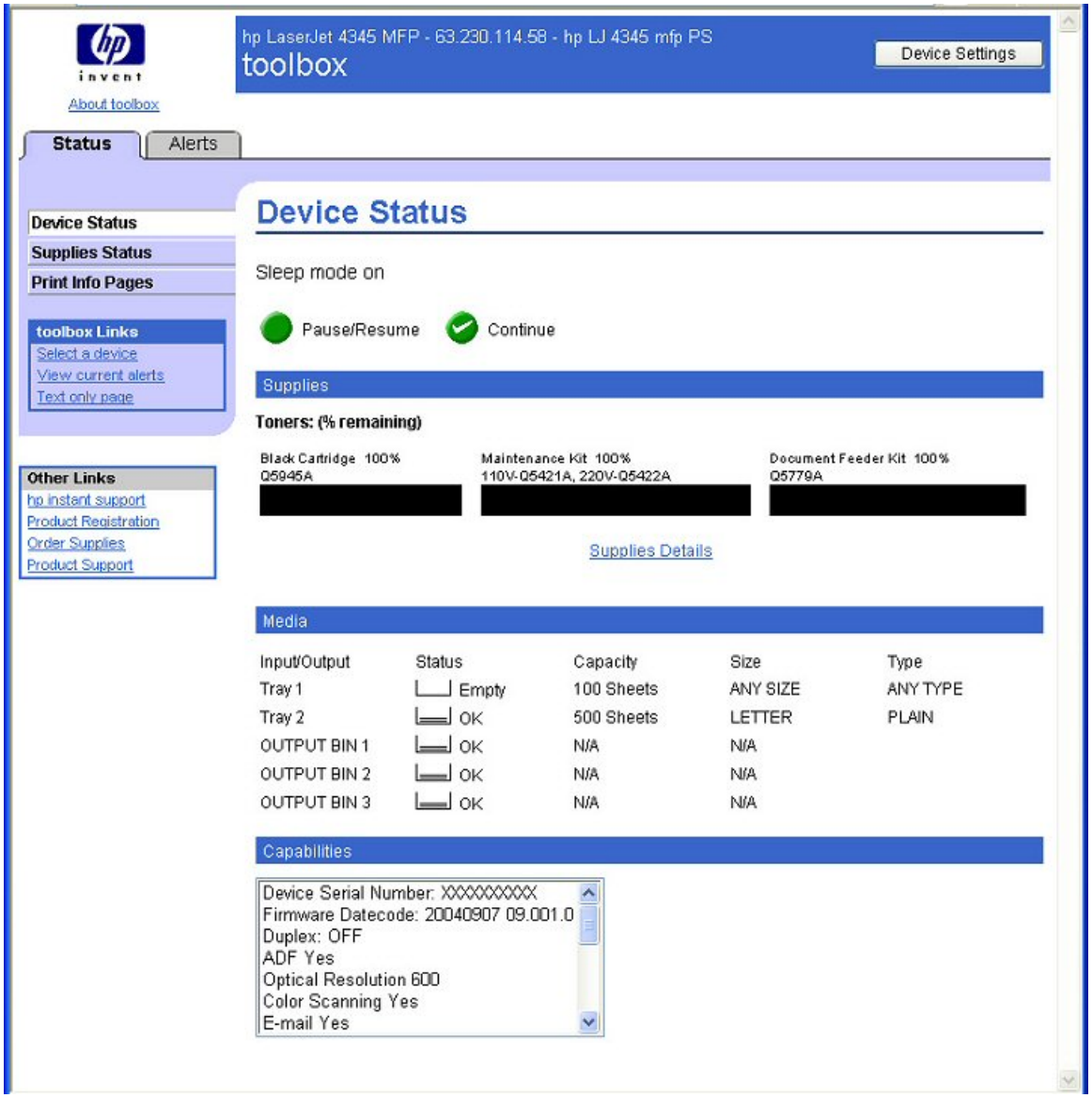

Figure 2-17 **Status** tab with **Device Settings** button

When you gain access to the HP EWS from HP Toolbox, a **Back to toolbox** button becomes available in the screen title bar. You can click this button to return to the HP Toolbox screens.

For additional information and a copy of the *HP Embedded Web Server User Guide*, go to www.hp.com/support/lj4345mfp.

Other Links

This section contains links that connect you to the Internet. These links appear on the left navigational bar throughout the embedded Web server screens. You must have Internet access in order to use any of these links. If you use a dial-up connection and did not connect when you first opened the HP Toolbox, you must connect before you can visit these Web sites. Connecting might require that you close the HP Toolbox and reopen it.

HP Instant Support ™ This link connects you to a set of dynamic Web resources that you can use to solve specific problems and determine additional services that might be available for your product. Specific status and configuration information about the product is retained and directed to the **Solve**

a Problem Web site, which offers targeted support content and messages to help resolve problems as quickly as possible.

Product Registration. Click this link to connect to a screen where you can register your HP LaserJet 4345mfp.

Order Supplies. Click this link to connect to an ordering screen where you can order genuine HP supplies, such as print cartridges and print media.

Product Support. This link connects you with an HP product-support screen from which you can search for information, contact the HP customer care home page, or find additional resources for your product.

HP Web Jetadmin

Use HP Web Jetadmin and a Web browser to manage HP Jetdirect connected products within your intranet. HP Web Jetadmin is a browser-based management tool, and should be installed only on a single network-administration server. It can be installed and run on Red Hat Linux; SuSE Linux; Windows NT 4.0 Server and Workstation; Windows 2000 Professional, Server, and Advanced Server; Windows XP Professional, and Windows Server 2003 systems.

To download a current version of HP Web Jetadmin and for the latest list of supported host systems, go to www.hp.com/go/webjetadmin.

When installed on a host server, any client can use HP Web Jetadmin through a supported Web browser, such as Microsoft Internet Explorer 5.5 and 6.0 or Netscape Navigator 7.0.

HP Web Jetadmin provides the following features:

- Task-oriented user interface that provides configurable views for network managers
- User profiles that can be customized to let network administrators include only the function that is being viewed or used
- Routing of instant e-mail notification of hardware failure, low supplies, and other product problems to different people
- Remote installation and management from anywhere, using only a standard Web browser
- Advanced automatic discovery of peripherals on the network without manually typing information about each product into a database
- Simple integration into enterprise-management packages
- Capacity to find peripherals based on parameters such as the Internet protocol (IP) address, color capability, and model name
- Capacity to organize peripherals into logical groups, with an option that provides virtual office maps for easy navigation
- Capability to manage and configure multiple products at one time

The following table lists the availability of HP LaserJet 4345mfp remote management and status tools by operating system.

NOTE In the following table, "98/Me" refers to Windows 98 and Windows Me; "4.0" refers to Windows NT 4.0; "2000" refers to Windows 2000; "XP" refers to Windows XP; “XP 64” refers to 64-bit Windows XP; and "Mac" refers to Macintosh operating systems.

Table 2-3 Availability of remote management and status tools

Component	98/Me	4.0	2000/XP	XP64	OS/2	Mac	UNIX	Linux
HP LaserJet 4345mfp plug-in for Web		x	x					x
Device Storage Manager for Web		x	x	x				x
Preconfiguration plug-in for Web		x	x	x				x

The HP LaserJet 4345mfp printing-system software CD provides the following link to download the latest version of the HP Web Jetadmin software: www.hp.com/go/webjetadmin.

Click **support** on the main screen in the installer CD Browser, and then click **hp web jetadmin**. The following table shows the supporting operating systems and hardware for HP Web Jetadmin.

Table 2-4 HP Web Jetadmin support

Protocols	■ TCP/IP ■ IPX/SPX
Compatible operating systems	■ Microsoft Windows 2000 Professional, Windows Server, and Windows Advanced Server ■ Microsoft Windows XP Professional and Windows Server 2003 ■ Microsoft Windows NT Server and Workstation ■ Red Hat Linux 9.0 ■ SuSE Linux 9.0 **Shared print queue creation support** ■ Microsoft Windows 2000 Professional, Server and Advanced Server ■ Microsoft Windows XP Professional and Windows Server 2003 ■ Microsoft Windows NT 4.0 Server and Workstation ■ HP-UX ® 11.0 ■ Red Hat Linux 9.0 ■ Solaris 7 and 8 ■ SuSE Linux 9.0 ■ Novell NetWare 5.1 and 6.0 (IPX only) using Netware Client 4.9 (using HP Web Jetadmin only on a Microsoft Windows NT 4.0, Windows 2000, Windows XP, or Windows Server 2003 system)

Table 2-4 HP Web Jetadmin support (continued)

Supported products	All HP and non-HP products that are connected through HP Jetdirect print servers, and standard Management Information Base-compliant (MIB-compliant) third-party network-connected products
Supported browsers	■ Microsoft Internet Explorer 6.0, for Windows only ■ Netscape 7.1 (English) for Linux only

HP Digital Sending Software

The HP Digital Sending Software (HP DSS) is a software program that, in conjunction with firmware, enables HP MFPs to send scanned documents directly to electronic mailboxes (e-mail) or to fax destinations, transforming paper-based information into digital images that can be shared, stored, or edited. Documents are initially scanned at the HP LaserJet 4345mfp, and then are transmitted to a network-connected computer where the HP DSS is installed. This prevents users from having to create an electronic copy of a hard-copy document. The HP DSS can also be configured to require user authentication, ensuring that only authorized persons use the Digital Sending feature of the MFP. For more information about HP DSS, see the *HP Digital Sending Software Software Technical Reference*.

Foreign Interface Harness

The Foreign Interface Harness (FIH) provides a portal on the HP LaserJet 4345mfp for third-party job accounting vendors to gain access to print and copy data for the HP LaserJet 4345mfp.

Bluetooth

Bluetooth®* wireless technology is a low-power, short-range radio technology that can be used to wirelessly connect computers, printers, personal digital assistants (PDAs), cell phones, and other devices.

* Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license.

Because Bluetooth wireless technology uses radio signals, products do not have to be in the same room, office, or cubicle and do not require unobstructed line of sight in order to communicate. This wireless technology increases portability and efficiency within business networks.

The HP LaserJet 4345mfp can use a Bluetooth adapter (hp bt1300) to incorporate Bluetooth wireless technology. The adapter is available for either USB or parallel connections. The adapter has a 10-meter line-of-site operation range in the 2.5 GHz ISM band and can achieve data transfer rates up to 723 Kbps. The product supports the following Bluetooth profiles:

- Hardcopy Cable Replacement Profile (HCRP)
- Serial Port Profile (SPP)
- Object Push Profile (OPP)
- Basic Imaging Profile (BIP)
- Basic Printing Profile (BPP) with XHTML-Print

Remote firmware update

The HP LaserJet 4345mfp features remote firmware update (RFU) capability. The method for downloading remote firmware updates from the Web site is similar to that used to download the latest printing-system software and print drivers.

The process for remotely upgrading firmware involves three steps:

1. Determine the current level of firmware that is installed on the HP LaserJet 4345mfp.
2. Go to the HP Web site and download the latest firmware to your computer.
3. Download the new firmware to the product.

Determining the current level of firmware

To determine the current level of firmware, view the configuration page. To print a configuration page, follow these instructions.

1. Press MENU.
2. Touch **INFORMATION**.
3. Scroll to, and then touch **PRINT CONFIGURATION**. The configuration page and the EIO Jetdirect page automatically print.
4. Look on the configuration page section marked "Device Information" for the firmware datecode.

Downloading the new firmware from the HP Web site

For support information about downloading new firmware from the Web, go to www.hp.com/support/lj4345mfp_firmware.

The product can receive an .RFU update when the product is in a **READY** state. The product waits for all of the I/O channels to become idle before performing the update.

NOTE If the firmware update involves a change in the format of nonvolatile random-access memory (NVRAM), any menu settings that are changed from the default settings will return to default settings. The settings must be changed again if you want them to be different from the defaults. Examples of settings that are affected in this way are tray types, default symbol sets, and Web-access alerts.

The elapsed time for an update depends on the I/O transfer time, as well as the time that it takes for the product to reinitialize. The I/O transfer time depends on a number of things, including the speed of the host computer that is sending the update and the I/O method (parallel or network). The reinitialization time depends on the specific hardware configuration of the product, such as the number of EIO devices installed, the presence of external media-handling devices, and the amount of memory that is installed.

If the remote firmware update process is interrupted before the firmware is downloaded (while **RECEIVING UPGRADE** appears on the control-panel display), the firmware file must be sent again. If power is lost during the flash dual inline memory module (DIMM) update (while **PERFORMING UPGRADE** appears on the control-panel display), the update is interrupted and the message **RESEND UPGRADE** appears (in English only) on the control-panel display. The update must now be sent only by a computer that is attached to the parallel port of the product.

Finally, any print jobs that are ahead of the .RFU job in the queue are printed before the update is processed.

Use one of the following methods to update your product firmware.

Remote firmware update by using FTP through a browser

Complete the following steps to update the product firmware by using file transfer protocol (FTP) through a browser.

NOTE The following instructions can be used on Windows or Macintosh operating systems.

1. Take note of the TCP/IP address on the EIO-Jetdirect page. The EIO-Jetdirect page is the second page of the configuration page printout. To print a configuration page, see Determining the current level of firmware.
2. Open a browser window.
3. In the address line of the browser, type ftp://<IPADDRESS>, where <IPADDRESS> is the TCP/IP address of your product. For example, if the TCP/IP address is 192.168.0.90, type the following:

   FTP://192.168.0.90
4. Locate the downloaded .RFU file for the product.
5. Drag and drop the .RFU file onto the **PORT1** icon in the browser window.

NOTE The product automatically restarts the firmware to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update by using FTP on a direct network connection

If the HP LaserJet 4345mfp uses a direct network connection, use file transfer protocol (FTP) to update your firmware. Complete the following steps for your operating system.

Windows operating systems

1. Take note of the TCP/IP address on the EIO Jetdirect page. The HP Jetdirect page is the second page of the configuration page printout. To print a configuration page, see Determining the current level of firmware.

   NOTE Before connecting to the product, make sure that the product is not in Sleep mode. Also make sure that any error messages are cleared from the control-panel display.
2. Open a command window on your computer.
3. Type ftp <TCP/IP printer ADDRESS>. For example, if the TCP/IP address is 192.168.0.90, type the following:

   ftp 192.168.0.90
4. Press Enter on the keyboard.

5 When prompted for the user name, press Enter.

6 When prompted for the password, press Enter.

7 Type bin at the command prompt.

8 Press Enter. The message **200 Type set to I, Using binary mode to transfer files** appears in the command window.

9 Type put <FILENAME>, where <FILENAME> is the name of the .RFU file that was downloaded from the Web, including the path. For example, type the following:

put C:\LJ\4345FW.RFU

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type put "C:\MY DOCUMENTS\LJ\4345FW.RFU"

10 Press Enter on the keyboard.

The following series of messages appears in the command window:

- **200 PORT command successful**
- **150 Opening BINARY mode data connection**
- **226 Ready**
- **226 Processing Job**
- **226 Transfer complete**

After these messages appear, a message containing transfer-speed information appears.

11 The download process begins and the firmware is updated on the product. This can take about five minutes. Let the process finish without further interaction with the product or the computer.

NOTE The product automatically restarts the firmware to activate the update. At the end of the update process, the **READY** message appears on the control panel.

12 At the command prompt, type bye to exit the FTP command.

13 At the command prompt, type exit to return to the Windows interface.

Macintosh operating systems

1 Take note of the TCP/IP address on the EIO-Jetdirect page. The EIO-Jetdirect page is the second page of the configuration page printout. To print a configuration page, see Determining the current level of firmware.

2 Open a Terminal window on your Macintosh. You can find the Terminal application on the computer hard drive in the Applications/Utilities folder.

3 Type FTP <TCP/IP printer ADDRESS> For example, if the TCP/IP address is 192.168.0.90, type the following:

FTP 192.168.0.90

4 Press Enter on the keyboard.

5 When prompted for a user name and password, press Enter.

6 Type put <path>, where <path> is the location where the .RFU file was downloaded from the Web, including the path. For example, type the following:

put /USERNAME/DESKTOP/4345FW.RFU

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type put "/USER NAME/DESKTOP/4345FW.RFU".

To ensure that the entire path to the .RFU file is placed in the put command, type put and a space, and then drag and drop the .RFU file onto the terminal window. The complete path to the file is automatically placed after the put command.

7 Press Enter on the keyboard.

8 The download process begins and the firmware is updated. This can take about five minutes. Let the process finish without further interaction with the product or the computer.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update through a local Windows port

If the product is connected through a local port (parallel), then you can send the .RFU file directly to the product by using a COPY command from a command prompt or an MS-DOS window. At the command prompt, perform the following steps for your operating system.

Windows 98 or Windows Me

1 From a command prompt or in an MS-DOS window, type the following:

Mode lpt1:,,p

NOTE If the product is attached to a parallel port other than LPT1, then substitute the correct LPT port number in the **mode** command.

2 Press Enter on the keyboard. The response you receive should be similar to these examples:

> LPT1 Not Rerouted

> Resident portion of MODE loaded

> Infinite retry on parallel printer time-out

3 At a command prompt, type copy /b <FILENAME> <PORTNAME>, where <FILENAME> is the name of the .RFU file (including the path) and <PORTNAME> is the name of the appropriate product port (such as LPT1). For example, type the following:

C:\>copy /b C:\4345FW.RFU LPT1

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "C:\MY DOCUMENTS \4345FW.RFU" LPT1

4 Press Enter on the keyboard. The messages that are described in Printer messages during the firmware update appear on the control panel.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

5 Print a configuration page and verify that the firmware revision number matches the revision of the current update. To print a configuration page, see Determining the current level of firmware.

6 Type exit at the command prompt to close the command window.

Windows NT 4.0, Windows 2000, Windows XP, or Windows Server 2003

The .RFU file can be sent directly to the product by typing a **copy** command at a command prompt or in an MS-DOS window.

1 At a command prompt, type copy /b <FILENAME> <PORTNAME> , where <FILENAME> is the name of the .RFU file (including the path) and <PORTNAME> is the name of the appropriate printer port (such as LPT1). For example, type the following:

C:\>copy /b c:\4345FW.RFU LPT1

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "C:\MY DOCUMENTS \4345FW.RFU" LPT1

2 Press Enter on the keyboard. The messages described in the section Printer messages during the firmware update appear on the control panel.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

3 At the command prompt, type exit to close the command window.

Remote firmware update through a Windows network

If the product is shared on a Windows network, follow these instructions.

1. From a command prompt or in an MS-DOS window, type copy /b <FILENAME> \ \<COMPUTERNAME>\<SHARENAME>, where <FILENAME> is the name of the .RFU file (including the path), <COMPUTERNAME> is the name of the computer from which the product is being shared, and <SHARENAME> is the product share name. For example, type the following:

   C:\>copy /b C:\4345FW.RFU \\your_server\your_computer

   NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "C:\MY DOCUMENTS \4345FW.RFU" \\your_server\your_computer

2. Press Enter on the keyboard. The messages that are described in Printer messages during the firmware update appear on the control panel. The message **1 file(s) copied** appears on the computer screen.

   NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update for UNIX systems

For UNIX systems, any command method that delivers the .RFU file to the product is acceptable, including the following:

At the command prompt, type cp /home/yourmachine/FILENAME /dev/parallel>, where </home/yourmachine/FILENAME> is the location of the .RFU file.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update by using Fetch (Mac OS 9.*x* only)

For Mac OS 9.*x*, a shareware program called Fetch provides FTP control for a put command. Download and install the program from download.com.com/3000-2151-10182446.html.

Complete the following steps to update the product firmware by using Fetch.

1. Start the program by clicking on the **Fetch** icon.
2. Type the IP address of the product in the **Host:** box.
3. Click the **Put Files** button and browse to the location of the .RFU file.
4. Double-click the file to select it and download it to the product. A confirmation message appears in the main window.
5. Click **OK**.

   NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update by using the HP LaserJet Utility (Mac OS 9.*x* only)

Complete the following steps to update the firmware by using the HP LaserJet Utility.

1. Make sure that you have the tools and files that are necessary for the update. You will need the HP LaserJet Utility and the following firmware file for the product.

   - 4345FW.RFU

   The HP LaserJet Utility can be found on the HP LaserJet 4345mfp printing-system software CD-ROM that came with the product. If you do not have the CD-ROM, you can obtain the HP LaserJet Utility by downloading the latest product installer from www.hp.com.

   The firmware file for the HP LaserJet 4345mfp (4345 FW.RFU) can be downloaded from www.hp.com/support/lj4345mfp_firmware.

   See Downloading the new firmware from the HP Web site for more information.

   After you have the firmware file and the HP LaserJet Utility, you are ready to begin the update process.

2. Open the HP LaserJet Utility.
3. Click **Select Printer** and locate the product that you would like to update on the network. Select the product on the right side of the dialog box, and then click **OK**. An information dialog box for the HP LaserJet 4345mfp appears.
4. On the left side of the information dialog box, click **Files**. A dialog box appears where you can select a file to be downloaded to the product.
5. Click **Select File**.
6. Locate the 4345FW.RFU on your hard disk and click the file name to highlight it. Click **Select**. The **Files** dialog boxes update to show the RFU file under **File to download**.
7. Click **Download**. The HP LaserJet Utility starts downloading the file to the product. A progress bar shows how much of the file has been downloaded. While the file is downloading, the **RECEIVING UPGRADE** message appears on the control-panel display on the product. After the file has downloaded to the product, the **PERFORMING UPGRADE** message appears on the control-panel display.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

Remote firmware update by using the LPR command

NOTE This remote firmware update method is for use in Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003.

Complete the following steps to update the firmware by using the LPR command.

1 From a command window, type lpr -P <IPADDRESS> -S <IPADDRESS> -o l <FILENAME> -OR- lpr -S <IPADDRESS> -Pbinps <FILENAME>, where <IPADDRESS> can be either the TCP/IP address or the hostname of the product, and where <FILENAME> is the filename of the .RFU file.

NOTE The parameter (-o l) consists of a lowercase "O", not a zero, and a lowercase "L", not the numeral 1. This parameter sets the transport protocol to binary mode.

2 Press Enter on the keyboard. The messages described in the section Printer messages during the firmware update appear on the control panel.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

3 Type exit at the command prompt to close the command window.

Remote firmware update through HP Web Jetadmin

This procedure requires that you install HP Web Jetadmin version 7.0 or later on your computer. Complete the following steps to update a single product through HP Web Jetadmin after downloading the .RFU file from the HP Web site.

1 Start HP Web Jetadmin.

2 Type the TCP/IP address or IP host name of the product in the **Quick Device Find** field, and then click **Go**. The product Status window opens.

3 Open the **Device Management** folder in the drop-down list in the Navigation panel. Navigate to the **Device Lists** folder.

4 Expand the **Device Lists** folder and select **All Devices**. Locate the product that you want to update in the list of products, and click to select it.

5 Locate the drop-down box for **Device Tools** in the upper-right corner of the window. Select **Update Printer Firmware** from the **choose action** list.

6 If the name of the .RFU file is not listed in the **All Available Images** dialog box, click **Browse** in the **Upload New Firmware Image** dialog box and navigate to the location of the .RFU file that you downloaded from the Web at the start of this procedure. If the filename is listed, select it.

7 Click **Upload** to move the .RFU file from your hard drive to the HP Web Jetadmin server.

8 Refresh the browser.

9 Select the .RFU file from the **Printer Firmware Update** drop-down menu.

10 Click **Update Firmware**. HP Web Jetadmin sends the selected .RFU file to the product. The messages that are described in Printer messages during the firmware update appear on the control panel.

NOTE The product automatically turns off and then on again to activate the update. At the end of the update process, the **READY** message appears on the control panel.

HP Web Jetadmin version 7.0 and later can also be used to perform multiple or unattended installations. Complete the following steps for multiple or unattended installations.

1 Start HP Web Jetadmin.

2 Create a device group. A simple way to do this is to follow these steps:

a. Click **Device Management**, and then click **All Devices**.

-or-

b. Shift-click to select products that you want to be included in the group, and then click **OK**.

-or-

c. When prompted, type a name for the new device group, and then click **OK.**

3 To modify several products in a group, click the group name, and then click **Open**.

4 The drop-down menu for **Device Group Tools** appears on the right side of the window. Scroll if necessary to view it.

5 In the **Device Group Tools** drop-down box, select an action. Type in the appropriate information. Click **Return to Device Group** when finished.

Printer messages during the firmware update

Three messages appear during a normal update process.

Table 2-5 Update messages

Printer message	Explanation
RECEIVING UPGRADE	This message appears from the time the product recognizes the beginning of an .RFU update until the time the product has verified the validity and integrity of the .RFU update.
PERFORMING UPGRADE	This message appears while the product is actually reprogramming the firmware.
INITIALIZING	This message appears from the time the product has finished reprogramming the DIMM until the product reinitializes.

NOTE To verify that the firmware update succeeded, print a new configuration page from the control panel and verify that the firmware date code on the configuration page has changed. To print a configuration page, see Determining the current level of firmware.

Troubleshooting a firmware update

The following table lists the causes and results of possible interruptions to the firmware update.

Table 2-6 Troubleshooting a firmware update

Cause	Result
The job was cancelled from the control panel.	No update has occurred.
A break in the I/O stream occurred during send (for example, the parallel cable was removed).	No update has occurred.

Table 2-6 Troubleshooting a firmware update (continued)

Cause	Result
A power cycle occurred during the **RECEIVING UPGRADE** process.	No update has occurred.
A power cycle occurred during the **PERFORMING UPGRADE** process.	No update has occurred. Resend the update through a parallel port.
A power cycle occurred during the **INITIALIZING** process.	The update has been completed.

Print jobs that are sent to the product while an update is in process do not interrupt the update.

The following table lists possible reasons for the failure of a remote firmware update and the corrective action that is required for each situation.

Table 2-7 Troubleshooting a firmware update failure

Reason for firmware update failure	Corrective action
The .RFU file is corrupted.	The product recognizes that the file is corrupted and rejects the update. Download the file again and send the new file to the product. Download the file from http://www.hp.com/support/lj4345mfp.
The wrong product is contained in the .RFU file.	The product recognizes the printer mismatch and rejects the update. Download the correct file and send it to the product. Download the file from http://www.hp.com/support/lj4345mfp.
The upgrade was interrupted.	See Troubleshooting a firmware update .
A flash hardware failure occurred.	Although it is extremely unlikely, the product might have a hardware failure. Call technical support to address the problem (see the flyer that came with the product for a local telephone support list).

NOTE All HP LaserJet products leave the factory with the latest available firmware version installed. If a remote firmware update fails, the .RFU file must be sent over a parallel port connection.

Printing print-ready documents from a command line

Documents in the following file formats can be printed by using a command line. That is, they do not need to be opened in a software program that supports the file format (such as the Adobe Acrobat or Acrobat Reader programs for .PDF files), but can be sent directly to the product using a command line.

- HP LaserJet Printer Control Language (.PCL)
- Portable Document Format (.PDF)
- Postscript (.PS)
- Text (.TXT)

Use one of the following methods to send print-ready files to your product.

NOTE The examples that are used in this section are for printing .PDF documents. However, any print-ready file type can be substituted.

Print-ready file printing by using FTP through a browser

Complete the following steps to print print-ready files from a command line by using FTP through a browser.

NOTE The following instructions can be used on Windows or Macintosh operating systems.

1. Take note of the TCP/IP address on the EIO Jetdirect page. The Jetdirect page is the second page of the configuration-page printout. To print a configuration page, see Determining the current level of firmware.
2. Open a browser window.
3. In the address line of the browser, type ftp://<IPADDRESS>. For example, if the TCP/IP address of your product is 192.168.0.90, type the following:

   FTP 192.168.0.90
4. Locate the print-ready file for the product.
5. Drag and drop the print-ready file onto the **PORT1** icon in the browser window.

Print-ready file printing by using FTP on a direct network connection

If the HP LaserJet 4345mfp uses a direct network connection, use file transfer protocol (FTP) to print a print-ready file. Complete the following steps for the operating system.

Windows operating systems

1. Take note of the TCP/IP address on the EIO Jetdirect page. The Jetdirect page is the second page of the configuration-page printout. To print a configuration page, see Determining the current level of firmware.
2. Open a command window on your computer.
3. Type ftp <TCP/IP printer ADDRESS>. For example, if the TCP/IP address is 192.168.0.90, type the following:

   ftp 192.168.0.90
4. Press Enter on the keyboard.
5. When prompted for the user name, press Enter.
6. When prompted for the password, press Enter.
7. Type bin at the command prompt.
8. Press Enter. The message **200 Types set to I, Using binary mode to transfer files** appears in the command window.

9 Type put <FILENAME>, where <FILENAME> is the name of the print-ready file to be printed, including the path. For example, type the following:

put C:\LJ\SAMPLE_DOC.PDF

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type put "c:\MY DOCUMENTS\LJ \SAMPLE_DOC.PDF"

10 Press Enter on the keyboard.

The following series of messages appears in the command window:

200 PORT command successful

150 Opening BINARY mode data connection

226 Ready

226 Processing Job

11 Your print-ready file prints.

Macintosh operating systems

1 Take note of the TCP/IP address on the EIO Jetdirect page. The Jetdirect page is the second page of the configuration-page printout. To print a configuration page, see Determining the current level of firmware.

2 Open a Terminal window on your Macintosh. You can find the Terminal application on the computer hard drive in the Applications/Utilities folder.

3 Type FTP <TCP/IP printer ADDRESS>. For example, if the TCP/IP address is 192.168.0.90, type the following:

FTP 192.168.0.90

4 Press Enter on the keyboard.

5 When prompted for a user name and password, press Enter.

6 Type put <path>, where <path> is the location where the print-ready file was downloaded from the Web. For example, type the following:

put /username/desktop/SAMPLE_DOC.PDF

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type put "/user name/desktop/SAMPLE_DOC.PDF"

To ensure that the entire path to the print-ready file is placed in the put command, type put and a space and then click and drag the print-ready file onto the terminal window. The complete path to the file is automatically placed after the put command.

7 Press Enter on the keyboard.

8 Your print-ready file prints.

Print-ready printing by using a local Windows port

To print from the command line by using a local Windows port, follow the instructions in this section for your operating system.

Windows 98 or Windows Me

1 From a command prompt or in an MS-DOS window, type the following:

Mode lpt1:,,p

NOTE If the product is attached to a parallel port other than LPT1, then substitute the correct LPT port number in the mode command.

2 Press Enter on the keyboard. The response you receive should be similar to these examples:

> LPT1 Not Rerouted

> Resident portion of MODE loaded

> Infinite retry on parallel printer time-out

3 At a command prompt, type copy /b <FILENAME> <PORTNAME>, where <FILENAME> is the name of the print-ready file (including the path) and <PORTNAME> is the name of the appropriate printer port (such as LPT1). For example, at the c:\> command prompt, type the following:

copy /b c:\SAMPLE_DOC.PDF lpt1

NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "c:\My Documents\SAMPLE_DOC.PDF"

4 Press Enter on the keyboard. The message **PROCESSING JOB** appears on the control panel, and the job prints.

5 At the command prompt, type exit to close the command window.

Windows NT 4.0, Windows 2000, Windows XP, or Windows Server 2003

The print-ready file can be sent directly to the product by typing a copy command at a command prompt or in an MS-DOS window.

1. At a command prompt, type copy /b <FILENAME> <PORTNAME>, where <FILENAME> is the name of the print-ready file (including the path) and <PORTNAME> is the name of the appropriate printer port (such as LPT1). For example, type the following:

   C:\>copy /b c:\SAMPLE_DOC.PDF lpt1

2. Press Enter on the keyboard.

   NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "c:\My Documents \SAMPLE_DOC.PDF". The message **PROCESSING JOB** appears on the control panel, and the job prints.

3. At the command prompt, type exit to close the command window.

Print-ready file printing in a Windows network

If the product is shared on a Windows network, complete the following steps.

1. From a command prompt or in an MS-DOS window, type copy /b <FILENAME> \ \<COMPUTERNAME>\<SHARENAME>, where <FILENAME> is the name of the print-ready file (including the path), <COMPUTERNAME> is the name of the computer from which the product is being shared, and <SHARENAME> is the product share name. For example, type the following:

   C:\>copy /b c:\SAMPLE_DOC.PDF \\your_server\sharename

   NOTE If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type C:\>copy /b "c:\My Documents \SAMPLE_DOC.PDF" \\your_server\sharename

2. Press Enter on the keyboard. The message **PROCESSING JOB** appears on the control panel, and the job prints. The message **1 file(s) copied** appears on the computer screen.

Print-ready file printing in UNIX systems

For UNIX systems, any command method that delivers the print-ready file to the product is acceptable, including the following:

At the command prompt, type cp </home/yourmachine/FILENAME/ dev/parallel>, where </home/yourmachine/FILENAME> is the location of the print-ready file.

Print-ready file printing by using Fetch (Mac OS 9.*x* only)

For Mac OS 9.*x*, a shareware program called Fetch provides FTP control for a put command. Download and install the program from download.com.com/3000-2151-10182446.html.

Complete the following steps to print print-ready files by using Fetch.

1. Start the program by clicking the **Fetch** icon.
2. Enter the IP address of the product in the **Host:** box
3. Click the **Put Files** button and browse to the location of the print-ready file.
4. Double-click the file to select it and download it to the product. A confirmation message appears in the main window.
5. Click **OK**.

File printing by using the HP LaserJet Utility (Mac OS 9.*x* only)

Complete the following steps to print a print-ready file by using the HP LaserJet Utility.

1. Make sure that you have the tools and files necessary for the update. You will need the HP LaserJet Utility and the print-ready file that you want to print.

   The HP LaserJet Utility can be found on the HP LaserJet 4345mfp printing-system software CD that came with the product. If you do not have the CD, you can obtain the HP LaserJet Utility by downloading the latest product installer from www.hp.com.

   After you have the HP LaserJet Utility and you know the location of the print-ready file that you want to print, you are ready to begin the command-line printing process.
2. Open the HP LaserJet Utility.
3. Click **Select Printer** and locate the product that you would like to upgrade on the network.
4. Select the product on the right side of the dialog box, and then click **OK**. An information dialog box for the HP LaserJet 4345mfp appears.
5. On the left side of the **Information** dialog box, click **Files**. A dialog box appears where you can select a file to be downloaded to the product.
6. Click **Select File**.
7. On your hard disk, locate the print-ready file that you want to print, and click the file name to highlight it. Then click **Select**. The **Files** dialog box updates showing the print-ready file that you want to print under **File to download**.
8. Click **Download**.

   The HP LaserJet Utility starts downloading the file to the product. A progress bar keeps you updated on how much of the file has been downloaded. While the file is downloading, the PROCESSING JOB message appears on the control-panel display on the product, and the print-ready file prints.

Print-ready file printing by using the LPR command

NOTE This command-line printing method is for use in Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003.

Complete the following steps to print a print-ready file by using the LPR command.

1. Take note of the TCP/IP address on the EIO Jetdirect page. The Jetdirect page is the second page of the configuration-page printout. To print a configuration page, see Determining the current level of firmware.
2. From a command window, type lpr -P <IPADDRESS> -S <IPADDRESS> -o l <FILENAME> -OR- lpr -S <IPADDRESS> -Pbinps <FILENAME>, where <IPADDRESS> can be either the TCP/IP address or the hostname of the product, and where <FILENAME> is the filename of the print-ready file.

   NOTE The parameter (-o l) consists of a lowercase "O", not a zero, and a lowercase "L", not the numeral 1. This parameter sets the transport protocol to binary mode.

3. The file prints, but no further messages appear in the command prompt window.
4. Type exit at the command prompt to close the command window.

Driver-feature comparison in various operating systems

The following tables detail the software features that are available for each driver type and for each operating system that the HP LaserJet 4345mfp supports. The printing-system drivers for Windows 98, Windows Me, and Windows NT 4.0 are the HP Traditional PCL 6, HP Traditional PCL 5, and PS Emulation Drivers. The printing-system drivers for Windows 2000, Windows XP, and Windows Server 2003 are the new HP unidrivers, with a user interface look and feel that is consistent across the HP PCL 6, PCL 5, and PS emulation unidrivers.

For more information about the HP Traditional HP PCL 6, PCL 5, and PS Emulation Drivers, see HP traditional print drivers for Windows. For more information about the HP PCL 6, HP PCL 5, and HP PS Emulation Unidrivers see HP PCL 6, HP PCL 5, and HP PS 3 emulation unidrivers for Windows.

Job stream output

Table 2-8 Driver support for job stream output feature

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
PCL 6 support	x			x			x			
PCL 5 pass-through support	x			x			x			
PCL 6 Color										
Postscript 3			x			x				x
Postscript 1, 2						x			x	x

PJL/PJL Encoding

Table 2-9 Printer Job Language (PJL) and PJL encoding

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
PJL support	x	x	x	x	x	x	x	x	x	
7-bit Encoding for PJL (a-z, A-Z, 0-9)										
8-bit Encoding for PJL (chars 32-255)										
UTF-8 encoding for PJL (Unicode to 8-bit)	x	x	x	x	x	x	x	x	x	

Job tracking

Table 2-10 Driver support for job tracking

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
PRN file driver identification	x	x	x	x	x		x	x		x
Job accounting information	x	x	x	x	x		x	x		
Job accounting enhancements (UUID)	x	x	x	x	x		x	x		
Reliable Time - born on date (PJL DMINFO)	x	x	x	x	x		x	x		
Born on Date (PJL TIMESTAMP)										
Sending user name with every job	x	x	x	x	x		x	x		

Connectivity

Table 2-11 Driver support for connectivity features

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Parallel (direct connect)	x	x	x	x	x	x	x	x	x	
Network - TCP/IP	x	x	x	x	x	x	x	x	x	x
Network - AppleTalk PAP										x
Wireless 802.11										x
Bluetooth	x	x	x	x	x	x	x	x	x	x
Rendezvous										x

Bidirectional communication

Table 2-12 Driver support for bidirectional communication features

Operating System	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
EAC	x	x	x	x	x		x	x		x
Status messages	x	x	x	x	x		x	x		x
Parallel (direct connect)	x		x							
Network - TCP/IP	x		x				x			x
Network - AppleTalk PAP										x
Update Now	x	x	x	x	x		x	x		x
Language Monitor[1]	x	x	x	x	x		x	x		

[1] MasterMon, a pseudo-language monitor that is used for all HP LaserJet products for the duplex communication channel with bidirectional communication products and to insert PJL commands into the job stream. It loads TCPMON for TCP/IP ports.

NOTE In Windows 98 and Windows Me, bidirectional support and Update Now support has been removed for the HP LaserJet 4345mfp when using a direct connect through the Installer.

HP Driver Preconfiguration

Table 2-13 Driver support for HP Driver Preconfiguration

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
HP Driver Preconfiguration	x	x	x	x	x		x	x		
Feature lockout	x	x	x	x	x		x	x		
Enterprise Autoconfiguration (EAC)	x	x	x	x	x		x	x		x
Continuous export	x	x	x	x	x		x	x		
DMC macro automation	x	x	x	x	x		x	x		

Bundle support

Table 2-14 Bundle support

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Assign Bundle support through the Installer	x	x	x	x	x		x	x		
Printer bundle in UI				x	x		x	x		x

Tray and paper assignment

Table 2-15 Tray and paper assignment

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Assign paper size to tray	x	x	x	x	x	x			x	
Assign paper type to tray				x	x					

Installable options

Table 2-16 Driver support for installable options

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Duplexing unit	x	x	x	x	x	x	x	x	x	x
Printer hard disk	x	x	x	x	x	x	x	x	x	x
Total memory	x	x	x	x	x	x	x	x	x	x
DWS (available memory)				x	x	x	x	x	x	
Additional source trays	x	x	x	x	x	x	x	x	x	x
Additional destination bins	x	x	x	x	x	x	x	x	x	x
Envelope feeder	x	x	x	x	x	x	x	x	x	x
Font DIMM Installer	x	x		x	x		x	x		
Mopier enabled	x	x	x	x	x	x	x	x	x	x
Job storage enabled	x	x	x	x	x	x	x	x	x	x

UI features

Table 2-17 Driver support for UI features

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
UI tabs ("Panels" in Mac)	x	x	x	x	x	x	x	x	x	x
UI extensions	x	x	x			x				x
Page preview images	x	x	x	x	x		x	x		x
Printer image bitmaps with hot spots				x	x		x	x		
Paper size dimensions	x	x	x	x	x		x	x		x
About . . .	x	x	x	x	x		x	x		x
Device Settings Notification	x	x	x	x	x		x	x		
Accessibility/Disability (JAWS)	x	x	x	x	x		x	x		x
Accessibility architecture	x	x	x	x	x		x	x		

Help features

Table 2-18 Driver support for Help features

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
What's this Help (F1)	x	x	x	x	x	x	x	x	x	
Help button	x	x	x	x	x		x	x		
Bubble Help				x	x		x	x		
MS Windows "?" Help	x	x	x	x	x	x	x	x	x	

Quick Sets

Table 2-19 Driver support for quick sets

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Print Task Quick Sets	x	x	x	x	x		x	x		
User Defined Quick Sets	x	x	x	x	x		x	x		x

Media Sizes

Table 2-20 Driver support for media sizes

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Media Sizes	x	x	x	x	x	x	x	x	x	x
User Defined Custom Paper	x	x	x	x	x	x	x	x	x	x
Edge- to-Edge Laser										

Media Types

Table 2-21 Driver support for media types

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
User Defined Media Types	x	x	x	x	x		x	x		
Combined Media Types & Sources in program. (Always NO driver UI switch)	x	x	x			x			x	
Combined Media Types & Sources in program.				x	x		x	x		

Table 2-21 Driver support for media types (continued)

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
(Optional driver UI switch)										
Combined Media Types & Sources in program. (In driver UI)						x			x	x
Alternative Letterhead Mode	x	x	x	x	x		x	x		

Job storage

Table 2-22 Driver support for job storage features

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh[1]
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh[1]**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
Proof and hold	x	x	x	x	x	x	x	x	x	x
Private job	x	x	x	x	x	x	x	x	x	x
Quick Copy	x	x	x	x	x	x	x	x	x	x
Stored Job	x	x	x	x	x	x	x	x	x	x
Job name	x	x	x	x	x	x	x	x		x
User name	x	x	x	x	x	x	x	x	x	x
PIN	x	x	x	x	x	x	x	x	x	x
Job storage pop-up	x	x	x	x	x		x	x		
Automatic job and user name	x	x	x	x	x	x	x	x		x

[1] Job Storage features are available only in Mac OS 9.*x*. They are not available for Mac OS X.

Print-quality and resolution

Table 2-23 Print-quality and resolution features

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Print-quality options	x	x	x	x	x		x	x		x
Print quality - custom options recall				x	x		x	x		
Economode	x	x	x	x	x	x	x	x	x	x
Print optimizations	x	x								
Halftoning										
Halftoning - Custom	x	x	x	x	x		x	x		
Rendering mode (automatic)					x			x		
Send graphics as vector		x			x			x		
Send graphics as raster		x			x			x		
Send page as raster					x			x		
Use HP MEt / Use More Memory										
Manually Print on 2nd Side / Print on										
REt (Laser)	x	x	x	x	x		x	x		x
Scale patterns (WYSIWYG)				x	x		x	x		

Reordering Options

Table 2-24 Driver support for reordering options

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Page order (reordering for job)	x	x	x							

Resizing options

Table 2-25 Resizing options

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Print Document On	x	x	x	x	x		x	x		
Scale to Fit	x	x	x	x	x		x	x		
Allow Scaling from Large Paper	x	x	x	x	x		x	x		
% of Normal Size	x	x	x	x	x		x	x		

Other document options

Table 2-26 Other document options

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Orientation (Portrait/ Landscape)	x	x	x	x	x	x	x	x	x	x
Rotate by 180 degrees	x	x	x	x	x		x	x		
Number of copies	x	x	x	x	x	x	x	x	x	x
Ignore Application Collation				x	x		x	x		
Collate	x	x	x	x	x	x	x	x	x	x
Collate - feature in driver UI						x			x	x
Collate through mopy	x	x	x	x	x	x	x	x	x	x

Watermarks

Table 2-27 Driver support for watermarks feature

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh[1]
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Watermarks on/off	x	x	x	x	x	x	x	x	x	x
First page only	x	x	x	x	x	x	x	x	x	x
Custom watermark definition	x	x	x	x	x	x	x	x	x	x
Watermark angle	x	x	x	x	x	x	x	x	x	x
Watermark font name	x	x	x	x	x	x	x	x	x	x
Watermark font color	x	x	x	x	x	x	x	x	x	x
Watermark font shading	x	x	x	x	x	x	x	x	x	x
Watermark font size	x	x	x	x	x	x	x	x	x	x
Watermark font style	x	x	x	x	x	x	x	x	x	x
Locally defined watermarks	x	x	x	x	x		x	x		

[1] Mac 9.x only; not supported by Mac X or later.

Alternative source/paper type

Table 2-28 Driver support for alternate source/paper type feature

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
All pages the same	x	x	x	x	x	x	x	x	x	x
Front Cover (Blank Front Cover Inserted)	x	x	x	x	x		x	x		
First Page	x	x	x	x	x		x	x		x
Other pages	x	x	x	x	x		x	x		x
Last Page	x	x	x	x	x		x	x		
Back Cover - Insert Blank Back Cover	x	x	x	x	x		x	x		

Table 2-28 Driver support for alternate source/paper type feature (continued)

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Front Cover form Feeder (PI Front Cover)										
Back Cover form Feeder (PI Back Cover)										

Printing destination

Table 2-29 Driver support for printing destination feature

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Left bin	x	x	x	x	x		x	x		x
HP 500–Sheet Stapler/ Stacker (optional)	x	x	x	x	x		x	x		x
HP 3–bin Mailbox (optional)	x	x	x	x	x		x	x		x

Finishing Options

Table 2-30 Driver support for finishing options

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
Auto Duplex / Print on Both Sides	x	x	x	x	x	x	x	x	x	x
Long Edge / Short Edge (Flip On)	x	x	x	x	x	x	x	x	x	x
Smart Duplexing - Single Page Jobs										
Smart Duplexing - Odd Page Jobs										

Table 2-30 Driver support for finishing options (continued)

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
Mixed Duplex & Simplex in Single Job	x	x	x	x	x	x	x	x		
Pages per Sheet (N-up)	x	x	x	x	x	x	x	x	x	x
Page Borders On/Off	x	x	x	x	x		x	x		x
Page Order (N-Up)	x	x	x	x	x		x	x		x
Poster Printing	x	x	x							
Booklet Printing (Layout through SW)	x	x	x	x	x		x	x		
Booklet Target Size	x	x	x	x	x		x	x		
Staple Options	x	x	x	x	x	x	x	x	x	x
Fold / Saddle Stitch										
Fold Options										
Punch Options										
Image Shift										
Transparency Interleave										

Font support

Table 2-31 Font support

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	**HP unidriver**			**HP traditional driver**			**HP traditional driver**			**Macintosh**
Driver	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**PCL 6**	**PCL 5**	**PS emulation**	**Postscript**
General device font support			x	x	x	x	x	x	x	x
Font substitution	x	x	x			x			x	x
Arabic, Cyrillic, Hebrew, Greek device			x	x	x	x	x	x	x	
Font DIMM (on/off)	x	x		x	x		x	x		
Send TrueType as Bitmap	x	x		x	x		x	x		

Table 2-31 Font support (continued)

Operating system	Windows XP (32-bit), Windows 2000, Windows Server 2003			Windows NT 4.0			Windows 98, Me			Macintosh
Driver type	HP unidriver			HP traditional driver			HP traditional driver			Macintosh
Driver	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	PCL 6	PCL 5	PS emulation	Postscript
TrueType Fonts (UI option)			x			x			x	
Print Text as Black	x	x	x	x	x		x	x		

Postscript-specific features

Table 2-32 Driver support for postscript-specific features

Operating system	Windows XP	Windows NT 4.0	Windows 98, Me	Macintosh
Driver type	HP unidriver	HP traditional driver		Postscript
Driver	PS emulation	PS emulation	PS emulation	Postscript
Postscript memory	x	x	x	
Output protocol	x	x	x	
Send CTRL-D before each job	x	x	x	
Send CTRL-D after each job	x	x	x	
Convert gray text to postscript gray	x			
Convert gray graphics to postscript gray	x			
Add euro currency symbol	x			
Job timeout	x	x	x	
Wait timeout	x	x	x	
Minimum font size to download as outline	x	x		
Minimum font size to download as bitmap	x	x		
Printing Preferences				
Postscript language level	x	x	x	x
Send postscript error handler	x	x	x	
Mirrored output				
Negative output	x	x	x	
Output options				
Optimize for speed	x	x	x	
Optimize for portability	x	x	x	
Encapsulated postscript (EPS)	x	x	x	x
Archive format	x	x	x	

Table 2-32 Driver support for postscript-specific features (continued)

Operating system	Windows XP	Windows NT 4.0	Windows 98, Me	Macintosh
Driver type	**HP unidriver**	**HP traditional driver**		**Postscript**
Driver	**PS emulation**	**PS emulation**	**PS emulation**	**Postscript**
Levels of Gray		x	x	
Fit to Page		x	x	
TrueType font download option				
Outline	x	x	x	
Bitmap	x	x	x	
Native TrueType	x	x	x	

3 HP traditional print drivers for Windows

Introduction

This chapter describes the features of the traditional print drivers for the HP LaserJet 4345mfp. The traditional drivers are the HP Traditional PCL 6 Driver, the HP Traditional PCL 5 Driver, and the HP Traditional Postscript 3 Emulation Driver (PS Emulation Driver) for Windows 98, Windows Me, and Windows NT 4.0.

You can control print jobs from several places: the product control panel, the software program, and the driver user interface. Generally, for features that are common to two or more of these places (for instance, you can select the media input tray from any of them), settings that are established in the software program take precedence over print-driver settings. Print-driver settings override product control-panel settings.

This chapter contains the following sections:

- HP traditional PCL 6 and HP traditional PCL 5 driver features
- HP Traditional Postscript 3 Emulation Driver features

HP traditional PCL 6 and HP traditional PCL 5 driver features

When you install the print drivers by using the printing-system installer in Windows 98 or Windows Me, the HP Traditional PCL 6 Driver is installed by default. The Traditional HP PCL 5 Driver can only be installed by using the Add Printer installation method. When you install the print drivers in Windows NT 4.0, you must use the Add Printer installation method to install the HP Traditional PCL 6 Driver and the HP Traditional PCL 5 Driver.

This section describes the options that are available on each tab of the HP traditional PCL 6 and PCL 5 **Document Default** print-driver interface and on some of the tabs of the HP traditional PCL 6 and PCL 5 **Properties** print-driver interface.

This section also describes differences between the HP Traditional PCL 6 Driver and the HP Traditional PCL 5 Driver.

This section contains information about the following topics:

- Access to print drivers
- Help system
- Finishing tab features
- Effects tab features
- Paper tab features
- Output tab features
- Job Storage tab features
- Basics tab features
- Properties tabs

Access to print drivers

Depending on the operating system that you are installing the print drivers on, there are different ways to gain access to the print drivers and different print-driver interfaces.

To gain access to the print-driver settings from within most software programs, click **File**, click **Print**, and then click **Properties**. These driver settings apply only while that software program is open.

Access to print drivers in Windows NT 4.0

In Windows NT 4.0, you can gain access to the **Document Default** driver tabs and the **Properties** driver tabs. The settings that you make on these driver tabs control print-job output.

Document Default driver tabs

In Windows NT 4.0, click **Start**, select **Settings**, and then click **Printers**. Right-click the product name, and then click **Document Defaults...** to gain access to all **Document Default** print-driver tabs, which are the same set of driver tabs that the software program controls. These driver settings change the default settings that are used across all software programs.

The following **Document Default** print-driver tabs are available in Windows NT 4.0:

- **Finishing** tab
- **Effects** tab
- **Paper** tab
- **Output** tab
- **Job Storage** tab

NOTE The Job Storage tab appears among the driver tabs *only* if Job Storage is enabled. If your HP LaserJet 4345mfp is equipped with a hard disk drive, all **Job Storage** options are available (**Proof and Hold**, **Private Job**, **Quick Copy**, and **Stored Job**). If your HP LaserJet 4345mfp is *not* equipped with a hard disk drive, but has a minimum of 48 MB of memory, the **Proof and Hold** and **Private Job** options are available.

- **Basics** tab

The HP driver tabs are indicated by the HP logo appearing in the lower-left corner of the driver tab. Only HP tabs are documented in this STR.

Properties driver tabs

In Windows NT 4.0, click **Start**, select **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties** to gain access to all Properties print-driver tabs. The following Properties driver tabs are available in Windows NT 4.0:

- **General**
- **Ports**
- **Scheduling**
- **Sharing**
- **Security**
- **NT Forms**
- **Configure**

NOTE Only the **NT Forms** tab and the **Configure** tab are described in this guide. See the Properties tabs section in this chapter.

Access to print drivers in Windows 98 and Windows Me

In Windows 98 and Windows Me, click **Start**, click **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties** to gain access to all print-driver tabs. The settings that you make on these driver tabs control print-job output. The following print-driver tabs are available in Windows 98 and Windows Me:

- **General**
- **Details**

- **Sharing**
- **Paper**
- **Graphics**
- **Fonts**
- **Device Options**
- **PostScript**

Help system

The HP Traditional PCL 6 Driver and the HP Traditional PCL 5 Driver include a full-featured Help system to provide assistance with printing and configuration options.

What's this? Help

What's this? Help is supported in Windows 98, Windows Me, and Windows NT 4.0. You can gain access to What's this? Help messages in any of the following ways:

- Right-click a control and then click **What's this?**. A pop-up Help window appears.
- Click the **?** button at the upper-right corner of the frame, next to the X, to change the cursor to an arrow with a question mark. When you use this special cursor to select a control, the pop-up Help window for that feature appears.
- Press the F1 key, and the Help window for the currently selected control appears.

Context-sensitive Help

When you press the **Help** button on a driver tab or in a dialog box, a context-sensitive Help message appears.

Incompatible Options messages

Incompatible Options settings (constraint) messages are unsolicited messages that appear in response to specific actions that you take. These messages alert you to selections that are illogical or impossible given the capabilities of the product or the current settings of other controls. For example, if you click **Face Down (Faster)** on the **Output** tab and then change the media type to **Envelope #10**, a message appears asking you to resolve this conflict.

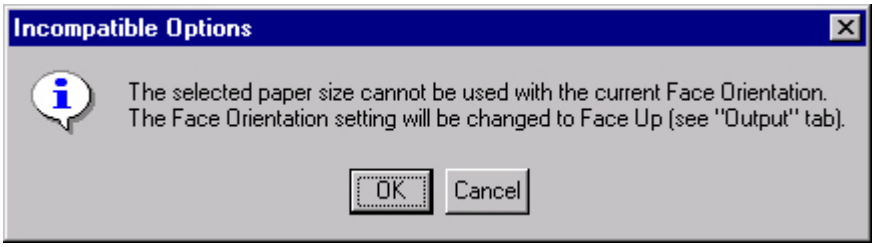

Figure 3-1 A typical constraint message with an **OK** button

Whenever a constraint message appears with the **OK** and **Cancel** buttons, the interpretation of the buttons is as follows:

- Clicking **OK** accepts the change that was just made, and the driver then resets the conflicting control to a setting that is compatible with the new value.
- Clicking **Cancel** rejects the change that was just made, and the control returns to its previous value.

Bubble Help

Bubble Help features a graphical icon that resembles a cartoon speech bubble with a lowercase "i" in it, representing the international symbol for information. The following illustration shows a Bubble Help icon on a driver tab.

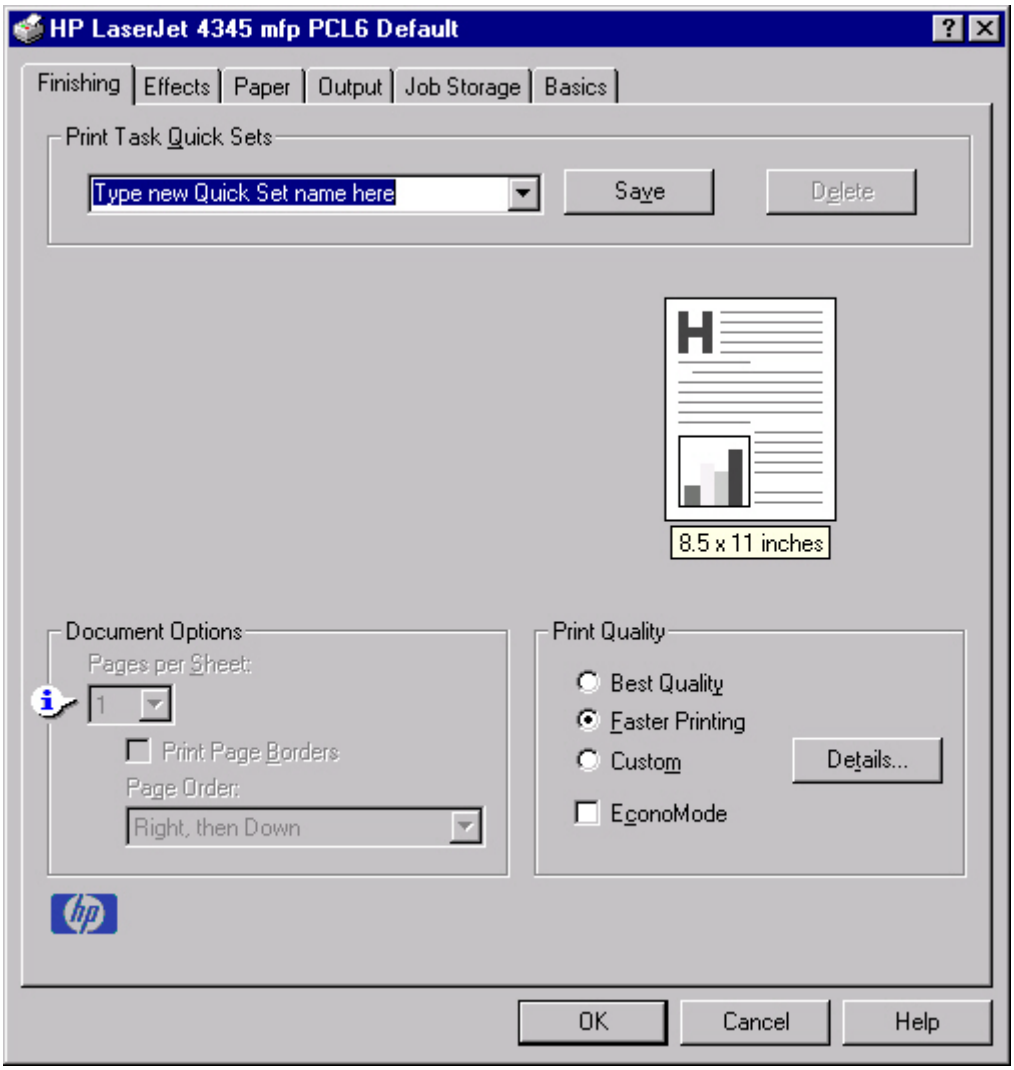

Figure 3-2 A property page with a Bubble Help icon

The bubble typically appears next to a control that is unavailable, although it can also accompany an available control if an important note concerning its use is available within the Help. Moving the pointer over the bubble changes the arrow to a gloved hand, which indicates that the area underneath the pointer is selectable. When the bubble is selected by using either the mouse or the

keyboard, a message box appears that contains a brief explanation about why the control is disabled and what can be done to enable it. If the control is not disabled, the message is a tip or a precaution that you should be aware of when using that particular feature.

Finishing tab features

Use the **Finishing** tab to print booklets and control the media output. The following illustration shows the **Finishing** tab.

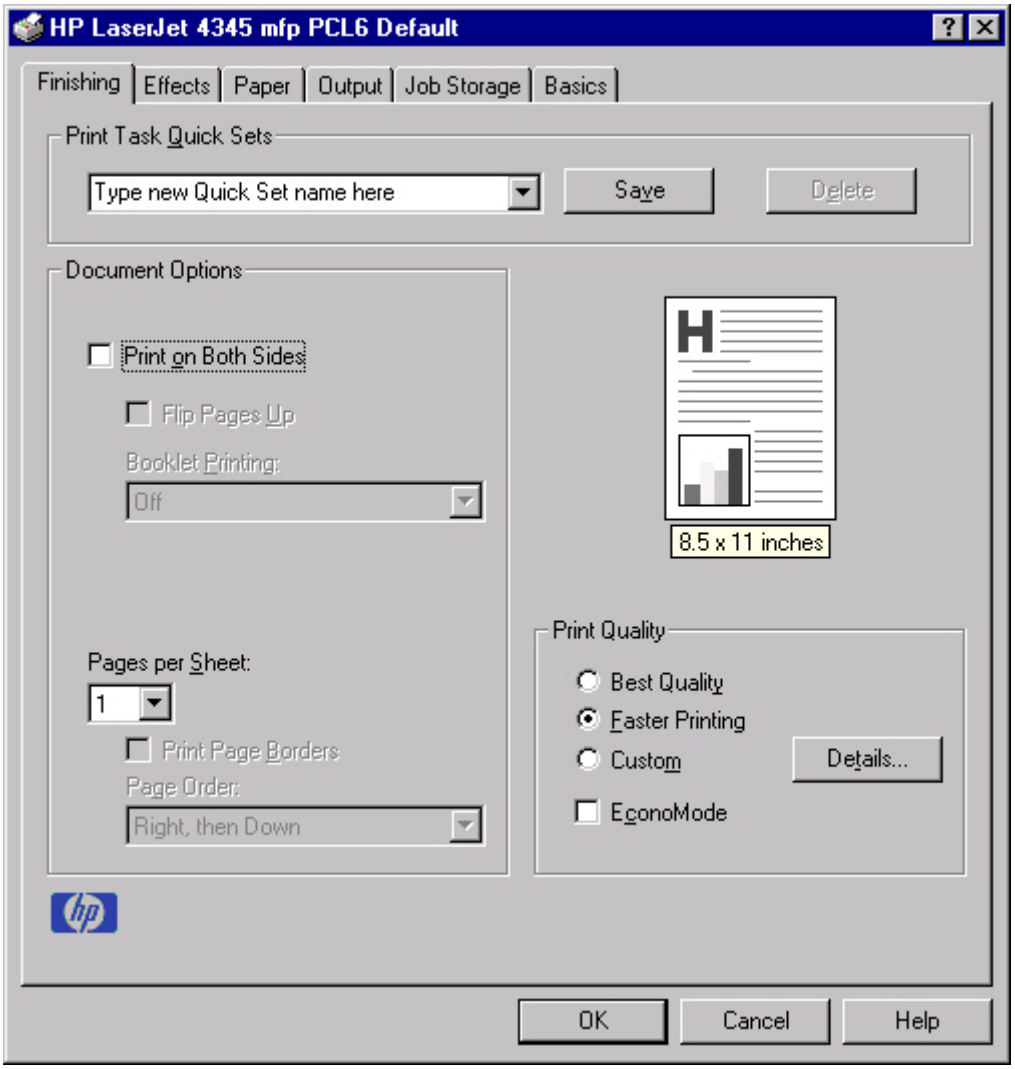

Figure 3-3 The default appearance of the **Finishing** tab

The **Finishing** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Document Options** group box
- Document preview image
- **Print Quality** group box

Print Task Quick Sets

The first group box in the upper portion of the **Finishing** tab is **Print Task Quick Sets**. Any change to the **Print Task Quick Sets** group box that is made on the **Finishing** tab affects the **Print Task Quick Sets** group boxes on all of the **Document Defaults** driver tabs (the **Effects** tab, the **Paper** tab, the **Output** tab, the **Job Storage** tab, and the **Basics** tab) because they are all the same control.

Use the **Print Task Quick Sets** setting to store the current combination of driver settings that appear on all of the other print driver tabs. **Print Task Quick Sets** are either preset by network-administrator settings or user-defined printing specifications (such as media size, pages per sheet, and so on). The **Print Task Quick Sets** control does *not* appear on the driver **Properties** tabs.

By default, the **Print Task Quick Sets** menu is set to **Type new Quick Set name here**. When you change any of the default settings on any of the **Document Defaults** driver tabs and you want to save the configuration as a print task quick set, highlight the words **Type new Quick Set name here**, type the name that you want for your new print task quick set, and then click **Save**. The print task quick sets are saved in the system registry. To delete a print task quick set, select it in the drop-down menu and then click **Delete**.

NOTE Administrators can predefine print task quick sets for their users. These administrator print task quick sets are defined on the server and are available to users, but usually cannot be modified by users. Users can also define print task quick sets for their own use. User-defined print task quick sets are described later in this section.

You can store a maximum of 25 print task quick sets on a particular system. If you attempt to save too many, a message box appears that reads, "There are too many Print Task Quick Sets defined. Please delete some before adding new ones."

The following settings are available in the **Print Task Quick Sets** drop-down menu:

- **Default Print Settings**
- **User Guide Print Settings**

Default Print Settings

When you select **Default Print Settings**, nearly all of the settings are restored to the combination that existed after the driver was installed (the original settings). However, if the attribute combinations that are associated with watermark definitions, custom media sizes, or the other quick sets have been changed or deleted, the original settings for those items are not restored.

The following table shows the default settings for **Print Task Quick Sets**. See HP Driver Preconfiguration for information about preconfigurable driver settings.

Table 3-1 Print Task Quick Set default values

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Preconfigurable[1]
Print on Both Sides	**Finishing** tab, **Document Options** group box	Off	Yes
Flip Pages Up	**Finishing** tab, **Document Options** group box	Unavailable; Off when first activated	Yes
Booklet Printing	**Finishing** tab, **Document Options** group box	Unavailable; **Off** when first activated	Yes

Table 3-1 Print Task Quick Set default values (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Preconfigurable[1]
Pages per sheet	**Finishing** tab, **Document Options** group box	1	Yes
Print page borders	**Finishing** tab, **Document Options** group box	Unavailable; Off when first activated	Yes
Page order	**Finishing** tab, **Document Options** group box	Unavailable; **Right then Down** when first activated	Yes
Print Quality	**Finishing** tab, **Print Quality** group box	**Faster Printing**	Yes
Print document on	**Effects** tab, **Fit to Page** group box	Off - print on the size that is specified on the **Paper** tab	Yes
Size to print on	**Effects** tab, **Fit to Page** group box	Actual size specified on the **Paper** tab	Yes[2]
Scale to fit	**Effects** tab, **Fit to Page** group box	Unavailable; **On** when first activated	Yes
% of Normal Size	**Effects** tab, **Fit to Page** group box	100	
Watermarks	**Effects** tab, **Watermarks** group box	(none)	Yes
First Page Only	**Effects** tab, **Watermarks** group box	Unavailable; **Off** when first activated	Yes
Current watermarks	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	(none)	Yes[2]
Watermark message	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	(none)	Yes[2]
Watermark message angle	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	Diagonal	Yes[2]
Watermark message angle (angle)	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	Unavailable unless the **Angle** option is selected; **52** (degrees) when activated	Yes
Watermark font name	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Arial	Yes[2]
Watermark font color	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Gray	Yes
Watermark font shading	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Very Light	Yes[2]
Watermark font size	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	80	No
Watermark font style	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Regular	Yes
Use different paper/ covers	**Paper** tab, **Paper Options** group box	Off - all of the pages use the same media	No
Size is:	**Paper** tab, **Paper Options** group box	Letter	Yes

Table 3-1 Print Task Quick Set default values (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Preconfigurable[1]
Source is:	**Paper** tab, **Paper Options** group box	Automatically Select	Yes
Type is:	**Paper** tab, **Paper Options** group box	Unspecified	Yes
Staple:	**Output** tab, **Output Options** group box	None	Yes
Bin:	**Output** tab, **Output Bin Options** group box	Automatically Select	Yes
Unlabeled group box	**Job Storage** tab	Status message about the destination of the job	No
Job storage mode	**Job Storage** tab, **Job Storage Mode** group box	Off	No
Proof and Hold	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected	No
Private Job	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected	No
Quick Copy	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected	No
Stored Job	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected	No
Require PIN to print option	**Job Storage** tab, **PIN** group box	Unavailable unless **Stored Job** is selected; not selected when first activated	No
PIN to print	**Job Storage** tab, **PIN** group box	Unavailable unless either**Private Job**is selected, or **Stored Job** and **Require PIN to print** are selected	No
Windows user name	**Job Storage** tab, **User Name** group box	Unavailable unless a Job Storage option has been selected; selected when activated	No
Job name	**Job Storage** tab, **Job Name** group box	Unavailable unless a Job Storage option has been selected; selected when activated	No
Display Job ID when printing	**Job Storage** tab, **Job Notification Options** group box	Unavailable unless a Job Storage option has been selected; selected when first activated	No
Copy	**Basics** tab, **Copies** group box	1	Yes
Portrait	**Basics** tab, **Orientation** group box	On	Yes
Landscape	**Basics** tab, **Orientation** group box	Off	Yes

Table 3-1 Print Task Quick Set default values (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Preconfigurable[1]
Rotate by 180 degrees	**Basics** tab, **Orientation** group box	Off	Yes
About	**Basics** tab		No

[1] Preconfigurable by using one of the HP Preconfiguration tools. For more information, see HP Driver Preconfiguration, or go to www.hp.com/support/lj4345mfp.

[2] Not supported in Windows 98 and Windows Me.

User Guide Print Settings

The **User Guide Print Settings** option provides a Print Task Quick Set for optimal printing of the *HP LaserJet 4345mfp User Guide*.

When you select **User Guide Print Settings**, all of the settings are restored to the default settings, except for the following settings:

- **Print on Both Sides** is set to **ON**
- **Flip Pages Up** is set to **ON**
- **Pages per Sheet** is set to **2**
- **Page Order** is set to **Right then Down**

Document Options

The **Document Options** group box contains the following controls:

- **Print on Both Sides** check box
- **Flip Pages Up** check box
- **Booklet Printing** drop-down menu
- **Pages Per Sheet** spin box
- **Print Page Borders** check box
- **Page Order** drop-down menu

Print on Both Sides

The default setting for the **Print on Both Sides** option is off (not selected). **Print on Both Sides** is available when the following conditions exist:

- **Type is:** on the **Paper** tab is set to any type except **Labels**, **Transparency**, or **Envelope**.
- **Size is:** is set to any size except **Envelope #10**, **Envelope #DL**, **Envelope #C5**, **Envelope Monarch** or **Envelope B5**.

When **Paper Size** is set to **Letter**, **Legal**, or **A4**, selecting **Print on Both Sides** makes the **Booklet Printing** option available.

Automatically printing on both sides

The duplexing unit in the product prints on two sides of a sheet when the **Print on Both Sides** option is specified in the print job. The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and HP LaserJet 4345xm mfp models come with a duplexing unit installed.

The HP LaserJet 4345mfp supports smart duplexing. The smart duplexing feature increases printing performance by not sending one-page print jobs or single-sided pages of a duplexed print job through the duplexing unit even when the duplexing feature has been enabled in the driver.

All media types support the smart duplexing feature, except for media types that cannot be printed on both sides, such as labels and transparancies, and the following media types:

- Prepunched
- Preprinted
- Letterhead

When the media type is set to **Unspecified**, the smart duplexing feature is disabled.

To achieve the best print quality when printing on the second side of the page, the product needs to make adjustments to its print modes. When you select a media type, you are, in effect, instructing the product to use a group of settings, such as fuser temperature and print speed, to produce the best possible quality. This group of settings is known as a mode or print mode, and a different print mode is used with each media type. Print-mode adjustments are automatic when the duplexing unit is used.

Flip Pages Up

The **Flip Pages Up** check box, which is available only when **Print on Both Sides** is selected, is used to specify the duplex-binding option. By default, the **Flip Pages Up** check box is not available. The following table demonstrates the results of selecting this box, depending on the media orientation that is selected on the **Basics** tab.

Table 3-2 Page orientation

Orientation (Basics tab)	Flip Pages Up selected	Flip Pages Up not selected
Portrait	Short-edge binding	Long-edge binding
Landscape	Long-edge binding	Short-edge binding

When **Print on Both Sides** is selected, the document preview image changes to show a spiral binding along either the left edge or the top edge of the page. In addition, a folded-over corner appears in the lower-right portion of the preview image, indicating that printing occurs on the back side. An arrow on the folded-over corner points in the direction that the pages would be flipped if they were bound together.

Short-side binding is for print jobs with pages that read by flipping over like the pages of a note pad. Long-side binding is for print jobs with pages that read by turning like the pages of a book.

Booklet Printing

The **Booklet Printing** drop-down menu is visible when **Print on Both Sides** is selected and a supported media size is selected in the **Size is:** drop-down menu on the **Paper** tab. The **Booklet Printing** drop-down menu offers choices that are based on the current media size. The default

setting is **Off**. The other settings have the following format, where **[paper size]** depends on the media size that is set on the **Paper** tab.

- **[paper size] (Left Binding)**
- **[paper size] (Right Binding)**

When you select **[paper size] (Left Binding)** or **[paper size] (Right Binding)**, the document preview image changes to show the location of the binding. If you change the **Pages per Sheet** setting manually to 4, 6, 9, or 16 pages per sheet, the booklet setting is disabled. See the Pages per Sheet section of this document for more information.

The **Booklet Printing** drop-down menu appears only when the following conditions exist:

- **Print on Both Sides** (on the **Finishing** tab) is selected.
- **%of Normal Size** (on the **Effects** tab) is 100.
- **Pages per Sheet** (on the **Finishing** tab) is 1.
- **Size is** (on the **Paper** tab) is set to Letter, Legal, or A4.

If any of these conditions is not met (except the first), a Bubble Help appears next to **Booklet Printing** to tell you why it is disabled.

Book and Booklet Printing

The HP LaserJet 4345mfp supports both book and booklet printing.

A book is a print job that consists of at least two pages and that can have a different media type for the front cover, first page, other pages, last page, or back cover. Use the **Front Cover**, **First Page**, **Other Pages**, **Last Page**, or **Back Cover** settings on the **Paper** tab (available when you select the **Use Different Paper/Covers** check box) to select different printing options for the book.

A booklet is a print job that places two pages on each side of a sheet that can be folded into a booklet that is half the size of the media type. Use the **Booklet Printing** drop-down menu on the **Finishing** tab to control booklet settings.

Printing a Booklet

Complete the following steps to print a booklet in most software applications.

1. In the software program, click **File**, click **Print**, and then click **Properties**.
2. Click the **Finishing** tab.
3. Select the **Print on Both Sides** check box.
4. In the **Booklet Printing** drop-down menu, select the type of booklet printing that you want. The booklet printing type consists of the media size and the location of the binding (for example, **Letter [Left binding]**).
5. Click **OK** in the print driver.
6. Click **OK** in the print dialog box to print.

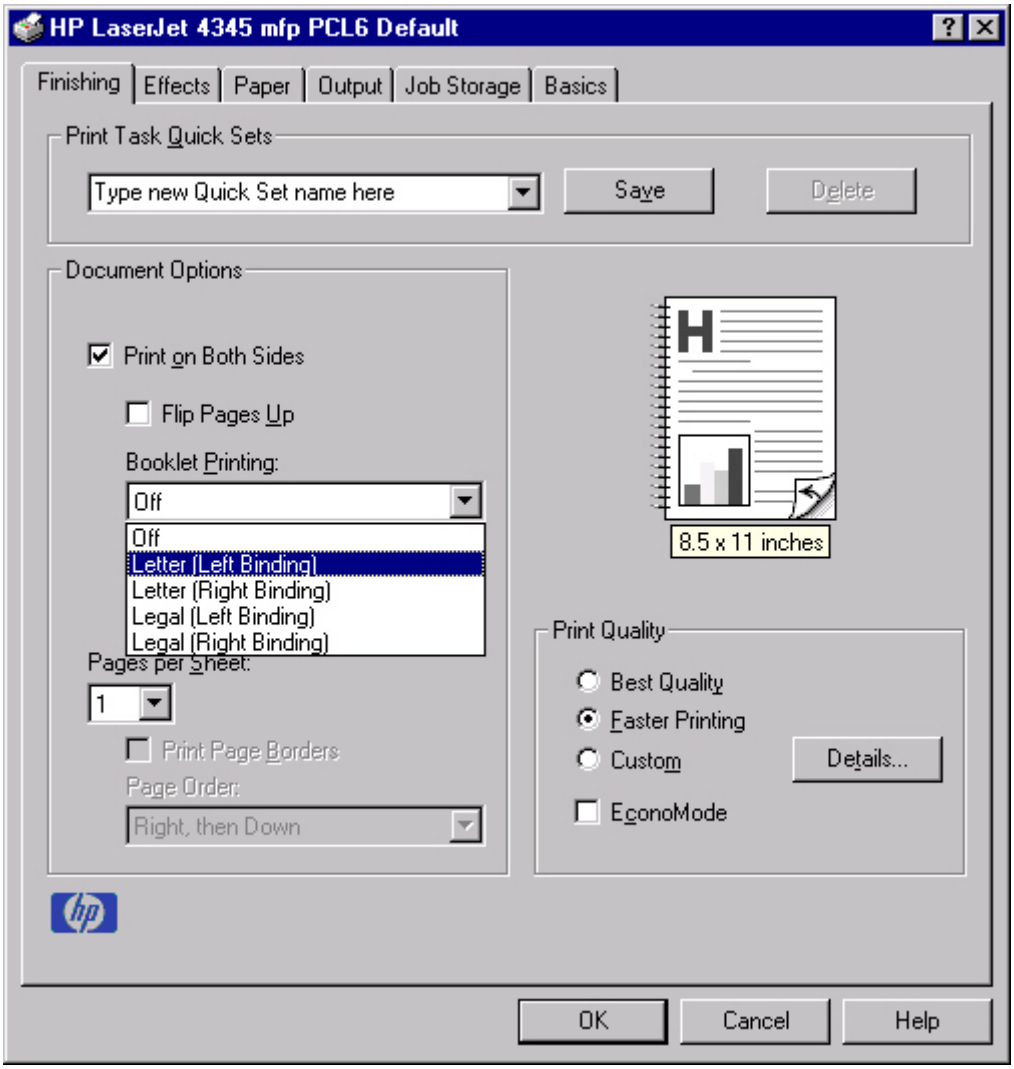

Figure 3-4 Printing a booklet

Printing a Book

You can print a book in which the front cover, first page, other pages, last page, and back cover have different media types. For more information, see Paper tab features of this chapter.

Pages per Sheet

Use the **Pages per Sheet** option to select the number of pages that you want to print on a single sheet of media. If you choose to print more than one page per sheet, the pages appear smaller and are arranged on the sheet in the order that they would otherwise be printed. The **Pages per Sheet** drop-down menu provides six settings:

- **1 page per sheet** (default)
- **2 pages per sheet**
- **4 pages per sheet**
- **6 pages per sheet**

- **9 pages per sheet**
- **16 pages per sheet**

When you select an option other than **1 page per sheet**, booklet printing is unavailable.

Print Page Borders

Related controls that are indented beneath the **Pages per Sheet** edit box are **Print Page Borders** and **Page Order**, which become active when **Pages per Sheet** is greater than 1.

Print Page Borders sets a line around each page image on a printed sheet to help visually define the borders of each logical page.

Page Order

The **Page Order** drop-down menu contains four selections:

- **Right, then Down**
- **Down, then Right**
- **Left, then Down**
- **Down, then Left**

The document preview image changes to reflect alterations in these settings, as shown by the examples in the following illustration.

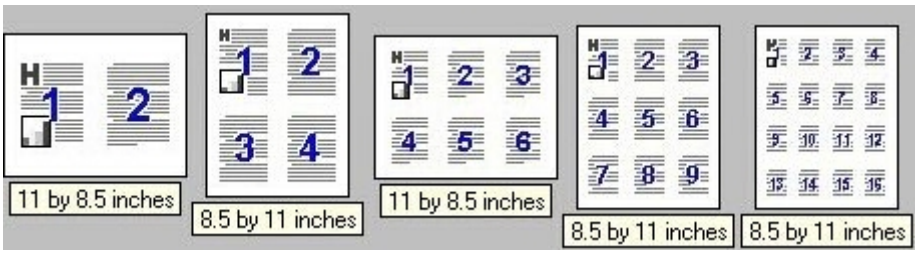

Figure 3-5 Page-order preview images

- **2 pages per sheet**
- **4 pages per sheet**
- **6 pages per sheet**
- **9 pages per sheet**
- **16 pages per sheet**

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image is always oriented so that the contents of the page are right-side up. The document preview image appears in the upper-right corner of the **Finishing**, **Effects**, **Paper**, **Output**, and **Basics** tabs.

Switching between tabs does not change the location or appearance of the document preview image. When you move the mouse over the document preview image, the mouse cursor changes

from an arrow to a gloved hand. You can toggle between portrait and landscape page orientation by clicking on the image. The dimensions label that appears below the preview image reflects the selected page size. The horizontal dimension is always first, so the order of the numbers reverses when the orientation changes. Click the dimensions label to toggle between English and metric units.

Print Quality group box

The HP LaserJet 4345mfp print driver **Print Quality** group box provides options that control output settings and font settings.

The default setting for **Print Quality** is **Faster Printing**. This is the fastest printing option, but prints with slightly lower quality than the **Best Quality** option. The **Faster Printing** setting uses a resolution of 300 dpi for the PCL 5 printer driver and 600 dpi for the PCL 6 printer driver.

Select the **Best Quality** option to print documents at the optimal resolution for your product. This option provides the best print quality but will print slightly slower than the **Faster Printing** option.

To use the **Custom** print quality setting, click the **Details** button. Clicking the **Details** button opens the **Print Quality Details** dialog box. The **Print Quality Details** dialog box has different options depending on the driver that you are using. After you have made changes in the **Print Quality Details** dialog box, the **Custom** option is selected in the **Print Quality** group box.

The **EconoMode** check box can be selected in conjunction with any of the print quality settings. When you select EconoMode, the product uses less toner on each page. Using this option might extend the life of your print cartridge and can lower the cost per page, but the option also reduces print quality. Using the EconoMode feature with non-HP print cartridges can result in spillage or product damage.

Print Quality Details for the HP Traditional PCL 6 Driver

The **Print Quality Details** dialog box provides the options for print-quality settings in the HP Traditional PCL 6 Driver as shown in the following illustration.

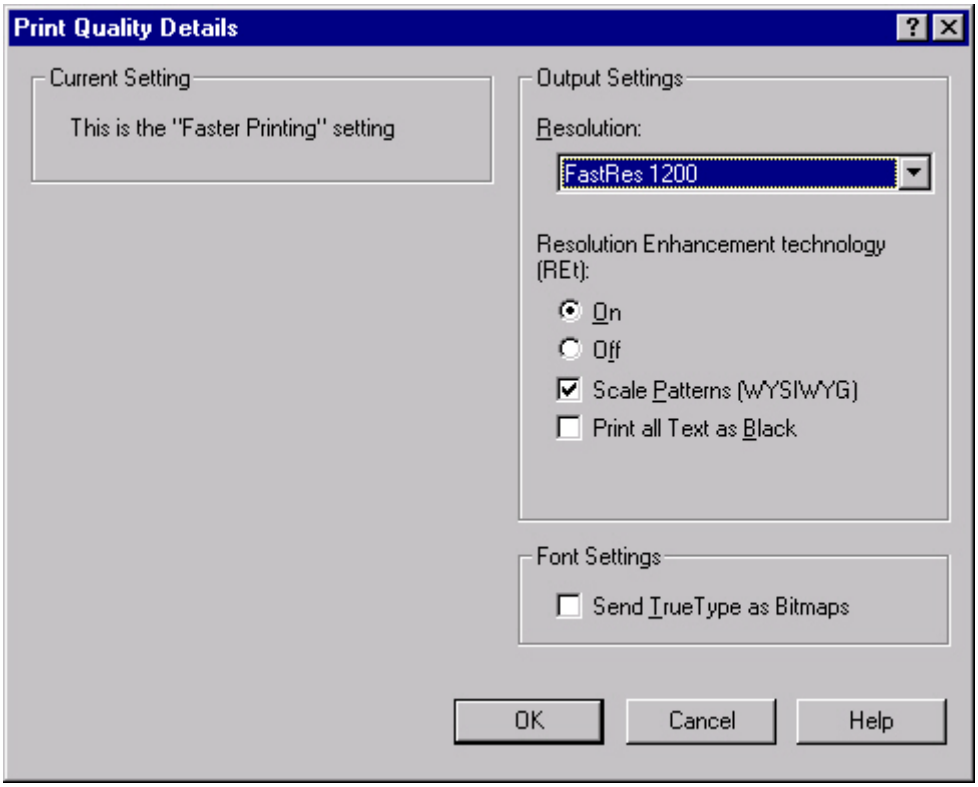

Figure 3-6 **Print Quality Details** dialog box for the HP Traditional PCL 6 Driver

The following options are available:

- **Current Settings** group box
- **Output Settings** group box
- **Font Settings** group box

Current Setting

The **Current Setting** group box contains a status message indicating which print quality setting is currently in use. When you make a change in the **Print Quality Details** dialog box, the setting changes from **This is the "Faster Printing" setting** (or **This is the “Best Quality” setting**) to **This is a "Custom" setting**.

Output Settings

The **Output Settings** group box contains controls for resolution and pattern scaling, and to print all text as black.

The following are the default values for the **Output Settings**:

- **Resolution**: **FastRes 1200** is selected
- **Resolution Enhancement Technology (REt)** is **On**
- **Scale Patterns (WYSIWYG)** is selected
- **Print all Text as Black** is *not* selected

Resolution

Resolution refers to the number of lines per inch (lpi) used to print the page. As resolution is increased, the quality (clarity and visual appeal) of print on the page is improved. However, higher resolution can result in longer printing times. The following resolution options are available for the HP LaserJet 4345mfp:

- **ProRes 1200 (180 lpi)**
- **ProRes 1200 (141 lpi)**
- **FastRes 1200**
- **600 dpi**

Resolution Enhancement technology (REt)

REt refines the print quality of characters by smoothing out jagged edges that can occur on the angles and curves of a printed image. It is **On** by default. Select **Off** if graphics, particularly scanned images, are not printing clearly.

Scale Patterns (WYSIWYG)

Use the **Scale Patterns (WYSIWYG)** feature to address the moiré effect that is created when certain programs encounter certain patterns. Use this feature to turn off the pattern scaling. What you lose is WYSIWYG with patterns, but the printed result might look better. The feature works only with programs that use vector hatch patterns. This option is selected by default.

Print all Text as Black

The **Print All Text as Black** feature is not selected by default. When the feature is selected, the driver prints all text as black regardless of the original document text color. Color text is printed as black, except for white text, which remains white. (White text is a reliable method of printing reverse typeface against a dark background.) This setting does not affect graphic images on the page, nor does it affect any text that is part of a graphic.

Font Settings

In the **Font Settings** group box, the only available option is **Send TrueType as Bitmaps**, which provides an alternative for software programs that cannot easily use TrueType fonts for special graphic purposes, such as shading, rotation, or slanting. The **Send TrueType as Bitmaps** check box is not selected (clear) by default. If you select this option, the driver sends TrueType fonts to the printer as outlines, which retains the standard format (outlines) of the fonts.

Print Quality Details for the HP Traditional PCL 5 Driver

The **Print Quality Details** dialog box provides the options for print-quality settings in the HP Traditional PCL 5 Driver as shown in the following illustration.

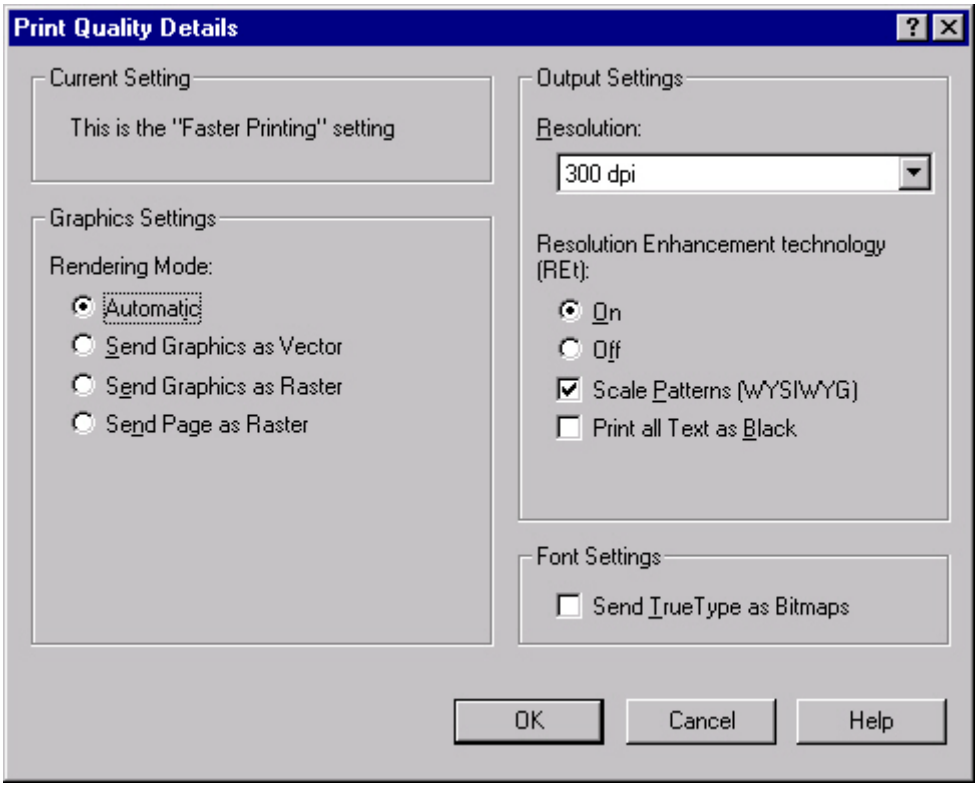

Figure 3-7 **Print Quality Details** dialog box for the HP Traditional PCL 5 Driver

The following options are available:

- **Current Setting** group box
- **Graphic Settings** group box
- **Output Settings** group box
- **Font Settings** group box

Current Setting

The **Current Setting** group box contains a status message indicating which print quality setting is currently in use. When you make a change in the **Print Quality Details** dialog box, the setting changes from **This is the "Best Quality" setting** (or **This is the “Faster Printing” setting**) to **This is a "Custom" setting**.

Graphic Settings

The **Graphic Settings** group box in the HP Traditional PCL 5 Driver has settings for the graphics rendering mode. The following **Rendering Mode:** option buttons are available:

- **Automatic**. This is the default setting.
- **Send Graphics as Vector**. Select this setting to send graphics to the product as a combination of HP Graphics Language, version 2 (HP-GL/2) and raster images. This setting might produce higher-quality output.

- **Send Graphics as Raster**. Select this setting to send all graphics to the product as images composed of individual dots. This setting might improve printing speed in some cases.
- **Send Page as Raster**. Select this setting to send all graphics and text (TrueType fonts) to the product as images composed of individual dots. Use **Send Page as Raster** if you are experiencing problems with overlapping text and graphics. With this setting, the **Send TrueType as Bitmaps** option has no effect.

Output Settings

The **Output Settings** group box contains controls for resolution, pattern scaling, and to print all text as black.

The default values for the **Output Settings** are as follows:

- **Resolution**: **300 dpi** is selected
- **Resolution Enhancement Technology (REt)** is **On**
- **Scale Patterns (WYSIWYG)** is selected
- **Print all Text as Black** is *not* selected

Resolution

Resolution refers to the number of dots per inch (dpi) used to print the page. As resolution is increased, the quality (clarity and visual appeal) of print on the page is improved. However, higher resolution may also result in longer printing times. The following resolution options are available in the HP Traditional PCL 5 driver for the HP LaserJet 4345mfp:

- **300 dpi**
- **600 dpi**

Resolution Enhancement technology (REt)

REt refines the print quality of characters by smoothing out jagged edges that can occur on the angles and curves of a printed image. It is **On** by default. Select **Off** if graphics, particularly scanned images, are not printing clearly.

Scale Patterns (WYSIWYG)

Use the **Scale Patterns (WYSIWYG)** feature to address the moiré effect that is created when certain programs encounter certain patterns. Use this feature to turn off the pattern scaling. What you lose is WYSIWYG with patterns, but the printed result might look better. The feature works only with programs that use vector hatch patterns. This option is selected by default.

Print all Text as Black

The **Print All Text as Black** feature is not selected by default. When the feature is selected, the driver prints all text as black regardless of the original document text color. Color text is printed as black, except for white text, which remains white. (White text is a reliable method of printing reverse typeface against a dark background.) This setting does not affect graphic images on the page, nor does it affect any text that is part of a graphic.

Font Settings

In the **Font Settings** group box, the only available option is **Send TrueType as Bitmaps**, which provides an alternative for software programs that cannot easily use TrueType fonts for special graphic purposes, such as shading, rotation, or slanting. The **Send TrueType as Bitmaps** check box is not selected (clear) by default. If you select this option, the driver sends TrueType fonts to the printer as outlines, which retains the standard format (outlines) of the fonts.

Effects tab features

The **Effects** tab is used to create unique media effects such as scaling and watermarks. The following illustration shows the **Effects** tab.

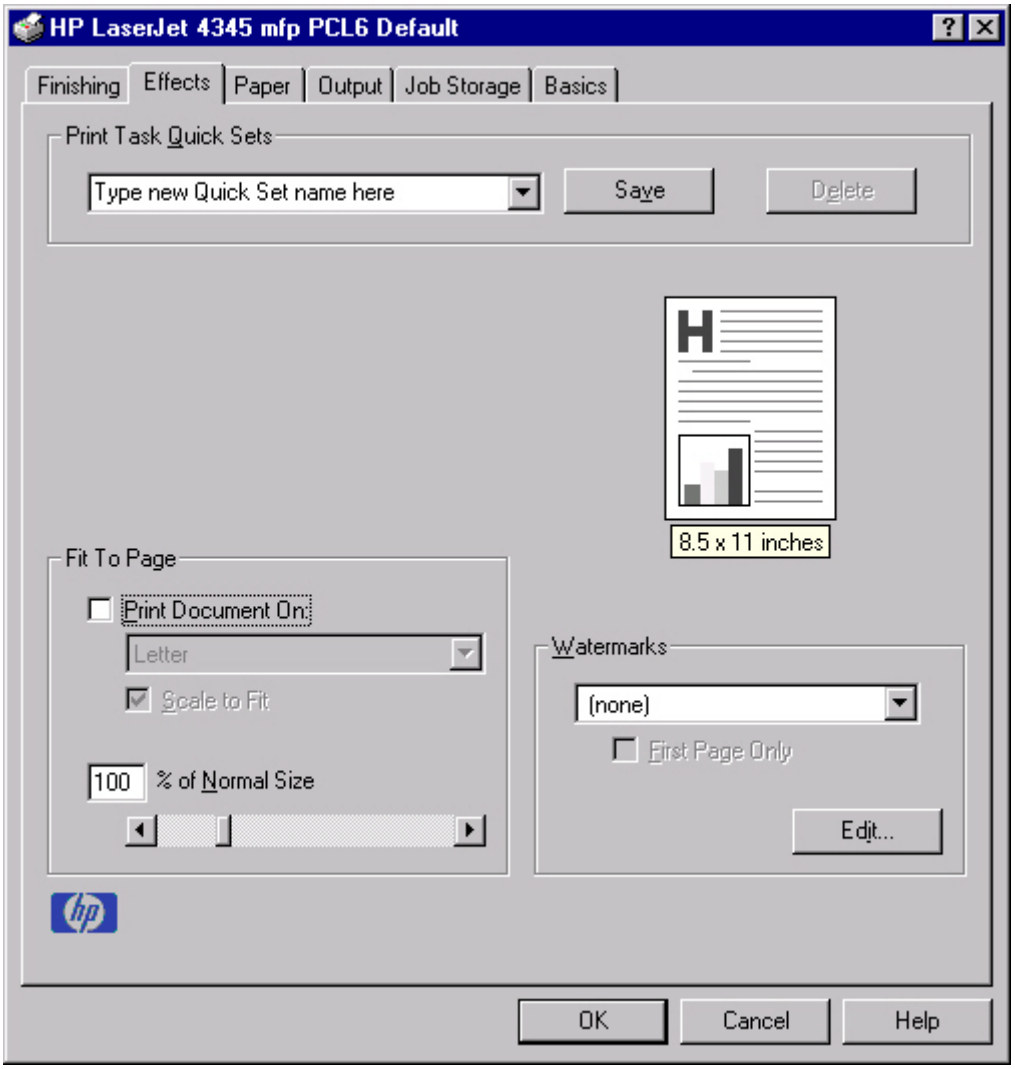

Figure 3-8 **Effects** tab

The **Effects** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Fit to Page** group box
- Document preview image

- **Watermarks** group box

Print Task Quick Sets

The **Print Task Quick Sets** control is used to store the current combination of driver settings that appear on all of the other **Document Defaults** driver tabs. Print Task Quick Sets are either preset (by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Fit To Page

The **Fit To Page** group box contains the following controls:

- **Print Document on** setting
- **Scale to Fit** check box
- **% of Normal Size** setting

Print Document On setting

Use **Print Document On** to format the document for one media size, and then print the document on a different media size, with or without scaling the page image to fit the new media size.

The **Print Document On** control is disabled by either of the following conditions:

- **% of Normal Size** is not 100.
- **Pages per Sheet** (on the **Finishing** tab) is not 1.

When **Print Document On** is selected, the drop-down menu shows the media sizes on which you can print. The list contains all of the standard media sizes that are supported by the selected media source, and any custom size that you have created. When **Print Document On** is selected, **Scale to Fit** is automatically selected. Clear this check box if you do not want your document reduced or enlarged to fit on the selected media size.

Scale to Fit

The **Scale to Fit** option specifies whether each formatted document page image is scaled to fit the target media size. By default, **Scale to Fit** is selected when **Print Document On** is selected. If the setting is turned off, then the document page images will not be scaled, and are instead centered at full size on the target media. If the document size is larger than the target media size, then the document image is clipped. If the document size is smaller, then it is centered within the target media. The following illustration shows preview images for a document formatted for Legal-size media with the **Print Document On** option selected, and the target size specified as **Letter**.

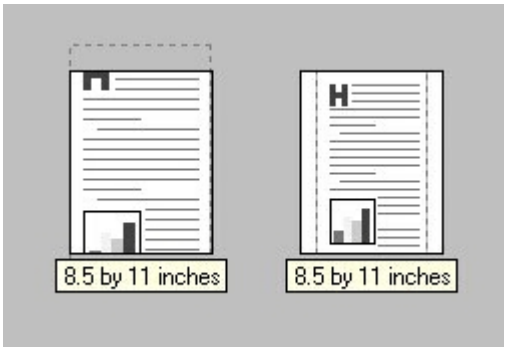

Figure 3-9 Preview images - Legal on Letter; Scale to Fit off (left) and on (right)

When the size for which the document is formatted (that is, the logical size) differs from the target size, the document preview image uses a dashed gray line to show the boundaries of the logical page in relation to the target page size.

% of Normal Size

The **% of Normal Size** option provides a slider bar for scaling the percentage setting. The default setting in the entry box is 100 percent of the normal size. The normal size is defined as the media size that is selected within the driver or what the driver receives from the software program (if the software program does not negotiate the media size with the driver). The driver scales the page by the appropriate factor and sends it to the product.

The limits of the range are from 25 percent to 400 percent, and any values outside the range are adjusted to those limits as soon as the focus is removed from the control (that is, when the Tab key is pressed or another control is selected).

Any change to the scale also changes the document preview image, which increases or decreases from the upper-left corner of the preview.

The slider bar controls the scale directly. The value in the edit box changes as the scroll bar indicator is dragged, and the document preview image is updated to the new image scale. Each click on the scroll bar arrows increases or decreases the scale by one percent. Each click on the slider bar affects the scale by 10 percent.

You cannot achieve an exact value by dragging the scroll bar indicator at the default Windows resolution; use the scroll bar indicator to approximate the value that you want, and then use the scroll bar arrows to refine the value. Or, type the value into the entry box.

The following settings disable **% of Normal Size**:

- **Print Document On** (on the **Effects** tab) is selected.
- **Pages per Sheet** (on the **Finishing** tab) is not 1.

Watermarks

Use the **Watermarks** feature to select a watermark, create your own custom watermarks (text only), or edit an existing watermark.

The **Watermarks** group box contains the following controls:

- **Watermarks** drop-down menu
- **First Page Only** check box
- **Edit** button (opens the **Watermark Details** dialog box)

Watermarks drop-down menu

The following watermarks are preset in the driver:

- **(None)**
- **Confidential**
- **Draft**
- **SAMPLE**

The drop-down menu shows alphabetically-sorted watermarks that are currently available on the system, plus the string "(none)", which indicates that no watermark is selected. This is the default setting. Any watermark that is selected from this list appears in the document preview image.

First Page Only

When **First Page Only** is selected, the watermark is printed only on the first page of the document. The **First Page Only** check box is not available when the current watermark selection is "(none)".

Watermarks are applied to logical pages. For example, when **Pages per Sheet** is set to "4" and **First Page Only** is turned off, four watermarks appear on the physical page (one on each logical page).

Edit

Click **Edit**, and the **Watermark Details** dialog box appears. The following illustration shows the **Watermark Details** dialog box.

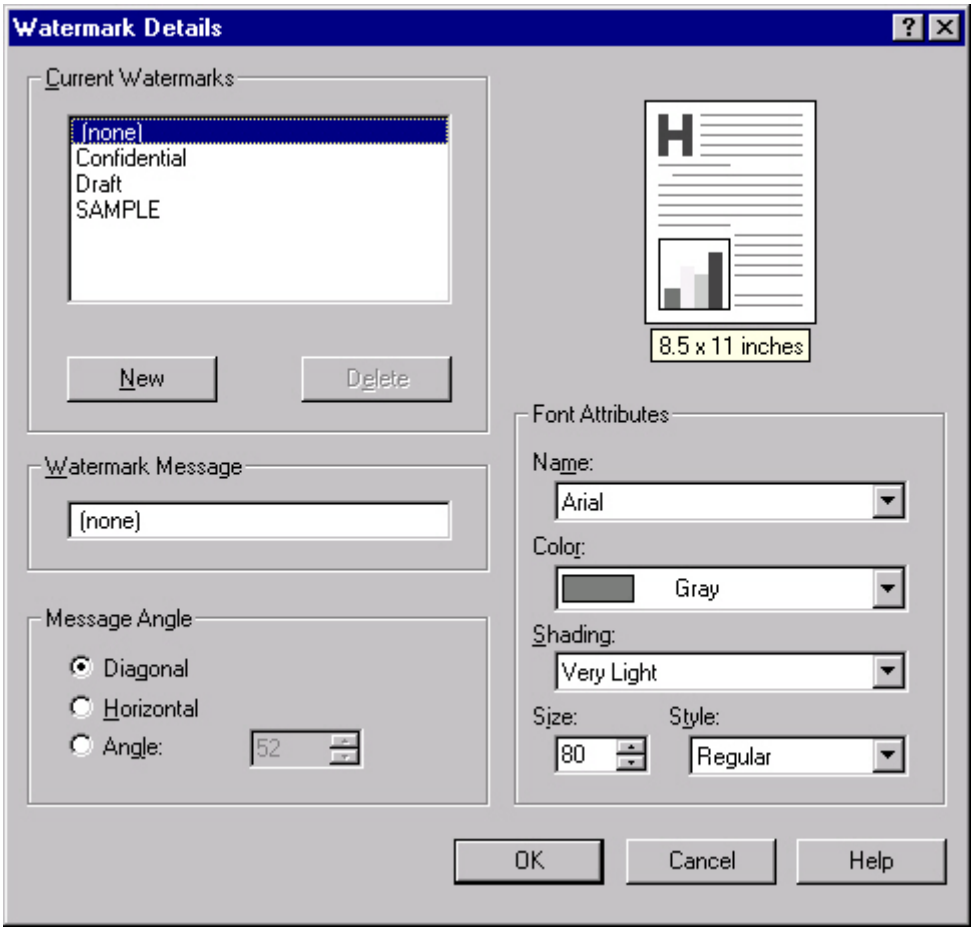

Figure 3-10 Watermark Details

The dialog box shows a document preview image and provides options for creating a new watermark and controlling the message angle and the font attributes.

The **Watermark Details** dialog box contains the following controls:

- **Current Watermarks**
- **Watermark Message**
- **Message Angle**
- Document preview image
- **Font Attributes**

Current Watermarks

The **Current Watermarks** group box contains a list of available watermarks, both predefined watermarks that are available in the driver and any new watermarks that you have created.

To create a new watermark, click **New**. The new watermark appears in the **Current Watermarks** list and in the **Watermark Message** edit box as **Untitled** until you name it.

To name the new watermark, type the selected watermark text in the **Watermark Message** edit box.

To delete a watermark, select the watermark in the **Current Watermarks** list and click **Delete**.

NOTE You can have no more that 30 watermarks in the **Current Watermarks** list at one time. When you reach the limit of 30 watermarks, the **New** button is disabled, and a Bubble Help message appears that explains why the button is disabled and how to make it available.

To edit an existing watermark, select the watermark in the **Current Watermarks** list. If you change the **Watermark Message** for that watermark, you are, in effect, creating a new watermark.

Watermark Message

The **Watermark Message** is also the name that identifies the watermark in the **Current Watermarks** list, except when more than one watermark has the same message. For example, you might want several different watermarks with the message DRAFT, each in a different font or size. When this occurs, the string is appended with a space, a pound sign, and a number (for example, **Draft #2**). When a number is added, the number two is used first, but if the resulting name is also in the list, then the number increases until the name is unique.

Message Angle

Use the controls in the **Message Angle** group box to print the watermark in a diagonal, horizontal, or angle (custom) orientation to the text on the page. The default is **Diagonal**. All three settings automatically center the watermark string within the page; the selection of a particular setting affects only the angle of the string placement. **Diagonal** places the text along a line that spans the lower-left to upper-right corners of the page.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image appears in the upper-right corner of the **Watermark Details** dialog box. The document preview image changes to reflect the modifications that you make in the **Watermark Details** dialog box.

Font Attributes

Use the controls in the **Font Attributes** group box to change the font and the shading, size, and style of the font.

The **Font Attributes** group box contains the following controls:

- **Name**
- **Color**
- **Shading**
- **Size**
- **Style**

Name

The **Name** drop-down menu lists TrueType fonts that are currently installed on the system. The default is language-dependent.

Color

The **Color** drop-down menu contains a single setting: **Gray**.

Shading

The default **Shading** setting for new and preset watermarks is **Very Light**. The following range of shades is available from the **Shading** drop-down menu:

- **Lightest**
- **Very Light** (default)
- **Light**
- **Medium Light**
- **Medium**
- **Medium Dark**
- **Dark**
- **Very Dark**
- **Darkest**

Size

Font sizes from 1 to 999 points are available from the **Size** menu. The default point size is language-dependent. The default point size for preset watermarks is language-dependent.

Style

The choice of **Regular**, **Bold**, **Italic**, and **Bold Italic** is available from the **Style** drop-down menu. The default **Style** setting for new and current watermarks is **Regular**.

Default settings

The default settings for new watermarks are **Arial** font, **Gray** color, **Very Light** shading, **80** points, and **Regular** style. The default settings for preset watermarks are **Arial** font, **Very Light** shading, and **Bold** style. The default font name and point size for preset watermarks are language-dependent, and vary.

Click **OK** to accept all of the changes that have been made in the **Watermark Details** dialog box. Clicking **Cancel** does not cancel all of the changes. If you make changes to a watermark, and then select a different watermark or click **New**, all of the changes made to the previous watermark are saved, and only the current, unsaved changes can be canceled.

Paper tab features

Use the **Paper** tab to specify the size, type, and source of the media. You can also use this tab to indicate different paper-selection choices for the front cover, first page, other pages, last page, and back cover of the document. The following illustration shows the **Paper** tab.

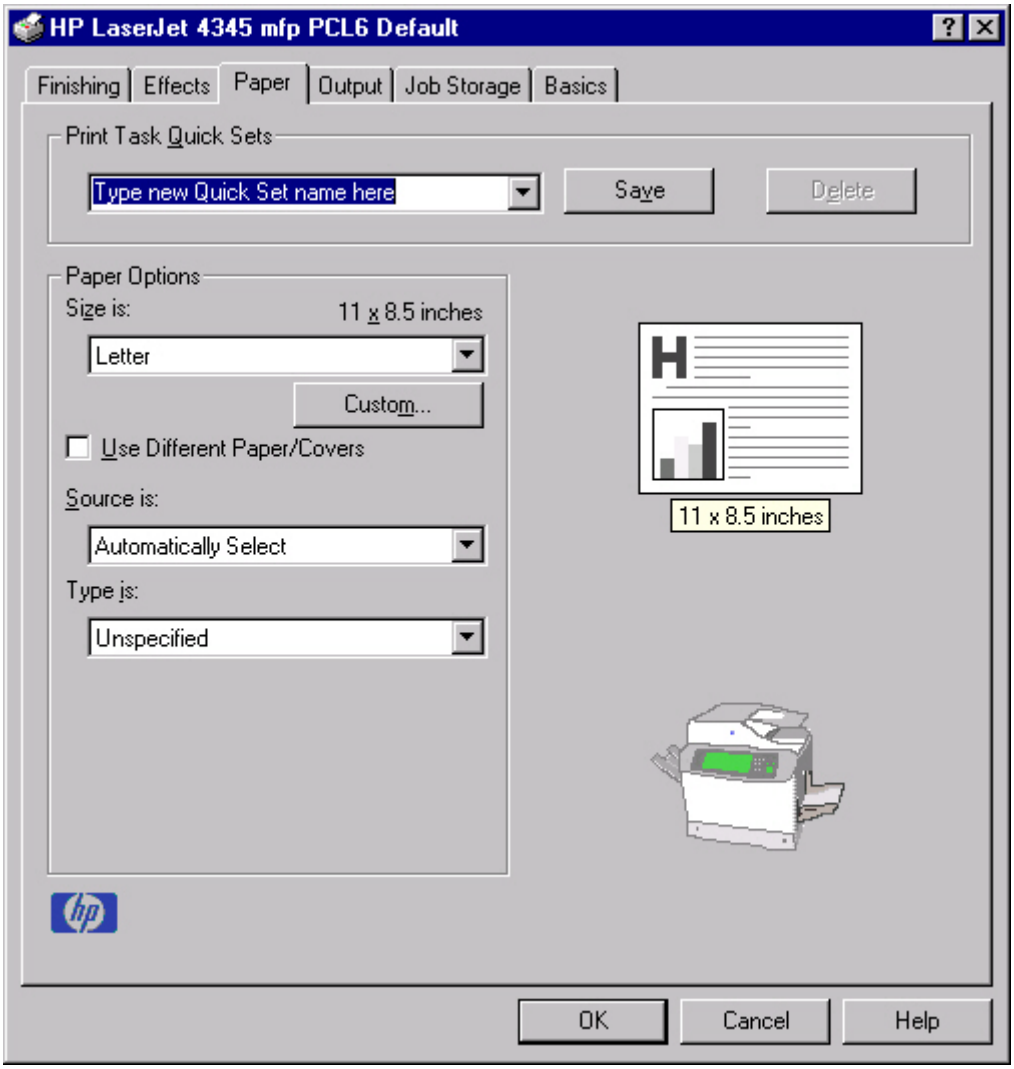

Figure 3-11 **Paper** tab

The **Paper** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Paper Options** group box
- Document preview image
- printer image

Print Task Quick Sets

The **Print Task Quick Sets** control is used to store the current combination of driver settings that appear on all of the other **Document Defaults** driver tabs. Print task quick sets are either preset (by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Paper Options

The settings that are specified in the **Paper Options** group box on the **Paper** tab apply to all of the pages of the document. The following illustration shows the **Paper Options** group box and the selections that are available by default.

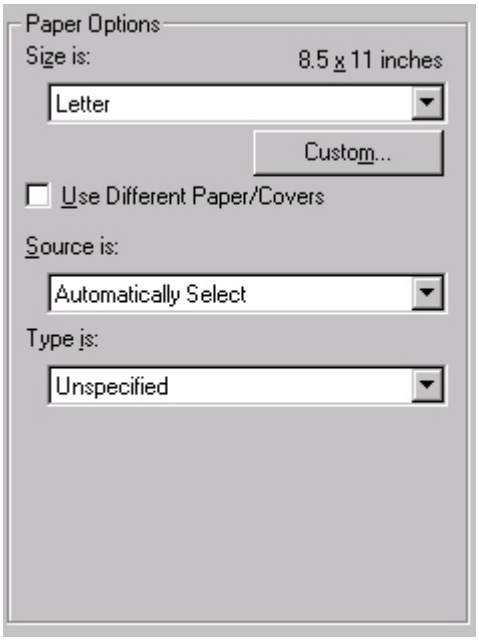

Figure 3-12 **Paper Options** group box (default)

The appearance of the **Paper Options** group box changes when the **Use Different Paper/Covers** check box is selected. For convenience, the settings in the **Paper Options** group box are described in the following order:

- Size is
- Source Is
- Type is
- Custom
- Use Different Paper/Covers

Size is

The **Size is:** setting is a drop-down menu that lists all of the supported media sizes.

NOTE When you move the mouse over the dimensions label, the mouse cursor changes from an arrow to a gloved hand. Click the dimensions label to toggle between English and metric units.

You can specify size for all of the settings in the **Paper Options** group box. When you set the media size in the driver, the entire print-job output uses that media size. That is, if the print job uses Letter-size media, any option that you select from the available **Use Different Paper/Covers** options must also use Letter-size media.

Because driver settings are overridden by media-size settings in most software programs, it is generally best to use the driver to set media size only for software programs that lack a media-size setting, such as NotePad, or when you are producing a book or a booklet that does not require different media sizes.

NOTE Certain software programs can override the size command and specify different media sizes within a single document.

For information about media sizes, see the Media attributes section of this guide.

When the **Use Different Paper/Covers** check box is selected and different options are configured, the **Size is:**, **Source is:**, and **Type is:** menus change, offering a variety of options. For more information, see Use Different Paper/Covers.

Source Is

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the product accessories. Any optional source trays that are installed through the **Configure** tab also appear here.

The **Source is:** drop-down menu can contain the following options:

- **Automatically select**
- **Manual Feed in Tray 1**
- **Envelope Feeder**
- **Tray 1** (100-sheet multipurpose tray)
- **Tray 2** (500-sheet tray)
- **Tray 3** (500-sheet tray)
- **Tray 4** (500-sheet tray)
- **Tray 5** (500-sheet tray)

The default setting is **Automatically Select**. When this setting is selected, the HP LaserJet 4345mfp uses the source tray that supports the media size that you have selected. If you select a source tray other than **Automatically select**, make sure that the correct media size is loaded in the source tray. For more information about media sources, see the Media attributes section of this guide.

Type is

The **Type is:** drop-down menu shows all of the media types that the HP LaserJet 4345mfp supports. When you use the default setting, **Unspecified**, the product uses the default media type, which is usually **Plain**.

The following standard types appear in the list:

- Unspecified
- Plain
- Preprinted
- Letterhead

- Transparency
- Prepunched
- Labels
- Bond
- Recycled
- Color
- Cardstock (164 to 200 g/m^2)
- Rough
- Envelope

The default setting is **Unspecified**, and the program selects the media type. If you select a different setting, make sure that the correct media type is loaded in the tray that you selected in the **Source is:** setting. For more information about media types, see the Media attributes section of this guide.

Custom

The **Custom Paper Size** dialog box appears when you click the **Custom** button on the **Paper** tab. The following illustration shows the initial appearance of the **Custom Paper Size** dialog box.

NOTE The **Custom** button is not available when **Use Different Paper/Covers** is selected *and* any setting other than **First Page** is also selected.

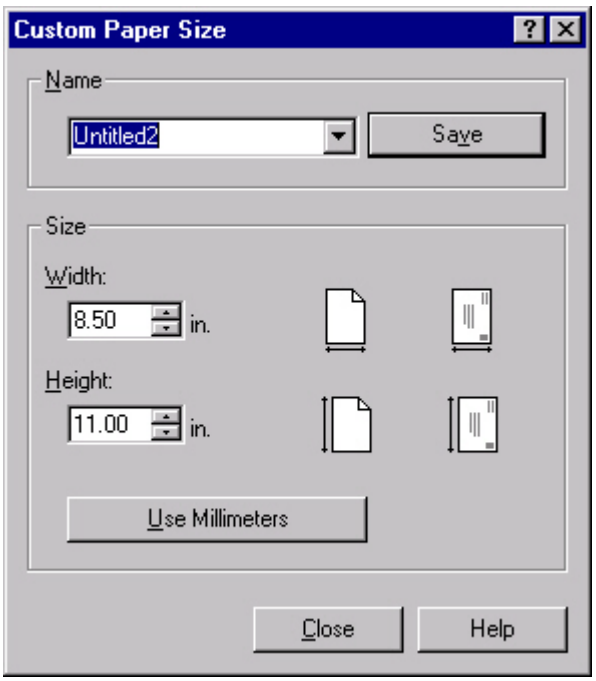

Figure 3-13 Custom Paper Size dialog box

When the **Custom Paper Size** dialog box appears, the drop-down menu in the **Name** group contains one of two things, depending on the current paper-size selection on the **Paper** tab:

- If the paper-size selection is a previously defined custom size, then the drop-down menu contains the name of that custom size.
- If the paper-size selection is a standard media size, then the drop-down menu shows the default name **Untitled** for a custom media size.

NOTE In Windows 98 and Windows Me, two names for the same size media can coexist (for example, "big" and "BIG" can both be used as names for custom-size media measuring 8.4 inches by 11 inches). In Windows NT 4.0, Windows 2000, and Windows XP, both uppercase and lowercase names can be used, but they cannot be used to name the same media size.

The new name is compared only against the list of user-defined custom media-size names, and not against the standard media-size names.

The complete set of titles for this button and the specific characteristics that determine its title and capabilities are discussed in the Save, Delete, or Rename section.

Name

The **Name** drop-down menu shows the name of the custom media size that was selected most recently. Use the **Name** drop-down menu to select from the list of currently defined custom media sizes, or to type a new name for a custom media size.

The name that appears in the **Name** drop-down menu is one of three things, depending on the following conditions:

- If a saved custom media size has been selected from the drop-down menu and the other controls in the dialog box have not been changed since, the **Name** drop-down menu shows the name of the last selected custom media size.
- If the width or height controls have been changed since a custom size was selected or saved, or if a saved media size has just been deleted, then the **Name** drop-down menu shows the default name of **Untitled**.
- If a new name has been typed into the **Name** drop-down menu for the purpose of saving a new size or renaming an existing size, then that new name will remain in the drop-down menu until a saved custom media size has been selected from the drop-down menu.

If you type a new name into the **Name** drop-down menu, but then do not click the **Save** button, you should be able to change the width and height values without losing the name. However, if a saved media-size name is selected from the drop-down menu, any unsaved name or size values are lost without warning, and replaced by the values of the selected custom media size.

Save, Delete, or Rename

The dynamic command button located under the **Name** drop-down menu has three possible labels: **Save**, **Delete**, and **Rename**.

- **Save** is the button title whenever the height and width values have been changed since the most recent save action or since the selection of an existing custom media size. Clicking the button causes the name in the **Name** drop-down menu to be compared against each of the saved names. If a duplicate is found, a dialog box appears, asking if it is okay to replace the existing item. If you click **Yes**, the old item is updated with the new values. If you click **No**, the driver returns to the **Custom Paper Size** dialog box, where you can type a different name. The new name is compared only against the list of user-defined custom media names, and not against the standard media-size names. Whenever the command button has the **Save** title, it is the default button.
- **Delete** is the button title whenever the name of an existing (previously saved) custom media size appears in the **Name** drop-down menu, such as immediately after selecting an item from the drop-down menu or clicking the **Save** button. Clicking the **Delete** button causes the saved custom media size to be deleted, after which the **Name** drop-down menu changes to **Untitled**, the height and width controls are unchanged, and the button title changes to **Save**.
- **Rename** is the button title when you type something into the **Name** drop-down menu after selecting an existing custom media size from the drop-down menu. If no duplicate is found, then the name of the stored custom media size changes to match the contents of the **Name** drop-down menu.

The following table illustrates the relationships between the **Name** drop-down menu, the command button, and the actions that take users from one state to another.

Table 3-3 Name drop-down menu text strings

State	Drop-down menu contents	Button label	Action	Next state
1	Untitled	Save	Click **Save**.	3
			Type something into the **Name** drop-down menu.	2
			Change the width or height values.	1
			Select a saved item from the drop-down menu.	3
2	<user-typed text>	Save	Click **Save**.	3
			Type something into the **Name** drop-down menu.	2
			Change the width or height values.	2
			Select a saved item from the drop-down menu.	3
3	<name of saved item>	Delete	Click **Delete**.	1
			Type something into the **Name** drop-down menu.	4
			Change the width or height values.	1
			Select a saved item from the drop-down menu.	3
4	<user-typed text>	Rename	Click **Rename** (when the name is unique).	3
			Click **Rename** (when the name is a duplicate).	4
			Type something into the **Name** drop-down menu.	4

Table 3-3 Name drop-down menu text strings (continued)

State	Drop-down menu contents	Button label	Action	Next state
			Change the width or height values.	2
			Select a saved item from the drop-down menu.	3

Custom size (width and height controls)

The width and height values can be changed either by typing numeric strings into the edit boxes, or by using the up and down arrows.

Any entry that is greater than the maximum limits of the width and height control is rounded down to the maximum valid entry, while any entry that is smaller than the minimum limits of the width and height control is rounded up to the minimum valid entry. See Custom width and height control limits.

If units are in millimeters, the custom media-size range minimum is the limit rounded up to the nearest whole millimeter. The custom media-size range maximum is the limit rounded down to the nearest whole millimeter. Any non-numerical entry reverts to the last valid entry. Width and height entries are validated when the focus has changed.

The resolution of each control is one millimeter or one-tenth of an inch, depending on the current measurement units. Clicking the up and down arrows increases or decreases the current value by the increment amount (within the allowed range of values). The computer determines the rate at which the values change.

Unit indicator labels change dynamically to indicate inches or millimeters, depending on the measurement units the driver is currently using. To change measurement units, click the dynamic Measurement Units button (either **Use Inches** or **Use Millimeters**).

Custom width and height control limits

The minimum media size for the HP LaserJet 4345mfp is 76.2 x 127 mm (3 x 5 inches) and the maximum is 215.9 x 355.6 mm (8.5 x 14 inches). The following table summarizes media size limits for each media-handling device.

Table 3-4 PCL 6 custom media sizes

Tray	Dimensions	Minimum	Maximum
Tray 1 (multipurpose)	Width	76.2 mm (3 inches)	215.9 mm (8.5 inches)
	Height	127.0 mm (5 inches)	355.6 mm (14 inches)
Tray 2 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 3 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 4 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 5 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)

Table 3-4 PCL 6 custom media sizes (continued)

Tray	Dimensions	Minimum	Maximum
Duplexing unit	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported
Envelope feeder	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported
HP 3-Bin Mailbox	Width	120.0 mm (4.72 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Stacker, Stapler/Stacker	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported

Paper and envelope icons

The paper and envelope icons visually define width and height.

Dynamic measurement units

Use the **Dynamic Measurement Units** button to toggle the unit of measurement between standard (inches) and metric (millimeters) units of measurement. The label on this button is dynamic, depending on the measurement units that are in use. If the custom size currently shows the measurements in inches, the button is labeled **Use Millimeters**. If the custom size currently shows the measurements in millimeters, the button is labeled **Use Inches**. Click the button to switch measurement-unit types.

Close

The **Close** button closes the **Custom Paper Size** dialog box according to the logic in the following table. In all cases, any custom media sizes that are successfully saved (and not renamed or deleted) while the dialog box is open will remain in the **Size is:** drop-down menu on the **Paper** tab. The following table lists options that appear when you click the **Close** button.

Table 3-5 Close dialog box text strings

If the drop-down menu contains	And the button says	Then this happens when the Close button is clicked
Untitled	Save	The dialog box closes, but you lose the changes that were not saved. The current media size remains the same as it was when the **Custom** button was clicked.
<user-typed text>	Save	The dialog box closes, but you lose the changes that were not saved. The current media size remains the same as it was when the **Custom** button was clicked.
<name of saved item>	Delete	The dialog box closes, and the current media size is set to the size that was last shown in the drop-down menu.

Table 3-5 Close dialog box text strings (continued)

If the drop-down menu contains	And the button says	Then this happens when the Close button is clicked
<user-typed text>	Rename	The dialog box closes, but you lose the changes that were not saved. The current media size remains the same as it was when the **Custom** button was clicked.

Use Different Paper/Covers

You can print books that are comprised of different media types using the **Use Different Paper/Covers** options.

When you select the **Use Different Paper/Covers** check box, the following settings can appear in the group box, along with associated options:

- **Front Cover**
- **First Page**
- **Other Pages**
- **Last Page**
- **Back Cover**

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/Covers** options use the size that you selected in the **First Page** settings and the **Size is:** driver setting becomes unavailable for all of the other **Use Different Paper/Covers** options. Therefore, the **First Page** settings are described first in the following sections.

When you change the type and source of the media and covers, the settings that you select remain configured until you close the software program.

Each option for the **Use Different Paper/Covers** setting is described in the following sections.

First Page

Use the **First Page** option to select an alternative media size, type, or source for the first page of a document. The following illustration shows the appearance of the Paper Options group box when you select the **Use Different Paper/Covers** check box. The **First Page** setting is selected by default.

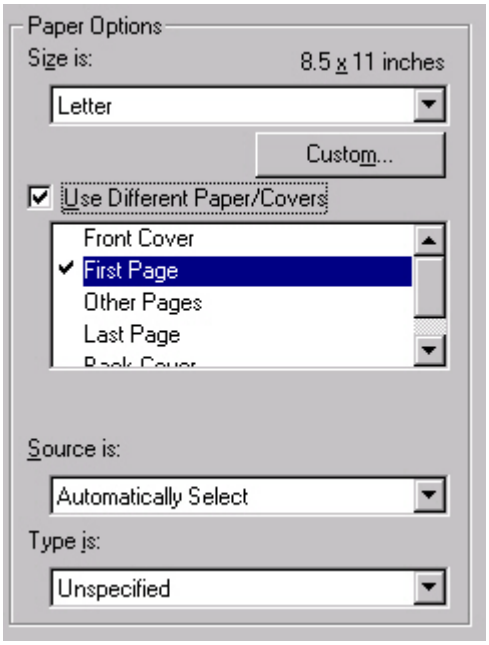

Figure 3-14 First Page options

The following are the **First Page** options:

- **Size is:** drop-down menu
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** driver setting for the first page applies to the entire print job. When this is set, the setting becomes unavailable for all the other **Use Different Paper/Covers** options.

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Configure** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the product supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

Front Cover

Use the **Front Cover** options to include a blank or preprinted front cover on a document, or to include a front cover from a source tray that is different from the one that is used for the remainder of the document.

The following illustration shows the **Front Cover** setting and options.

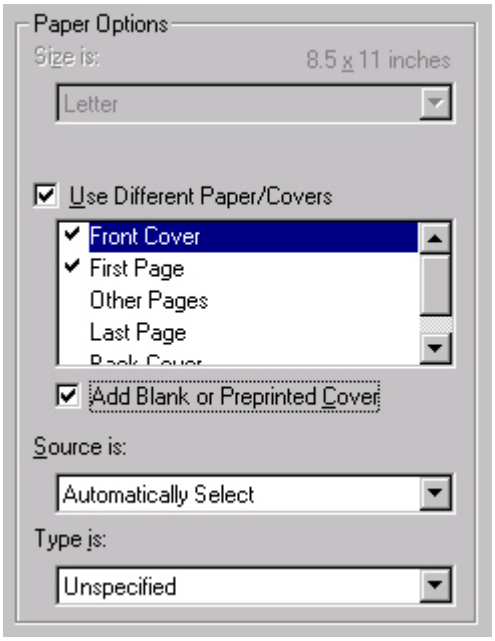

Figure 3-15 Front Cover options

The following are the **Front Cover** options:

- **Add a Blank or Preprinted Cover** check box
- **Source is:** drop-down menu
- **Type is:** drop-down menu

When you select **Front Cover**, you must also select the **Add a Blank or Preprinted Cover** check box to enable the setting. When you select this check box, the **Source is:** and **Type is:** drop-down menus become available and a check mark appears next to the **Front Cover** option.

The **Source is:** setting specifies the source tray to use for adding a front cover to the document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Configure** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The**Type is:** drop-down menu shows all of the media types that the product supports. For more information about the **Type is:**drop-down menu settings, see the **Type is:** in the Type is section of this chapter.

Other Pages

Use the **Other Pages** options to select an alternative media source (or the same source as **First Page**) for the other pages of the document.

The **Other Pages** setting and options are shown in the following illustration.

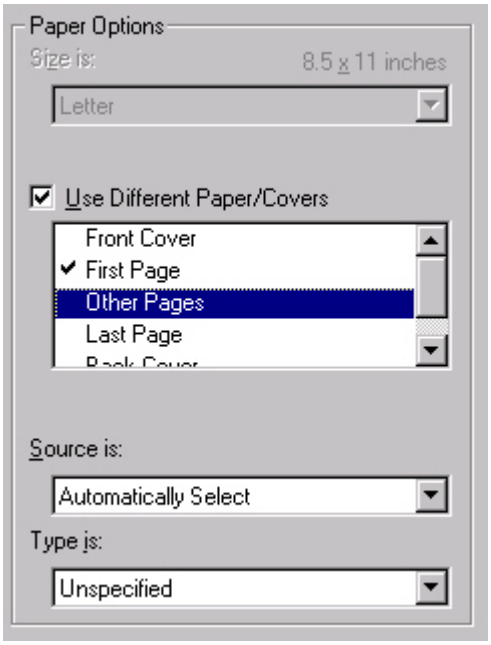

Figure 3-16 Other Pages options

The following are the **Other Pages** options:

- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Configure** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the product supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

Last Page

Use the **Last Page** options to select an alternative media type or source for the last page of a document. The following illustration shows the appearance of the Paper Options group box when you select the **Use Different Paper/Covers** check box.

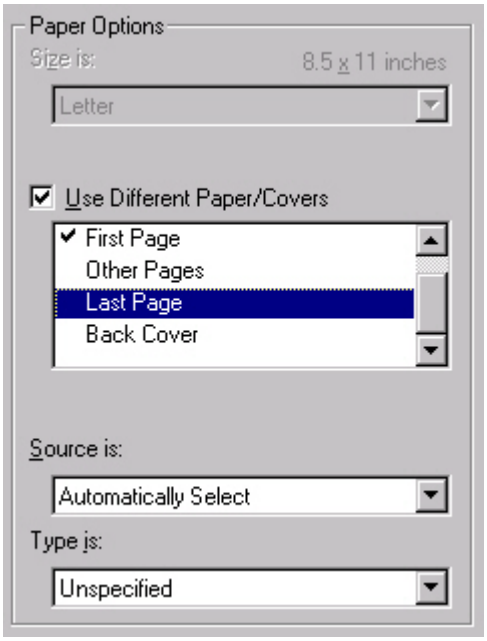

Figure 3-17 Last Page options

The following are the **Last Page** options:

- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Configure** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the product supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

Back Cover

Use the **Back Cover** options to include a blank or preprinted back cover on a document.

The following illustration shows the **Back Cover** setting and options.

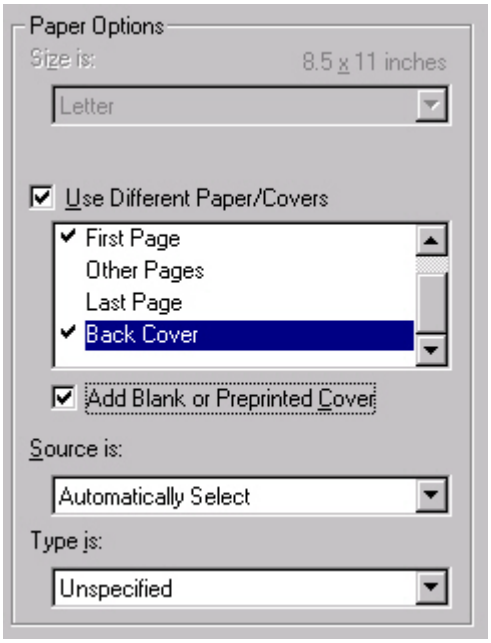

Figure 3-18 Back Cover setting

The following are the **Back Cover** options:

- **Add a Blank or Preprinted Cover** check box
- **Source is:** drop-down menu
- **Type is:** drop-down menu

When you select **Back Cover**, you must also select the **Add a Blank or Preprinted Cover** check box to enable the setting. When you select this check box, the **Source is:** and **Type is:** drop-down menus become available and a check mark appears next to the **Back Cover** option.

NOTE The **Back Cover** options are not available when the **Booklet Printing Layout** setting is enabled on the **Finishing** tab. The back cover setting is unavailable, because this page would otherwise be printed in the middle of a booklet.

The **Source is:** setting specifies the source tray to use for adding a back cover to the document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Configure** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the product supports. For more information about the **Type is:** drop-down menu settings, see the **Type is:** in the Type is section of this chapter.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image appears in the upper-right corner of all of the **Document Defaults** driver tabs except the **Job Storage** tab. For more information about the document preview image, see the Finishing tab features section of this chapter.

Product image

The bitmap image in the lower-right portion of the **Paper** tab represents the current physical configuration of the product and corresponds to its configuration data. It should look the same as the image that appears in the same location on the **Configure** tab in the printer **Properties** dialog box.

On the **Paper** tab, the product image contains hot spots where you can select a media source. When you use the mouse to move the pointer over a hot spot, the arrow reverts to a gloved hand. The current media source tray, whether selected from the drop-down menu or from a product image hot spot, is highlighted on the product image. The following points are worth noting:

- The **Automatically Select** setting in the **Source is:** drop-down menu does not have a corresponding area to highlight in the product image. Selecting other settings in this menu highlights the corresponding part in the product image.
- Selecting the area that represents a tray in the image always selects the corresponding tray in the **Source is:** option. **Manual Feed in Tray 1**, which is available from the **Source is:** drop-down menu, cannot be selected by selecting the image.
- On the **Paper** tab, only source trays have product image hot spots and can be highlighted.

Output tab features

The **Output** tab provides output options for print jobs. The controls that appear on the tab depend on the current physical configuration of the product, either obtained automatically through bidirectional communication or configured manually.

NOTE The product image shown in the illustration might differ from your HP LaserJet 4345mfp, depending on the model number and the installed accessory devices.

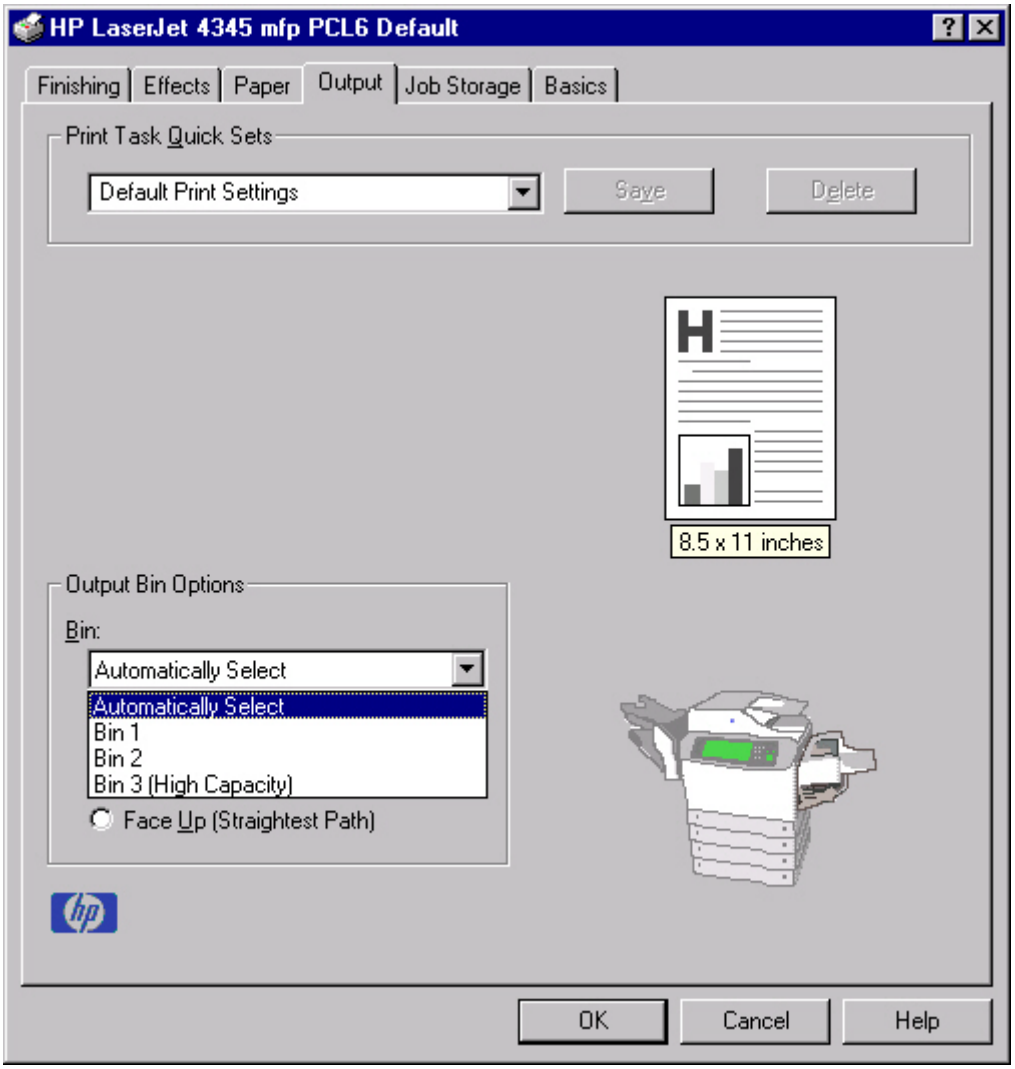

Figure 3-19 **Output** tab

The **Output** tab can contain the following controls:

- **Print Task Quick Sets** group box
- **Output Options** group box
- **Output Bin Options** group box
- Document preview image
- Product image

Print Task Quick Sets

Use the **Print Task Quick Sets** control is to store the current combination of driver settings that are found on all other **Document Defaults** driver tabs. Print Task Quick Sets are either preset (by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Output Options

If the stapler/stacker accessory is installed, the **Output Options** group box appears, containing the **Staple** drop-down menu. The options are **None** or **One Staple Angled**. Select **One Staple Angled** to staple the finished print job. When you select the staple option, the page preview image displays where the staple will be placed on the page.

NOTE For some custom paper sizes, the printer may assume a specific paper feed orientation (that is, which edge goes into the printer first). If you encounter unexpected results in the staple placement, try using a different feed orientation.

Output Bin Options

The available **Output Bin Options** depend on which accessory output device is installed on the product. The **Face Down (Faster)** and the **Face Up (Straightest Path)** options are available with all accessory output devices.

If you install the **HP 3-Bin Mailbox-Mailbox Mode** as the accessory output device, the **Bin** drop-down menu appears with the available output bin options. The options are **Automatically Select** (default), **Bin 1**, **Bin 2**, and **Bin 3 (High Capacity)**.

Hint The **HP 3-Bin Mailbox-Mailbox Mode** output bins can be configured by using HP Web Jetadmin. For more information, see Configuring accessory output bins through HP Web Jetadmin in chapter 7 of this guide.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image appears in the upper-right corner of all of the **Document Defaults** driver tabs except the **Job Storage** tab. For more information about the document preview image, see the Finishing tab features section of this chapter.

Product image

The bitmap image in the lower-right portion of the **Output** tab represents the current physical configuration of the printer according to the driver configuration data (obtained automatically through bidirectional communication, or configured manually through the driver). It should have the same appearance as the image in the same location on the **Paper** tab. On the **Output** tab, the product image contains hot spots for selecting an output bin. When the pointer moves over a hot spot, the arrow reverts to the gloved hand used in the Bubble Help, the preview image, and other areas. The current output bin is highlighted in a bright green color on the printer bitmap.

NOTE On the **Output** tab, only output bins have hot spots and can be highlighted; source trays must be selected from the **Paper** tab.

Job Storage tab features

The HP LaserJet 4345mfp lets you store print jobs in the product's memory for printing at a later time. These job-storage features are described in the following sections.

The Job Storage tab appears among the driver tabs *only* if Job Storage is enabled. To support job-storage features for complex jobs, or if you often print complex graphics, print postscript (.PS) documents, or use many downloaded fonts, HP recommends that you install additional memory,

install a hard disk, or both. Added memory also gives you more flexibility in supporting job-storage features. A minimum total memory of 48 MB is required to use job-storage features.

After a hard disk or additional memory is installed, the driver must be configured to reflect the changes in the product. If bidirectional communication is enabled in your environment, the Update Now feature can be used to update the drivers. For more information, see the Configure tab features in this chapter.

To configure the HP traditional PCL 6 and PCL 5 drivers manually after installing a hard disk or additional memory, follow these steps:

1. Click **Start**, select **Settings**, and then click **Printers**.
2. Right-click the product name, click **Properties**, and then click the **Configure** tab.
3. Under **Other Options**, click **More...**.
4. If additional memory has been installed, change the setting in the **Total Memory:** drop-down menu. If you select a minimum of 48 MB, this also selects the **Job Storage Enabled** check box.
5. If a hard disk has been installed, select the **Printer Hard Disk** check box in the **Storage** group box. This also selects the **Job Storage Enabled** check box.
6. Click **OK** to make the printer hard disk and job-storage features available.

NOTE You can disable Job Storage while leaving the product hard disk enabled. To disable Job Storage, click **Start**, select **Settings**, and then click **Printers**. Right-click the product name, click **Properties**, click the **Configure** tab, click **More...**, and then click to clear the **Job Storage Enabled** check box in the **More Configuration Options** box. When **Job Storage** is disabled, the **Job Storage** tab is not visible.

If Job Storage is enabled (without installing a hard disk), two **Job Storage Mode** settings are available on the **Job Storage** tab:

- **Proof and Hold**
- **Private Job**

Two additional **Job Storage Mode** settings become available on the **Job Storage** tab if a hard disk is installed:

- **Quick Copy**
- **Stored Job**

Job Storage tab

The following illustration shows the **Job Storage** tab.

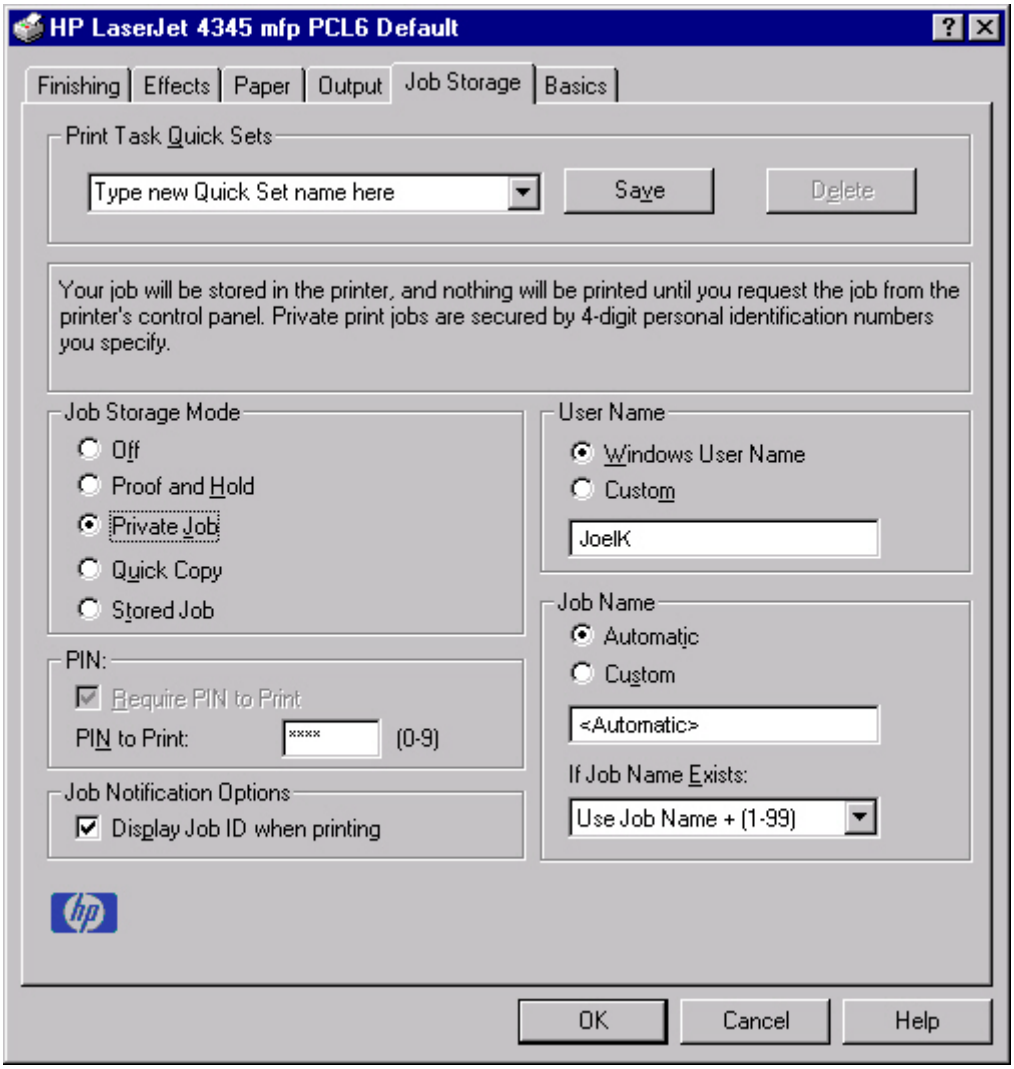

Figure 3-20 **Job Storage** tab

The **Job Storage** tab contains the following controls:

- **Print Task Quick Sets** group box
- Status group box (unlabeled)
- **Job Storage Mode** group box
- **PIN** group box
- **Job Notification Options** group box
- **User Name** group box
- **Job Name** group box

Print Task Quick Sets

Use the **Print Task Quick Sets** control is to store the current combination of driver settings that appear on all of the other **Document Defaults** driver tabs. Print Task Quick Sets are either preset

(by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Status group box

The unlabeled group box on the **Job Storage** tab contains a status message about the destination of a print job. The status information changes depending on the selections that are made on the **Job Storage** tab.

Job Storage Mode

Use the **Job Storage Mode** options on the HP LaserJet 4345mfp to store documents at the product and then control their printing at the product control panel.

The HP LaserJet 4345mfp offers the following **Job Storage Mode** options:

- **Off**
- **Proof and Hold**
- **Private Job**
- **Quick Copy**
- **Stored Job**

These options and the settings that control them are described in the following sections.

Off

When selected, this option turns the **Job Storage** feature off (it is disabled), which means that the print job will not be stored in the product.

Proof and Hold

To use the **Proof and Hold** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When selected, this option stores the print job in memory and prints only the first copy of the job, allowing you to check the first copy. If the document prints correctly, you can print the remaining copies of the print job at the product control panel. You can set the number of proof-and-hold print jobs that can be stored in the product at the control panel.

After it is released for printing, the proof-and-hold job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. If you send a second proof-and-hold job to the product with the same user name and job name as an existing proof-and-hold job (and you have not released the original job for printing), the job will overwrite the existing job. Proof-and-hold jobs are deleted if you turn off the product.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document. Also, a document that has the same user and job name as one that is already stored on the hard disk will overwrite the existing document.

Private Job

To use the **Private Job** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Private Job**, the print job is sent to the product, but is not printed until you request the job at the product control panel. Selecting **Private Job** activates the **PIN** group box. The print job can be printed only after you type the correct PIN at the control panel. After the job is printed, the job is deleted from the product. This feature is useful when you are printing sensitive or confidential documents that you do not want to leave in an output bin after printing.

After it is released for printing, the private job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. If you send a second private job that has the same user name and job name as an existing private job (and you have not released the original job for printing), the job will overwrite the existing job, regardless of the PIN. Private jobs are deleted if you turn off the product.

Using a PIN for Private Job

The **Private Job** option can be secured by a four-digit personal identification number (PIN). You must type in this number at the product control panel before the product can print the job.

The group box labeled **PIN** is usually inactive. It becomes active when you select the **Private Job** option.

The Private Job/PIN coupling has a PIN restriction of four ASCII numeric characters (0 though 9). If you type non-numeric characters, they are removed immediately. If you type more than four characters, the characters past the fourth are truncated. The field temporarily accepts fewer than four digits in the string, but when the edit field loses focus, the zeroes pad the left end until the PIN contains exactly four digits. The default initialized value for the PIN is 0000 for **Private Job**.

Quick Copy

To use the **Quick Copy** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Quick Copy**, the entire print job prints and a copy of the print job is stored on the product, after which you can print additional copies of the print job at the product control panel. The number of quick-copy print jobs that can be stored in the product is set by using the product control panel.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document. Also, a document that has the same user and job name as one that is already stored on the hard disk will overwrite the existing document. **Quick Copy** jobs are deleted if you turn off the product.

Stored Job

To use the **Stored Job** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

Use the **Stored Job** option to send a print job directly to the product hard disk without printing it. The print job is stored in the product as if it is an electronic file cabinet. After the print job is stored on the product hard disk, you can print the job at the product control panel.

The job remains stored in the product until it is deleted or overwritten by a document that has the same user and job names. Stored jobs remain on the product hard disk when the product is turned off. Use this feature for forms and other common or shared documents.

A stored job can be managed in two ways: as either a private or a public job. Use a private stored job to send a print job directly to the product, which can then be printed only after you type in a PIN at the product control panel. (You can set the PIN in the **PIN** group box.) After the job is printed, the job remains in the product and can be printed again at the product control panel. The private mode is initiated by selecting the **Require PIN to Print** check box. In this mode, a PIN that is typed at the product control panel is required in order to release the job.

The box labeled **PIN** is usually inactive. The **Require PIN to Print** option becomes available when you select **Stored Job**. If you select the **Require PIN to Print** box, you must type a PIN to make the stored job private.

NOTE A private stored job is not the same as a private job (see above). *Private* jobs are deleted from the product after they are printed. *Private stored* jobs are retained in the product after printing, but require that a PIN be typed each time they are printed.

PIN

The **PIN** group box is usually inactive. The option within the PIN group box, **PIN to Print**, is activated if you select either of the following options:

- Select **Private Job**. If selected, you must type in the PIN number at the product control panel in order to print the job. For more information, see Using a PIN for Private Job.
- Select **Stored Job**, and then select the **Require PIN to Print** check box. If the **Require PIN to Print** check box is selected, you must type a PIN in order to make the stored job private. For more information, see the Stored Job.

Job notification

Clicking a job storage mode selection causes the **Job Notification Options** group box to become available. The **Display Job ID when printing** check box is selected by default. The **Display Job ID when printing** option causes a pop-up dialog box to appear when the job-storage print job is printed. The dialog box shows the user name and job name that are associated with the stored print job, as well as the product name, port, and location.

User Name

Use the **User Name** settings to help identify the job at the product control panel. The following are the **User Name** settings:

- **Windows User Name.** This option associates your Windows user name with the stored print job. The Windows user name automatically appears in the text field below the **User Name** options.
- **Custom.** Use this option to type a custom name for the stored print job. When you click the **Custom** radio button, the text field below the option becomes available. The **User Name** field can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

Job Name

Use the text box in the **Job Name** group box to specify a name to identify the job at the product control panel. The **Automatic** option is the default selection. It uses a default job name for the stored print job. The file name of the print job is used if it is available to the print driver. Otherwise, the software program name or a time stamp is used for the job name. If you would like to enter a custom name, select **Custom** and type the custom job name in the text box. The **Job Name** text box can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

If **Custom** is selected but no job name is specified, as soon as the focus is removed from the control (that is, when the Tab key is pressed or another control is selected), the empty string is replaced with **<Automatic>**. In those languages for which **<Automatic>** cannot be translated without the use of invalid characters, the driver uses a string of three dashes. The acceptable characters for job name and user name vary for each operating system. The string must be of a length and type that can appear on the product control-panel display.

Use the **If Job Name Exists** drop-down box to choose whether a duplicate job name should have a number appended to it, or whether it should overwrite the existing job with the same name.

Using Job Storage features when printing

To use Job Storage features when printing, follow these steps:

1. Click **File** and then click **Print** from the software program. The **Print** dialog box appears.

   NOTE Clicking the print icon in the software program toolbar prints the job without using Job Storage features.

2. Click **Properties**. The **Properties** dialog box appears.
3. Click the **Job Storage** tab.
4. Select the Job Storage options (described previously) by clicking the appropriate option button, and then complete any required fields.
5. Click **OK**.
6. Click **OK**. The Job Storage Identification dialog box appears.
7. Click **OK**.

Releasing a Job Storage print job

After you send a print job that uses the **Job Storage** feature, you can release the job to print by using the product control panel.

1. Press MENU to open the menus.
2. Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.
3. Touch the appropriate user name and a list of stored jobs for that user appears.
4. Touch the Job Name, and then touch **PRINT**.

5 If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.

6 Select the number of copies to print.

7 Touch **OK** to print the job.

Deleting a Job Storage print job

Sometimes it is necessary to delete a print job from the product hard disk. You can do this from the product control panel.

1 Press MENU to open the menus.

2 Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.

3 Touch the appropriate user name and a list of stored jobs for that user appears.

4 Scroll to the Job Name, and then touch **DELETE**.

5 If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.

6 Touch **DELETE**.

7 Touch **YES** to delete the job.

Basics tab features

The **Basics** tab provides options for setting the number of copies to be printed and for the orientation of the print job. You can also use it to retrieve information about the driver.

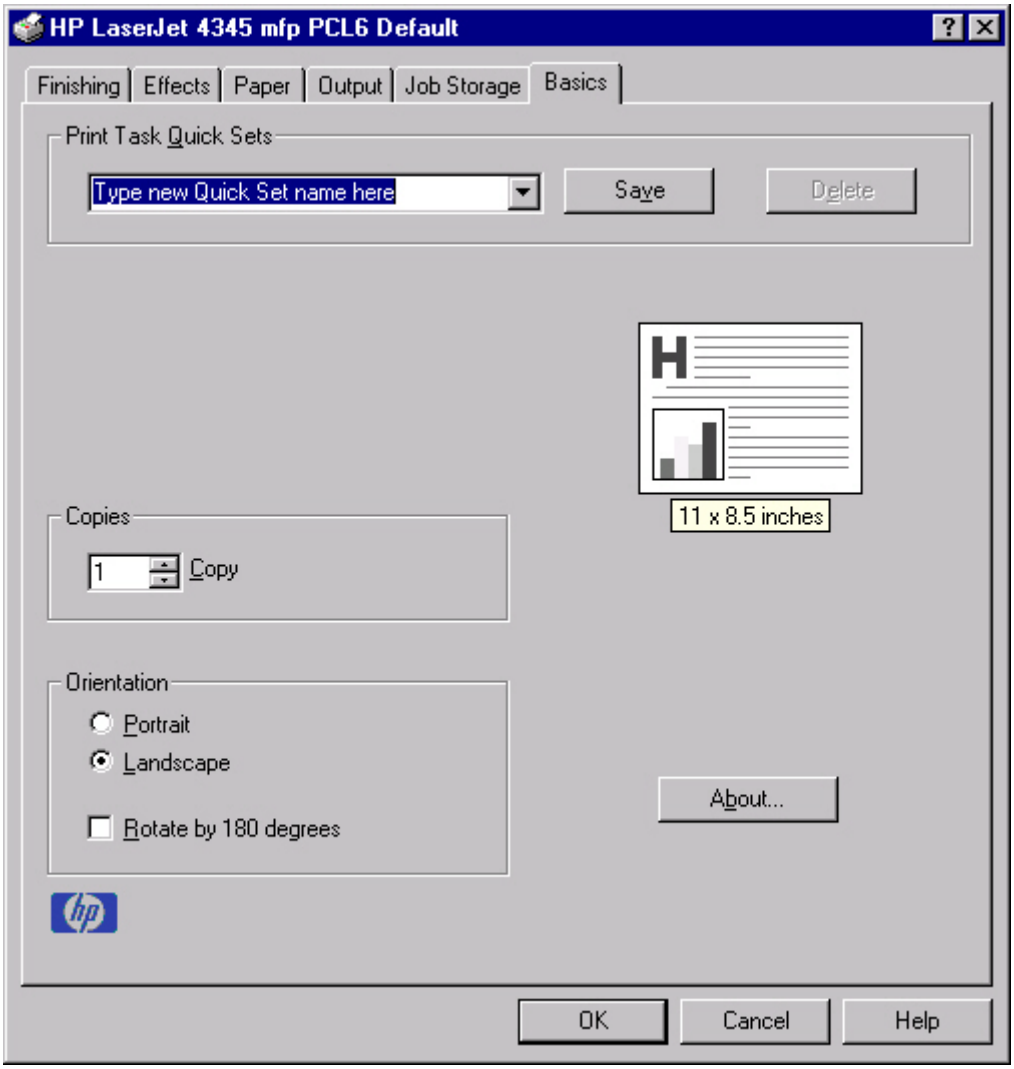

Figure 3-21 **Basics** tab

The **Basics** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Copies** group box
- **Orientation** group box
- Document preview image
- **About** button

Print Task Quick Sets

Use the **Print Task Quick Sets** control is to store the current combination of driver settings that appear on all of the other **Document Defaults** driver tabs. Print Task Quick Sets are either preset (by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Copies

Use the **Copies** option to specify the number of copies to print.

The number of copies that you request appears in the **Copies** group box. You can select the number by typing in the box or by using the up and down arrows to the right of the text box. Valid entries are numbers from 1 to 9999. The copies value will not advance from the maximum number (9999) to 1 when the up arrow is used, or change from 1 to the maximum number (9999) when the down arrow is used. When you click another group box or leave the **Basics** tab, invalid entries into the edit box (such as non-numerical input, numbers less than 1, or numbers greater than the maximum allowed) are changed to the last valid value that appeared in the box. The default number of copies is 1.

Because you can set the number of copies that you want from some software programs, conflicts between the software program you are using and the driver can arise. In most cases, the software program and the driver communicate, so that the number of copies set in one location (such as the program) will appear in the other (such as the driver). For some programs, this communication does not take place, and the copies values are treated independently. For these programs, setting 10 copies in the program and then setting 10 copies in the driver will result in 100 copies (10 x 10) being printed. It is recommended that you set the number of copies in the program, wherever possible.

Orientation

Orientation refers to the layout of the image on the page, and does not affect the manner in which media is fed into the product. You can specify the orientation of the print job. The three available orientations are portrait, landscape, and rotated. The default orientation is **Portrait**.

NOTE Nearly all software programs establish the orientation for the printed page, so the page orientation in the driver is useful only for the few software programs that do not set an orientation.

The **Orientation** group box contains three options:

- **Portrait.** The top edge of the document is the shorter edge of the media.
- **Landscape.** The top edge of the document is the longer edge of the media.
- **Rotate by 180 degrees.** This creates a landscape or portrait orientation in which the image is rotated 180 degrees. This setting is useful for printing prepunched media.

You can toggle orientation between portrait and landscape by clicking the document preview image. If you select the **Rotate by 180 degrees** check box, no change occurs in the document preview image.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image appears in the upper-right corner of all of the **Document Defaults** driver tabs except the **Job Storage** tab. For more information about the document preview image, see the Finishing tab features section of this chapter.

About

When you click the **About** button on the **Basics** tab, or you click the HP logo on any of the driver **Properties** tabs, the **About This Driver** dialog box appears. To close the **About** box, click **OK**, press Esc, press **Alt** + F4, or press Enter. The following figure shows the **About This Driver** dialog box. The information it contains varies according to driver, date, and version.

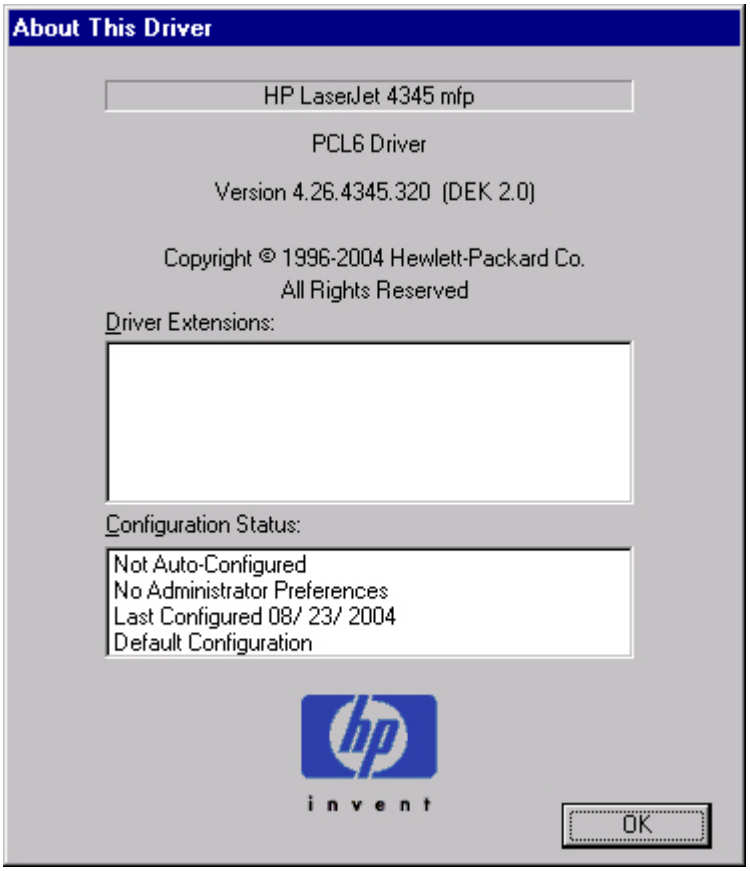

Figure 3-22 **About This Driver** dialog box

The **About This Driver** dialog box provides the following information:

- Product name
- Driver name
- Print driver version number
- Copyright information
- Driver Extensions (if any)
- Configuration Status

The product name, the driver name, the print driver version number, and the copyright information appear at the top of the **About This Driver** dialog box.

The **Driver Extensions** group box lists the driver extensions, if any.

The **Configuration Status** group box indicates whether the driver was autoconfigured, whether administrator preferences were set, the date the driver was last configured, and whether the configuration is default or user-defined.

Properties tabs

The **Properties** tabs contain information about and options for configuring the product.

NT Forms tab features

NOTE The **NT Forms** tab is in the Properties for the print driver.

To gain access to the Properties tabs, click **Start** on the Window task bar, click **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties**.

The **NT Forms** tab appears only in the Windows NT 4.0 operating environment. The **NT Forms** tab (like the **Configure** tab) can be viewed only from the Properties window. The following illustration shows the **NT Forms** tab.

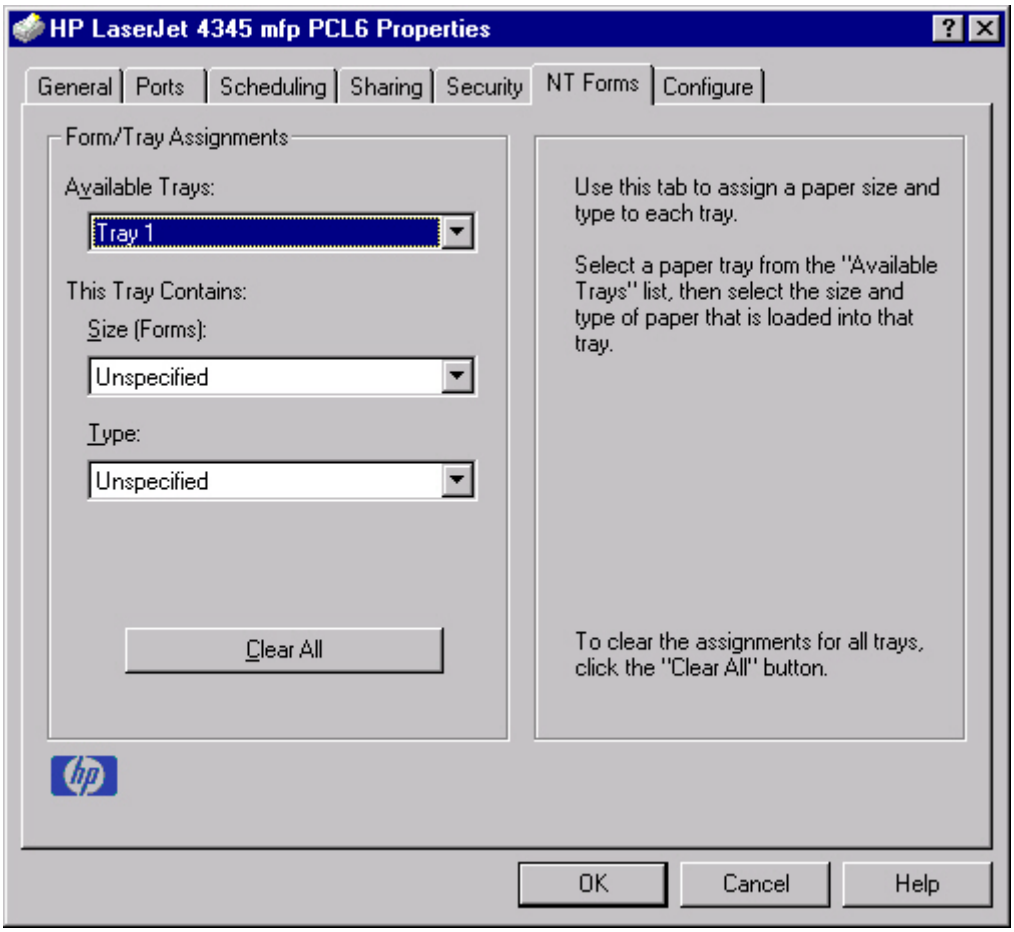

Figure 3-23 Driver **NT Forms** tab

Use the **NT Forms** tab to specify which media sizes and types are loaded in each of the available source trays. This constrains the choices that are available in the **Size** and **Type** lists on the **Paper** tab.

The **NT Forms** tab contains a single group box (the **Form/Tray Assignments** group box) which contains the following controls:

- **Available Trays** is a drop-down menu that contains all of the trays that are specified on the **Configure** tab.
- **This Tray Contains/Size (Forms)** drop-down menu contains a list of standard media sizes that the HP LaserJet 4345mfp supports, as well as any custom forms that are defined in the **NT Forms** tab.

- **This Tray Contains/Type** drop-down menu lists all of the media types that the HP LaserJet 4345mfp supports.
- **Clear All** button removes all the size and type constraints on the **Paper** tab.

Configuring the trays

1. Select the appropriate tray from the **Available Trays** drop-down menu.
2. Use the **This Tray Contains/Size (Forms)** drop-down menu to select the media size (or form) that is loaded in that tray.
3. Use the **This Tray Contains/Type** drop-down menu to select the media type that is configured for the tray.
4. Repeat steps 1 through 3 for the remaining trays.
5. Click **OK** to enable your settings, or, if necessary, click the **Clear All** button to reconfigure all of the trays and remove the size and type constraints that have been imposed on the **Paper** tab.

Configure tab features

The **Configure** tab is in the Properties for the print driver.

To gain access to the Properties tabs, click **Start** on the Window task bar, click **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties**.

The **Configure** tab is also available when the driver is opened from the **Printers** folder by clicking **Properties**. When you open the driver from within a program, the **Configure** tab is not visible (with a few exceptions, such as when using Excel 5.0 or Corel® Chart 4.0).

Use the **Configure** tab to tell the driver about the product hardware configuration. If bidirectional communication is enabled in a supported environment, configure the settings on this tab by clicking the **Update Now** button. If your environment does not support bidirectional communication, the **Update Now** button is unavailable, so you must manually configure the options on this tab.

When opened from the **Printers** folder, the **Configure** tab appears as shown in the following illustration.

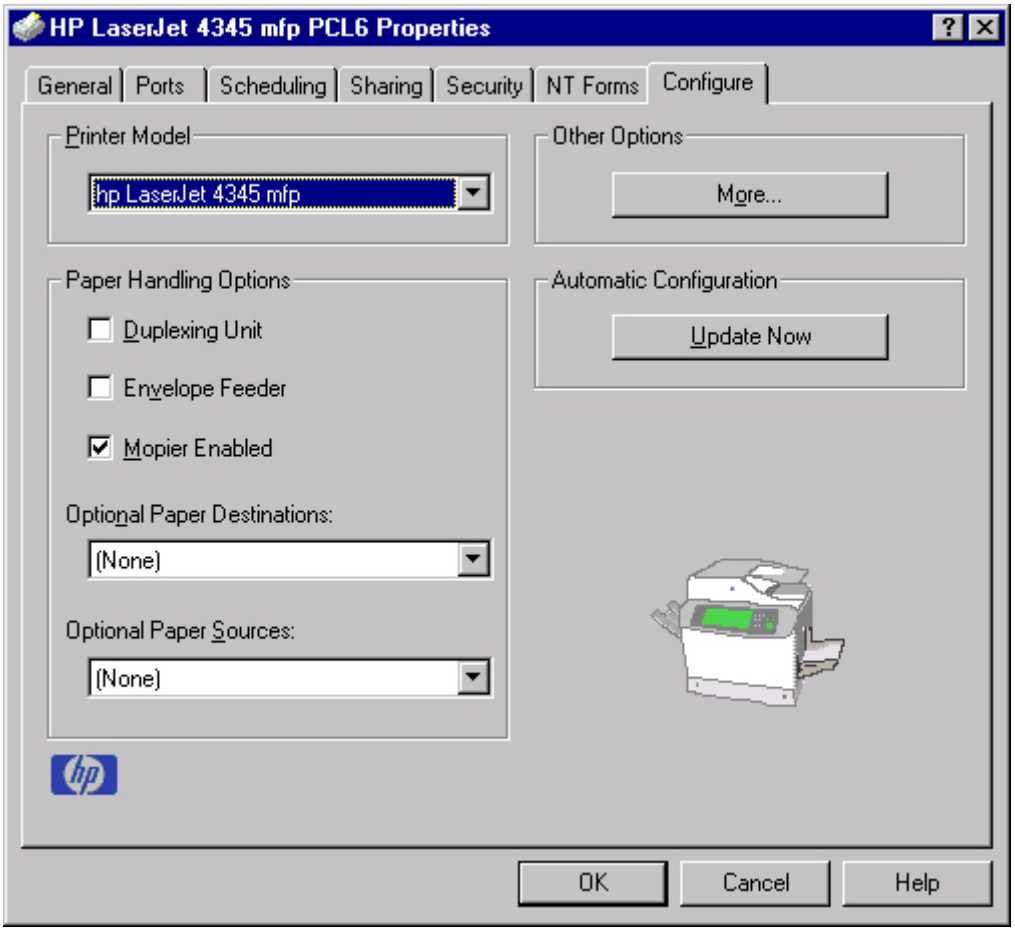

Figure 3-24 **Configure** tab

The **Configure** tab contains the following controls:

- **Printer Model** group box
- **Paper Handling Options** group box
- **Other Options** group box
- **Automatic Configuration** group box
- Product image

Printer Model

In the **Printer Model** group box, the driver title depends on the printer model being used. Selection of any model in the drop-down menu makes the appropriate changes to other configuration options on the tab.

The **Printer Model** setting automatically changes to **User Configured** whenever you change any of the device configuration settings on the tab.

The list of models and the changes they produce are described in the table below.

Table 3-6 Printer model bundles

Paper Handling Options						Other Options (in the More Configuration Options dialog box)	
Model	**Duplexer**	**Mopier Enabled**	**Stapler/ Stacker**	**3-Bin Mailbox**	**500-Sheet Tray**	**DWS**	**Total Memory**
HP LaserJet 4345mfp		x				6.0	256 MB
HP LaserJet 4345x mfp	x	x			x	6.0	256 MB
HP LaserJet 4345xs mfp	x	x	x		x	6.0	256 MB
HP LaserJet 4345xm mfp	x	x		x	x	6.0	256 MB

If it is installed and working, the bidirectional mechanism will detect the correct model and update the configuration accordingly, either during installation or when you select **Update Now** on the **Configure** tab. However, the printer model name shown in the **Printer Model** text box does not change.

Paper Handling Options

The **Paper Handling Options** group box contains the following controls:

- **Duplexing Unit** check box
- **Envelope Feeder** check box
- **Mopier Enabled** check box
- **Optional Paper Destinations** drop-down menu
- **Optional Paper Sources** drop-down menu

Duplexing Unit

The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp and HP LaserJet 4345xm mfp models are equipped with automatic 2-sided printing (duplexing), which allows you to print on both sides of supported media. Automatic 2-sided printing is not supported for certain media types, including transparencies, labels, envelopes, and cardstock.

NOTE The HP LaserJet 4345mfp supports smart duplexing. The product uses the smart duplexing feature to detect information on both sides of the print job pages and only runs the pages through the duplexing unit if printable information appears on the second side of the page.

Envelope Feeder

Select the **Envelope Feeder** check box if your HP LaserJet 4345mfp is equipped with an optional envelope feeder accessory.

Mopier Enabled

The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job. Multiple-original printing (mopying) increases performance and reduces network traffic by transmitting the job to the product once, and then storing it on the hard disk. The remainder of the copies are printed at the fastest speed. All documents that are printed in mopier mode can be created, controlled, managed, and finished from the computer, which eliminates the extra step of using a photocopier.

The HP LaserJet 4345mfp supports the transmit-once mopying feature when the product has an installed hard disk or a minimum total memory of 288 MB, and the **Mopier Enabled** setting on the **Configure** tab is on.

Mopier mode and collation

Mopying and collating print jobs are independent but closely related functions. The print driver performs mopying, which is the ability to send multiple original print jobs to the product. Collating is controlled by using either the print driver or the document software program. The mopying mode is selected by default in the driver, and can be disabled by clearing the **Mopier Enabled** selection on the **Configure** tab to disable the feature.

You can control collation through the print driver by selecting or clearing the **Ignore Application Collation** check box in the **More Configuration Options** dialog box that appears when you click the **More...** button on the **Configure** tab. You can clear the check box, which is available only when the **Mopier Enabled** setting on the **Configure** tab is selected, to allow the software program to control collation.

To receive uncollated multiple copies of a print job with the mopier enabled, you must clear the **Ignore Application Collation** check box *and* make sure that the software program collation feature is not selected.

The following table shows the relation between **Mopier Enabled** settings and collation settings in the software program and the driver. The first three columns show the settings; the last column, "Expected result," shows how a three-page print job would appear.

Table 3-7 Driver Mopier mode and collation settings

Mopier Enabled	Application collation	Ignore Application Collation	Expected result
Not selected	Not selected	Not available	3 copies uncollated
Not selected	Selected	Not available	3 copies collated
Selected	Not selected	Not selected	3 copies uncollated
Selected	Not selected	Selected	3 copies uncollated
Selected	Selected	Not selected	3 copies collated by printer
Selected	Selected	Selected	3 copies collated by printer

Optional Paper Destinations

The **Optional Paper Destinations** drop-down menu lists optional output bins. The list of available trays varies depending on your product , its output accessories, and the product configuration settings on the **Configure** tab.

For the HP LaserJet 4345mfp, the following settings are available in the **Optional Paper Destinations** drop-down menu:

- **(None).** This is the default setting.
- **HP 500-Sheet Stapler/Stacker**
- **HP 3-Bin Mailbox-Mailbox Mode**
- **HP 3-Bin Mailbox-Stacker Mode**
- **HP 3-Bin Mailbox-Function Separator**

Optional Paper Sources

The **Optional Paper Sources** drop-down menu lists optional trays. The list of available trays varies depending on your product , its input accessories, and the product configuration settings on the **Configure** tab.

For the HP LaserJet 4345mfp, the following settings are available in the **Optional Paper Sources** drop-down menu:

- **(None).** This is the default setting.
- **3x HP 500-Sheet Input Tray**
- **2x HP 500-Sheet Input Tray**
- **HP 500-Sheet Input Tray**

Other Options

The **Other Options** group box contains a single **More...** command button. Clicking the **More...** button opens the **More Configuration Options** dialog box.

More configuration options

When you click the **More...** button under **Other Options**, more configuration options are available. The **More Configuration Options** dialog box is shown in the following illustration.

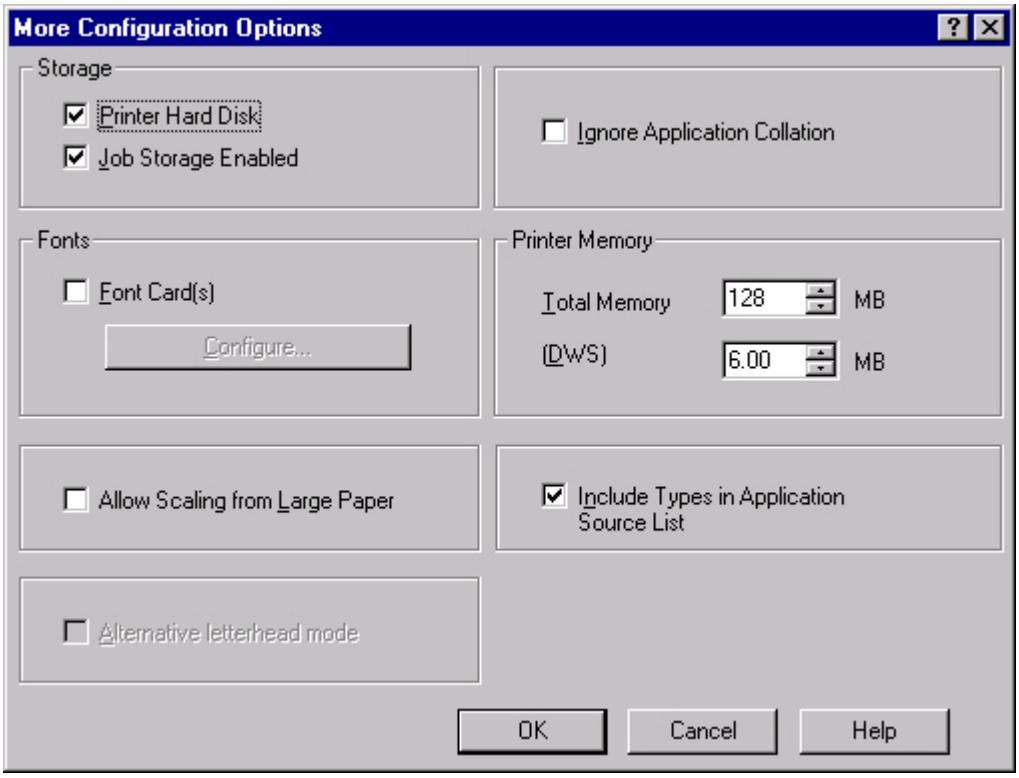

Figure 3-25 More Configuration Options dialog box

The **More Configuration Options** dialog box contains the following controls:

- **Storage** group box
- **Fonts** group box
- **Allow Scaling from Large Paper** check box
- **Alternative letterhead mode** check box
- **Ignore Application Collation** check box
- **Printer Memory** group box
- **Include Types in Application Source List** check box

Storage

The **Storage** group box contains the **Printer Hard Disk** and **Job Storage Enabled** check boxes. If your HP LaserJet 4345mfp is equipped with a hard disk drive, the **Printer Hard Disk** check box should be selected and all job storage options are available. If your HP LaserJet 4345mfp is *not* equipped with a hard disk drive but has a minimum of 48 MB of memory, limited job storage options are available. When job storage is enabled, the product can store print jobs so that you can gain access to those print jobs later at the product control panel.

Fonts

The **Fonts** group box contains a **Font Card(s)** check box and a corresponding **Configure** button. Selecting the **Font Card(s)** check box tells the driver that a Font card is installed, and that stored

data about the fonts on the card is available. When the check box is selected, the **Configure** button is enabled. Click the **Configure** button to open the **Configure Font Card(s)** dialog box. If the **Font Card(s)** check box was not selected when you opened the **More Configuration Options** dialog box, selecting that check box automatically opens the **Configure Font Cards** dialog box.

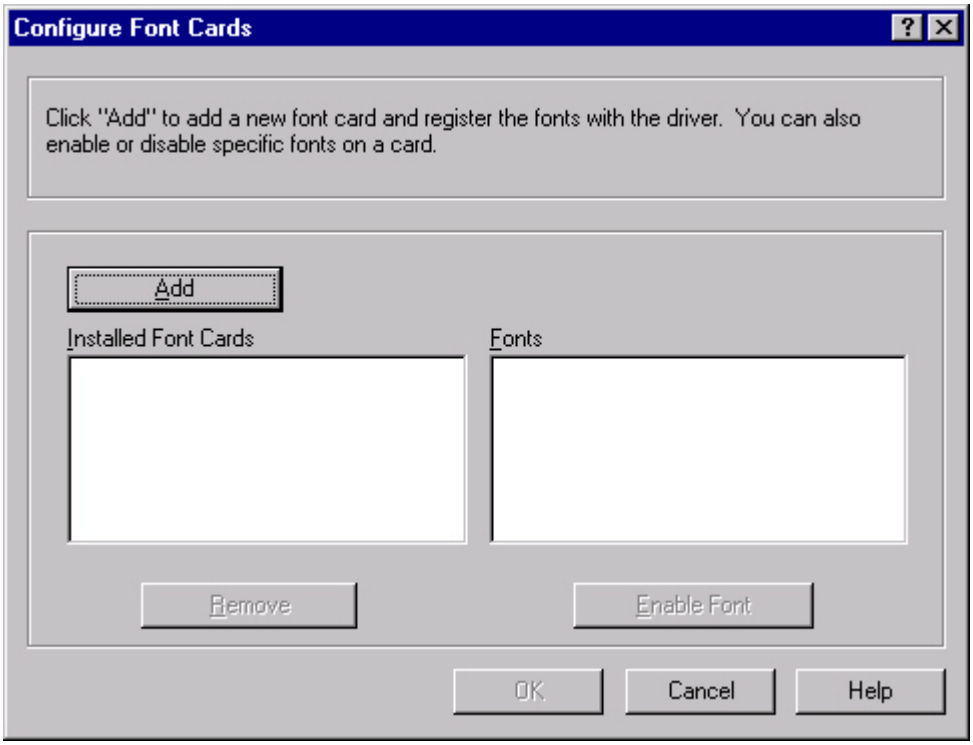

Figure 3-26 **Configure Font Cards** dialog box

Use the **Configure Font Cards** dialog box to perform the following tasks:

- Add up to two font cards by clicking the **Add** button.
- Specify a unique font-card name.
- Select specific font card data files that contain lists of fonts on specified cards.
- Select one or more installed cards in the **Installed Font Cards** list. The list to the right (**Fonts**) shows all of the fonts that are available on the selected card(s).
- Enable or disable one or more of the selected font(s).

Complete the following steps to configure a font card:

1. Make sure that the font card is installed correctly.
2. Click **Add**. The **Add Font Card** dialog box appears.
3. Click **Browse**. The **Font Card Files** dialog box appears.
4. Find and select the appropriate Printer Cartridge Metrics (PCM) file that came with the font card.
5. Click **OK**.
6. If you want to, you can specify a font card name in the **Add Font Card** dialog box.

7 Click **OK**. The selected .PCM file appears in the **Installed Font Cards** list. Select the .PCM file to see a list of available fonts in the **Fonts** list.

8 Click **OK** to close the **Add Font Card** dialog box. The fonts on the card should now be available on the system.

NOTE When using font cards with the HP Traditional PCL 5 and HP Traditional PCL 6 drivers: To install screen fonts that match the font card, use the .HPB file that is specifically designed to work with that card. If no screen fonts exist for the card, use the .PCM file that is specifically designed to work with that card.

Allow Scaling from Large Paper

Use the **Allow Scaling from Large Paper** check box to print from media sizes that are larger than those that the product supports. When this check box is selected, you can select these larger paper sizes from the **Size Is:** drop-down menu on the **Paper** tab, and the print jobs are automatically scaled to a size that the product does support.

Alternative letterhead mode

Under normal operation, the product prints duplex jobs with a different orientation than single-sided jobs. This becomes a problem when printing on letterhead, because the user has to switch the orientation of the letterhead media if they need to go back and forth between duplex and single-sided jobs. Alternative letterhead mode solves this problem.

When this feature is selected, you can load letterhead or pre-printed mediain the same way for all print jobs, whether you are printing duplex or single-sided jobs. To use it, load the media as you would for a *duplex* letterhead job. (This is the exact opposite of how you would load the media for a single-sided letterhead job. See the User Guide for details.) If the product tray has an icon that indicates to load the media either face-up or face-down, load the media in the opposite direction from the orientation that is shown. When **Alternative Letterhead Mode** is on, both single-sided and double-sided jobs will print the correct way, without having to change the orientation of the letterhead or pre-printed media.

Ignore Application Collation

This setting overrides collation options that are selected in a software program print options. When **Ignore Application Collation** is selected, the print driver collates in the most appropriate way for the print job. The performance of this feature depends on the software program that you are using.

Printer memory

The **Total Memory** group box shows the total amount of memory that is physically installed in the product. The default values for total product memory are specified on the **Configuration** tab. Total product memory is updated through a successful bidirectional query, or can be set manually.

The Driver Work Space **(DWS)** value shows the amount of memory that is available for keeping track of fonts that are downloaded from the driver. The driver deletes downloaded fonts if it has exceeded the available memory value. The **(DWS)** value is a dynamic value that varies depending on the specific configuration of the product. An accurate **(DWS)** value optimizes driver performance.

The HP Traditional PCL 6 and HP Traditional PCL 5 drivers automatically configure the **(DWS)** value in Windows 98, Windows Me, and Windows NT 4.0 environments that support bidirectional communication. Use the **(DWS)** option to specify the amount of work-space memory that is available to the product. To manually set the **(DWS)** value, print a configuration page and find the DWS value

in the Memory section of the page. Then, click the **More...** button on the **Configuration** tab, and type the DWS value in the **(DWS)** field of the **More Configuration Options** dialog box.

To print a configuration page, see Determining the current level of firmware.

Include types in application source list

NOTE The **Include Types in Application Source List** check box is available only when using a computer that is running Windows NT 4.0.

When the **Include Types in Application Source List** check box is selected, all media types (such as heavy media and transparencies) are available from the **Source is:** list on the **Paper** tab. When you are in a software program, you can open the **Paper** tab by clicking **Print** from the **File** menu, and then clicking **Properties**.

Automatic configuration

If you have modified the configuration of the HP LaserJet 4345mfp since installation, click the **Update Now** button to automatically reflect the new configuration in the driver. For more information about the print driver's automatic configuration feature, see the Driver Configuration section of this guide.

If the **Update Now** button is not available, select the appropriate configuration options on the **Configure** tab.

Printer image

The bitmap image in the lower-right portion of the **Configure** tab represents the current physical configuration of the product according to the driver configuration data. It should have the same appearance as the image in the same location on the **Paper** tab.

NOTE The printer image shown on the **Configure** tab might differ from your HP LaserJet 4345mfp printer, depending on the installed accessory devices.

HP Traditional Postscript 3 Emulation Driver features

When you install the printing-system software in Windows 98 or Windows Me, the HP Traditional PCL 6 Driver is installed by default. The PS Emulation Driver can be installed by performing a Custom Installation. When you install the print drivers in Windows NT 4.0, you must use the Add Printer install method to install the PS Emulation Driver.

This section describes the options that are available on each tab of the PS Emulation Driver **Document Default** interface and on one of the tabs of the PS Emulation Driver **Properties** interface. It also shows the tabs that are available on the PS Emulation Driver interface for Windows 98 and Windows Me.

NOTE The information and illustrations in this section reflect the PS Emulation Driver when the computer is running Windows NT 4.0. The PS Emulation Driver looks significantly different for computers that are running Windows 98 or Windows Me.

This section contains information about the following topics:

- Access to print drivers
- PS 3 emulation support for the HP LaserJet 4345mfp
- Help system
- Page Setup tab features
- Advanced tab features
- Job Storage tab features
- Device Settings tab

Access to print drivers

Depending on the operating system that you are using when you install the print drivers, different methods are available to gain access to the print drivers and different print-driver interfaces.

To gain access to the print-driver settings from within most software programs, click **File**, click **Print**, and then click **Properties**. These driver settings apply only while the software program is open.

Access to print drivers in Windows NT 4.0

To gain access to the print-driver settings from within most software programs, click **File**, click **Print**, and then click **Properties**. These driver settings apply only while the software program is open.

You can also control the Document Default print drivers directly from the **Printers** folder. In Windows NT 4.0, click **Start**, select **Settings**, click **Printers**, right-click the product name, and then click **Document Defaults...** to gain access to the same set of driver tabs that the software program controls. These driver settings change the default settings used across all software programs.

The following **Document Default** print driver tabs are available in Windows NT 4.0:

- **Page Setup** tab
- **Advanced** tab
- **Job Storage** tab

NOTE The Job Storage tab appears among the driver tabs *only* if Job Storage is enabled. If your HP LaserJet 4345mfp is equipped with a hard-disk drive, all **Job Storage** options are available (**Proof and Hold**, **Private Job**, **Quick Copy**, and **Stored Job**). If your HP LaserJet 4345mfp is *not* equipped with a hard-disk drive, but has a minimum of 288 MB of memory, the **Proof and Hold** and **Private Job** options are available.

Properties driver tabs

In Windows NT 4.0, click **Start**, select **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties** to gain access to all **Properties** print-driver tabs. The following **Properties** print-driver tabs are available in Windows NT 4.0:

- **General**
- **Ports**
- **Scheduling**
- **Sharing**
- **Security**
- **Device Setting**

NOTE Only the **Device Setting** tab is described in this guide.

Access to print-driver settings in Windows 98 and Windows Me

In Windows 98 and Windows Me, click **Start**, click **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties** to gain access to all print-driver tabs.

PS 3 emulation support for the HP LaserJet 4345mfp

A set of 92 postscript soft fonts is included with the printing-system software. If you want to permanently install the fonts in the product, postscript fonts are also available from HP in an optional font DIMM. The PS emulation maintains full compatibility with Adobe PostScript when PostScript fonts are purchased from Adobe.

Users of Adobe-licensed programs might also have the right to use the Adobe PostScript print drivers from Adobe with the HP LaserJet PostScript 3 emulation PPD, which is available on the HP LaserJet 4345mfp software CD or from the HP Web site. When using the Adobe PostScript print driver, users must comply with all Adobe licensing agreements, as stated on the Adobe Web site at www.adobe.com/support/downloads/license.html.

See the Font support section of this guide for a list of the additional fonts.

Help system

The PS Emulation Driver includes the following Help systems to provide assistance with printing and configuration options.

NOTE Bubble Help, a feature of HP traditional PCL drivers, is not available in the PS Emulation Driver.

What's this Help

In Windows 98, Windows Me, and Windows NT 4.0, What's this? Help is supported. You can gain access to What's this? Help messages in any of the following ways:

- Right-click a control and then click **What's this?**. A pop-up Help window appears.
- Click the **?** button at the upper-right corner of the frame, next to the X, to change the cursor to an arrow with a question mark. When you use this special cursor to select a control, the pop-up Help window for that feature appears.
- Press the F1 key, and the Help window for the currently selected control appears.

Context-sensitive Help

When you press the **Help** button on a driver tab or in a dialog box, a context-sensitive Help message appears.

Page Setup tab features

The **Page Setup** tab controls media and finishing options for the HP PS Emulation Driver. The following illustration shows the **Page Setup** tab.

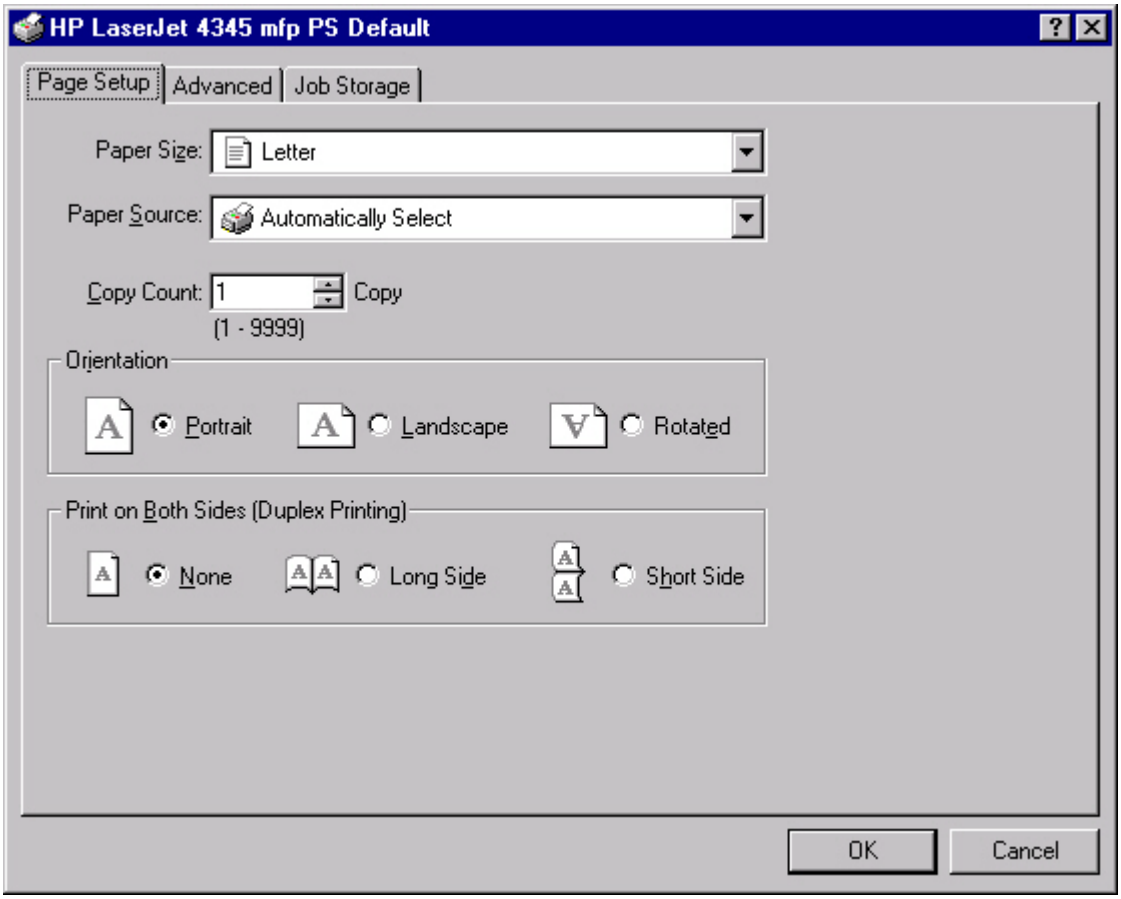

Figure 3-27 **Page Setup** tab

The **Page Setup** tab contains the following controls:

- **Paper Size** drop-down menu. Click this to specify the media size (form). The list of available forms matches those that the product supports.
- **Paper Source** drop-down menu. Use these settings to select a tray. The default setting is **Automatically Select**.
- **Copy Count** spin box. Use this box to specify the number of copies.
- **Orientation** group box. The settings in this group box specify how the document is positioned on the page.
- **Print on Both Sides (Duplex Printing)** group box. The settings in this group box specify whether or not the print job is double-sided. It only appears if the duplexer is installed.

Advanced tab features

The **Advanced** tab controls the settings for output, graphics, and product features. The following illustration shows the **Advanced** tab.

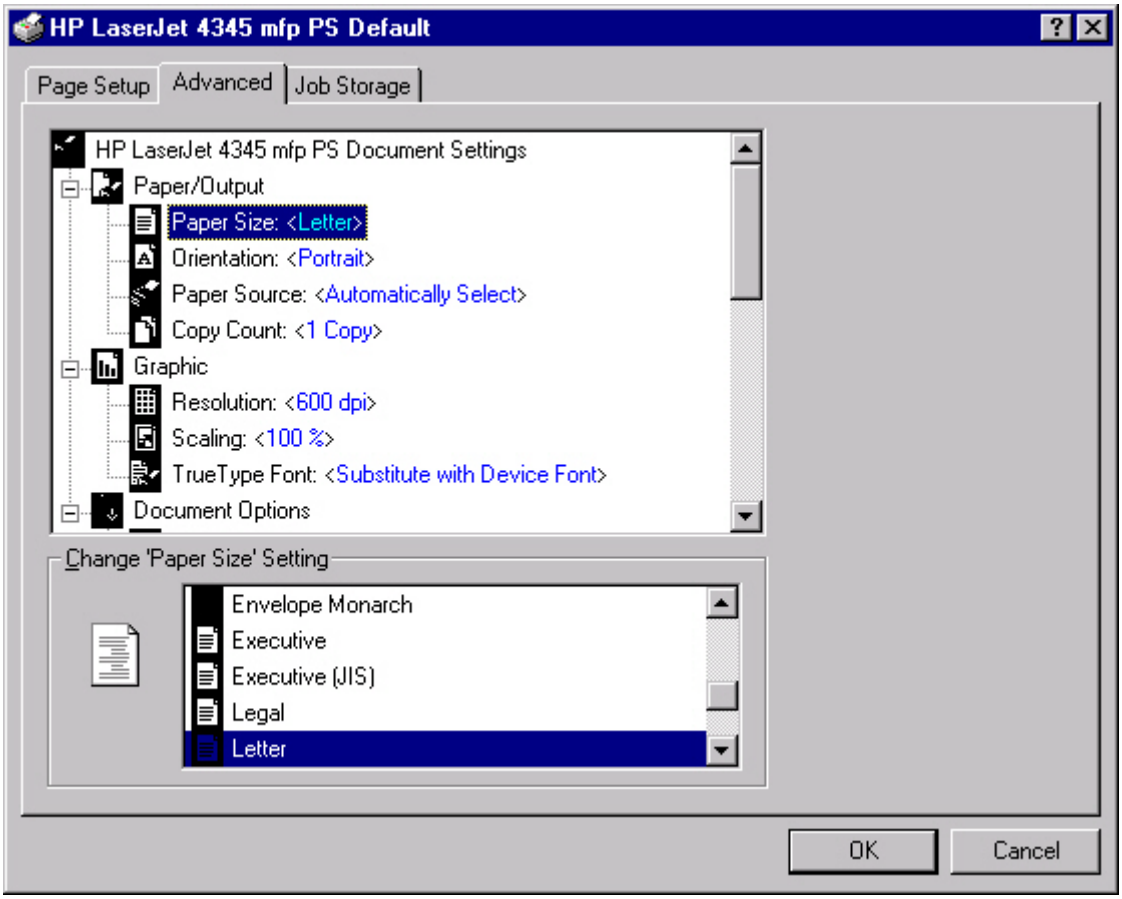

Figure 3-28 **Advanced** tab

The **Advanced** tab contains the following controls:

- **Paper/Output** settings (advanced control over the options that are available on the **Page Setup** tab)
- **Graphic** drop-down menu (including resolution, scaling, and TrueType font controls)
- **Document Options** drop-down menu (including product features and postscript options)

Paper/Output

The following are the **Paper/Output** settings:

- **Paper Size**
- **Orientation**
- **Paper Source**
- **Copy Count**

These settings are also available on the **Page Setup** tab. For more information, see Page Setup tab features.

Graphic

The following are the **Graphic** settings:

- **Resolution**. Resolution refers to the number of dots per inch (dpi) used to print the page. As resolution is increased, the quality (clarity and visual appeal) of print on the page is improved. The default setting is **600 dpi**.
- **Scaling**. Use this setting to reduce or enlarge documents by a specified percentage. When you enlarge a document, only the portion of the document that fits on the page will print. The default setting is **100%**.
- **TrueType Font**. The default setting is **Substitute with Device Font**. The other available setting is **Download as Softfont**. Use this setting when your document has overlapping text and graphics.

Document Options

The following are the **Document Options** settings:

- **Page Layout (N-up) Option**
- **PostScript Options**
- **Printer features**

Page Layout Option

The **Page Layout (N-up) Option** specifies whether the N-up printing feature is enabled. The following settings are available:

- **Normal (One-up)**. This is the default setting.
- **Two-up (1x2)**. The print job prints two pages per sheet.
- **Four-up (2x2)**. The print job prints four pages per sheet.
- **Six-up (2x3)**. The print job prints six pages per sheet.
- **Nine-up (3x3)**. The print job prints nine pages per sheet.
- **Sixteen-up (4x4)**. The print job prints 16 pages per sheet.

PostScript Options

The following are the settings for **PostScript Options**:

- **PostScript Output Options** provides the following settings:
  - **Optimize for Speed**. This is the default setting.
  - **Optimize for Portability**. Use this setting to create a file that conforms to the Adobe Document Structuring Conventions (ADSC). Each page of the document will be a self-contained object. This is useful, for instance, if you want to create a PostScript file and print it on a different product.
  - **Encapsulated PostScript (EPS)**. Use this setting to include the file as an image in another document that is to be printed from a different program.
  - **Archive Format**. Use this setting to create a PostScript file that you can use later.
- **TrueType Font Download Option** offers the following settings:
  - **Automatic (default)**
  - **Outline**
  - **Bitmap**
  - **Native TrueType**
- The **PostScript Language Level** specifies which PostScript language level to use, from 1 to the highest level that your product supports. Some products support multiple levels. It is usually best to select the highest level that is available, because a higher language-level provides more features. In some instances, however, you would still use level 1. For example, if you are printing a file to disk and that file will be printed by someone who has a level-1 printer, you would need to select level 1. The **PostScript Language Level** spin box offers settings **1** through **3**.
- **Send PostScript Error Handler** specifies whether a PostScript error handler message is sent. If you want the product to print an error page when an error occurs in the print job, click **Yes**.
- **Mirrored Output** specifies mirrored print output. Click **Yes** to print a mirror image of your document by reversing the horizontal coordinates.
- **Negative Output** specifies print output similar to a film negative . Click **Yes** to print a negative of the image by reversing the values for black and white.

Printer Features

The following **Printer Features** options are available:

- **Output Bin**
  - Automatically Select
  - Standard Left Bin
  - Stacker Bin
- **Stapling Options**
  - None
  - One Staple Angled (max 15 sheets) Portrait
  - One Staple Angled (max 15 sheets) Landscape
- **Watermark**. The following settings are available:
  - None (default)
  - Draft
  - Company Confidential
  - Company Proprietary
  - Company Private
  - Confidential
  - Copy
  - Copyright
  - File Copy
  - Final
  - For Internal Use Only
  - Preliminary
  - Proof
  - Review Copy
  - Sample
  - Top Secret
  - Urgent
  - Custom

- **Watermark (Pages per Sheet)**
  - 1 (default)
  - >= 2
- **Watermark Font**
  - Courier Bold
  - Helvetica Bold (default)
  - Times Bold
- **Watermark Size**. Settings for the watermark size range from 24 points to 90 points. 48 points is the default.
- **Watermark Angle**. Settings for the watermark angle range from 90 degrees to -90 degrees in 15-degree intervals. A 45-degree angle is the default.
- **Watermark Style**
  - Narrow Outline
  - Medium Outline (default)
  - Wide Outline
  - Wide Halo Outline
  - Filled
- **Print Watermark**
  - No (default)
  - All Pages
  - First Page Only
- **Collate**
  - On (turn off in application)
  - Off (default)

- **Economode**
  - False (default)
  - True
- **Fit to Page**
  - Prompt User (default)
  - Nearest Size and Scale
  - Nearest Size and Crop
  - Letter
  - A4

Job Storage tab features

Use the Job Storage feature to store print jobs in the HP LaserJet 4345mfp memory for printing at a later time. These job-storage features are described in the following sections.

The **Job Storage** tab appears among the driver tabs *only* if Job Storage is enabled. To support job-storage features for complex jobs, or if you often print complex graphics, print postscript (.PS) documents, or use many downloaded fonts, HP recommends that you install additional memory, install a hard disk, or both. Added memory also gives you more flexibility in supporting job-storage features. A minimum total memory of 288 MB is required to use job-storage features.

After a hard disk or additional memory is installed, the driver must be configured to reflect the changes in the product.

Bidirectional communication is not supported in Windows 98, Windows Me, or Windows NT 4.0, the operating environments that support the PS Emulation Driver. The driver must therefore be updated manually.

To configure the driver manually after installing a hard disk or additional memory, follow these steps:

1. Click **Start**, select **Settings**, and then click **Printers**.
2. Right-click the product name, click **Properties**, and then click the **Device Settings** tab.
3. If additional memory has been installed, select **Printer Memory:** under **Installable Options**, and then select the option that matches the total amount of memory installed.
4. If a hard disk has been installed, select **Printer Hard Disk:** under **Installable Options**, and then select **Installed** in the **Change 'Printer Hard Disk' Setting** dialog box that appears.
5. Click **OK** to make the printer hard disk and job-storage features available.

NOTE You can disable Job Storage while leaving the product hard disk enabled. To disable Job Storage, click **Start**, select **Settings**, and then click **Printers**. Right-click the product name, click **Properties**, click the **Device Settings** tab, select **Job Storage:**, and then select **Disabled** in the **Change 'Job Storage' Setting** dialog box that appears. When Job Storage is disabled, the **Job Storage** driver tab is not visible.

Job Storage tab

The following illustration shows the **Job Storage** tab.

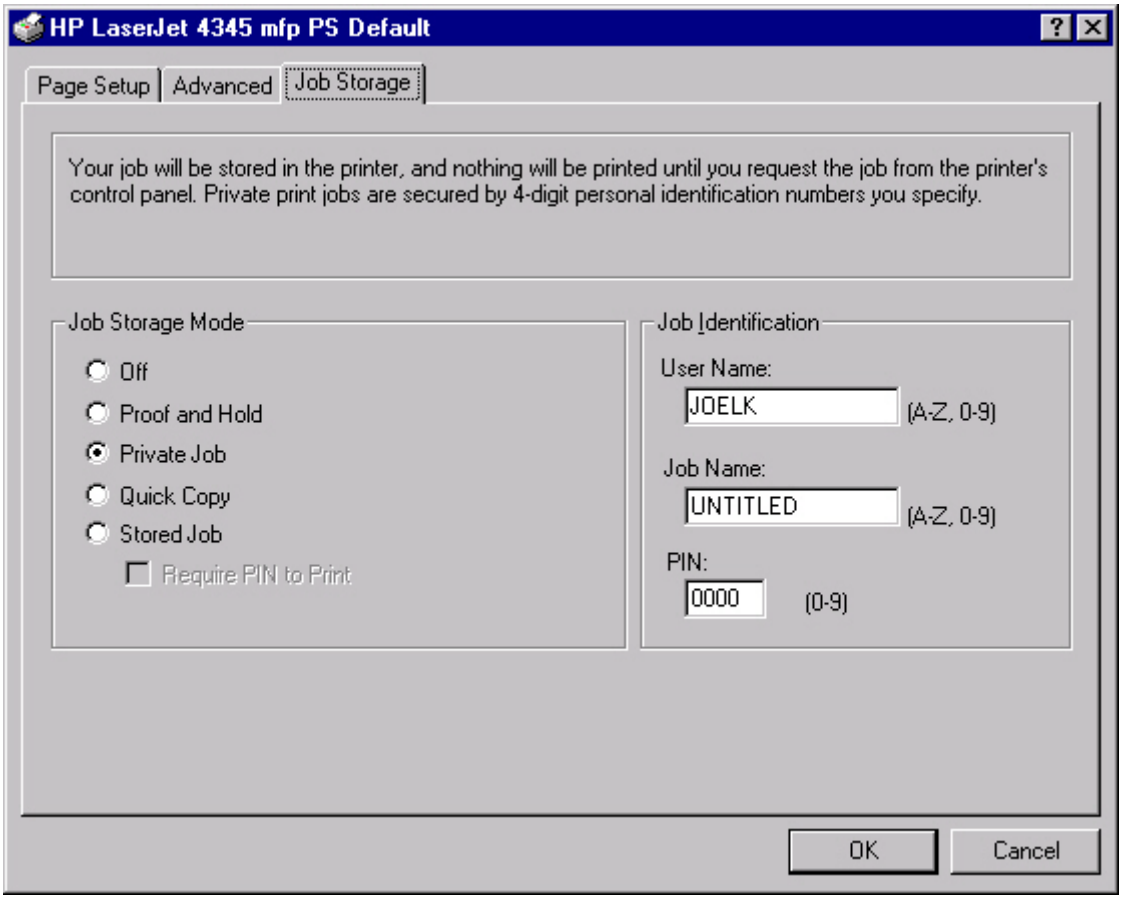

Figure 3-29 **Job Storage** tab

The **Job Storage** tab contains the following controls:

- Status group box (unlabeled)
- **Job Storage Mode** group box
- **Job Identification** group box

Status group box

The unlabeled group box on the **Job Storage** tab contains a status message about the destination of a print job. The status information changes depending on the selections that are made on the **Job Storage** tab.

Job Storage Mode

Use the **Job Storage Mode** options on the HP LaserJet 4345mfp to store documents at the product and then control their printing at the product control panel. This feature is intended to provide greater flexibility, convenience, security, and cost savings.

The HP LaserJet 4345mfp offers the following **Job Storage Mode** options:

- **Off**
- **Proof and Hold**
- **Private Job**
- **Quick Copy**
- **Stored Job**
  - **Require PIN to Print** (available when **Stored Job** is selected)

These options and the settings that control them are described below.

Off

When selected, this option turns the **Job Storage** feature off (it is disabled), which means that the print job will not be stored in the product.

Proof and Hold

To use the **Proof and Hold** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When selected, this option stores the print job in memory and prints only the first copy of the job, allowing you to check the first copy. If the document prints correctly, you can print the remaining copies of the print job at the control panel. You can set the number of proof-and-hold print jobs that can be stored in the product at the control panel.

After it is released for printing, the proof-and-hold job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. If you send a second proof-and-hold job to the product with the same user name and job name as an existing proof-and-hold job (and you have not released the original job for printing), the job will overwrite the existing job. Proof-and-hold jobs are deleted if you turn off the product.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document. Also, a document that has the same user and job name as one that is already stored on the hard disk will overwrite the existing document.

Private Job

To use the **Private Job** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Private Job**, the print job is sent to the product, but is not printed until you request the job at the product control panel. Selecting **Private Job** activates the **PIN** group box. The print job can be printed only after you type the correct PIN at the control panel. After the job is printed, the job is deleted from the product. This feature is useful when you are printing sensitive or confidential documents that you do not want to leave in an output bin after printing.

After it is released for printing, the private job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. If you send a second private job hat has the same user name and job name as an existing private job (and you have not released the

original job for printing), the job will overwrite the existing job, regardless of the PIN. Private jobs are deleted if you turn off the product.

Using a PIN for Private Job

The **Private Job** option can be secured by a four-digit personal identification number (PIN). You must type in this number at the product control panel before the product can print the job.

The group box labeled **Job Identification** is usually inactive. It becomes active when you select the **Private Job** option.

The Private Job/PIN coupling has a PIN restriction of four ASCII numeric characters (0 though 9). If you type non-numeric characters, they are removed immediately. If you type more than four characters, the characters past the fourth are truncated. The field temporarily accepts fewer than four digits in the string, but when the edit field loses focus, the zeroes pad the left end until the PIN contains exactly four digits. The default initialized value for the PIN is 0000 for **Private Job**.

Quick Copy

To use the **Quick Copy** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Quick Copy**, the entire print job prints and a copy of the print job is stored on the product, after which you can print additional copies of the print job at the product control panel. The number of quick-copy print jobs that can be stored in the product is set by using the product control panel.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document. Also, a document that has the same user and job name as one that is already stored on the hard disk will overwrite the existing document. **Quick Copy** jobs are deleted if you turn off the product.

Stored Job

To use the **Stored Job** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

Use the **Stored Job** option to send a print job directly to the product hard disk without printing it. The print job is stored in the product as if it is an electronic file cabinet. After the print job is stored on the product hard disk, you can print the job at the product control panel.

The job remains stored in the product until it is deleted or overwritten by a document that has the same user and job names. Stored jobs remain on the product hard disk when the product is turned off. Use this feature for forms and other common or shared documents.

A stored job can be managed in two ways: as either a private or a public job. Use a private stored job to send a print job directly to the product, which can then be printed only after you type in a PIN at the product control panel. (You can set the PIN in the **Job Identification** group box.) After the job is printed, the job remains in the product and can be printed again at the product control panel. The private mode is initiated by selecting the **Require PIN to Print** check box. In this mode, a PIN that is typed at the product control panel is required in order to release the job.

The box labeled **PIN** is usually inactive. The **Require PIN to Print** option becomes available when you select **Stored Job**. If you select the **Require PIN to Print** check box, you must type a PIN to make the stored job private.

NOTE A private stored job is not the same as a private job (see above). *Private* jobs are deleted from the product after they are printed. *Private stored* jobs are retained in the product after printing, but require that a PIN be typed each time they are printed.

Job Identification

The **Job Identification** group box contains the following controls:

- **User Name** text box
- **Job Name** text box
- **PIN** text box

User Name

Use the **User Name** text box to help identify the job at the product control panel. The Windows user name automatically appears in the **User Name** text box. To enter a custom user name, type the custom user name in the text box. The **User Name** text box can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

Job Name

Use the **Job Name** text box to specify a name to identify the job at the product control panel. This text box uses **UNTITLED** as the default job name associated with the stored print job. The file name of the print job is used if it is available to the print driver. Otherwise, the software program name or a time stamp is used for the job name. To enter a custom name, type the custom job name in the text box. The **Job Name** text box can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

When the dialog box is closed, or as soon as the focus is removed from the control (that is, when the Tab key is pressed or another control is selected), an empty string is replaced with **UNTITLED**. In those languages for which **UNTITLED** cannot be translated without the use of invalid characters, the driver uses a string of three dashes. The acceptable characters for job name and user name vary for each operating system. The string must be of a length and type that can appear on the product control-panel display.

PIN

The box labeled **PIN** is usually inactive. The **Require PIN to Print** option is activated if you select either of the following options:

- Select **Private Job**. If selected, you must type in the PIN number at the product control panel in order to make the job print. For more information, see Using a PIN for Private Job.
- Select **Stored Job**, and then select the **Require PIN to Print** check box. If the **Require PIN to Print** check box is selected, you must type a PIN in order to make the stored job private. For more information, see Stored Job.

Using Job Storage features when printing

To use Job Storage features when printing, follow these steps:

1. Click **File** and then click **Print** from the software program. The **Print** dialog box appears.

   NOTE Clicking the print icon in the software program toolbar prints the job without using Job Storage features.

2. Click **Properties**. The **Properties** dialog box appears.
3. Click the **Job Storage** tab.
4. Select the Job Storage options (described previously) by clicking the appropriate option button, and then complete any required fields.
5. Click **OK**.
6. Click **OK**. The Job Storage Identification dialog box appears.
7. Click **OK**.

Releasing a Job Storage print job

After you send a print job that uses the **Job Storage** feature, you can release the job to print by using the product control panel.

1. Press MENU to open the menus.
2. Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.
3. Touch the appropriate user name and a list of stored jobs for that user appears.
4. Touch the Job Name, and then touch **PRINT**.
5. If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.
6. Select the number of copies to print.
7. Touch **OK** to print the job.

Deleting a Job Storage print job

Sometimes it is necessary to delete a print job from the product hard disk. You can do this from the product control panel.

1. Press MENU to open the menus.
2. Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.
3. Touch the appropriate user name and a list of stored jobs for that user appears.
4. Scroll to the Job Name, and then touch **DELETE**.
5. If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.
6. Touch **DELETE**.
7. Touch **YES** to delete the job.

Device Settings tab

The **Device Settings** tab is in the **Properties** for the print driver in Windows NT 4.0. In Windows 98 and Windows Me, a tab with similar options and settings is called the **Device Options** tab.

To gain access to the print driver **Properties**, click **Start** on the Window task bar, select **Settings**, and then click **Printers**. Right-click the product name, and then click **Properties**.

The **Device Settings** tab communicates information about the hardware configuration to the print driver. The **Device Settings** tab appears when you open the driver from the **Printers** folder by selecting and right-clicking the printer, and then clicking **Properties** for the driver. When the driver is opened from within a software program, the **Configure** tab is not visible.

When opened from the **Printers** folder, the **Device Settings** tab appears, as shown in the following illustration.

NOTE The illustration below shows the **Device Settings** tab in Windows NT 4.0. The appearance of the equivalent tab in Windows 98 follows this illustration.

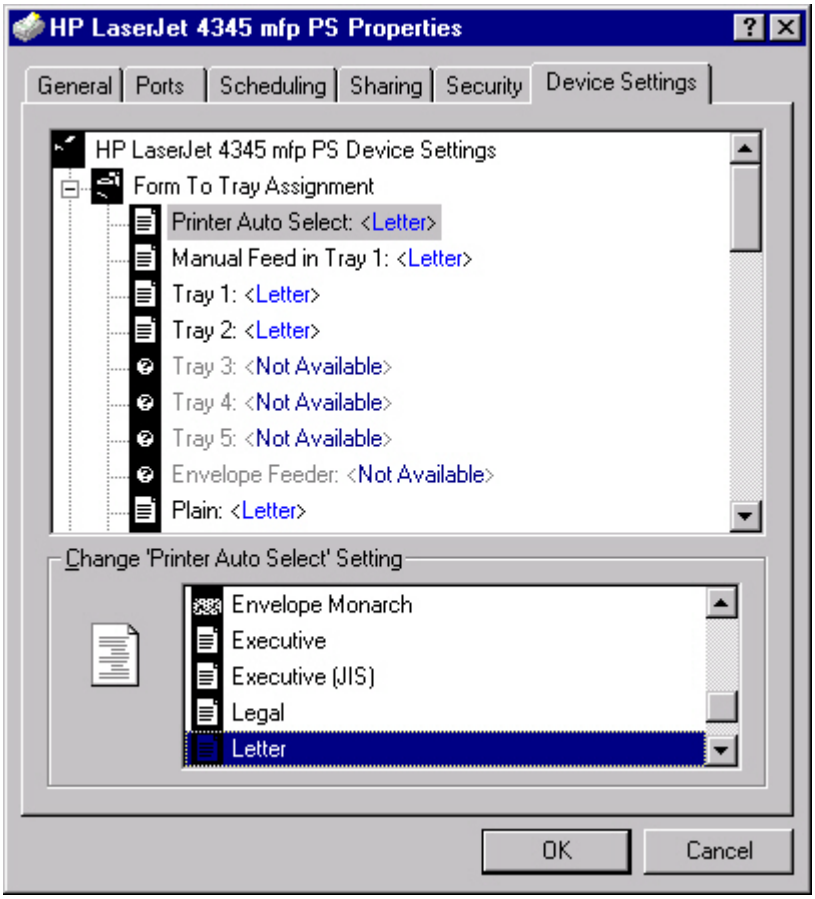

Figure 3-30 **Device Settings** tab in Windows NT 4.0

The following illustration shows the **Device Options** tab in Windows 98.

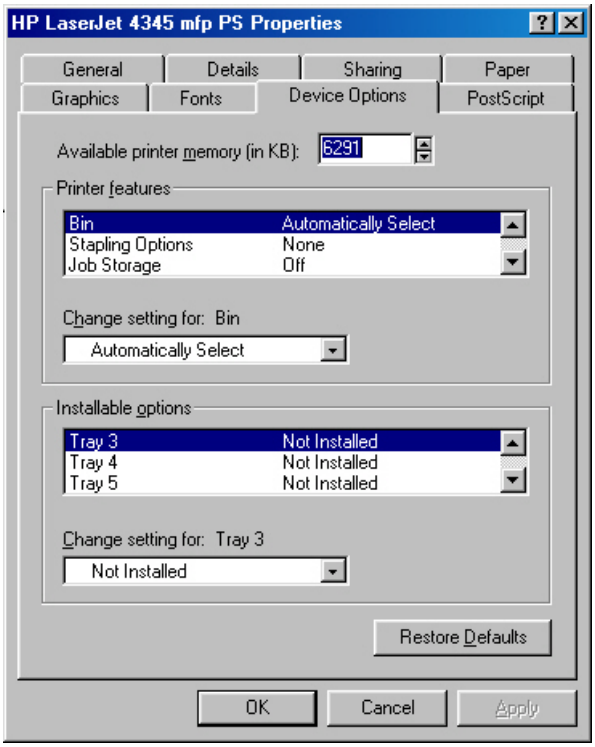

Figure 3-31 **Device Options** tab in Windows 98

NOTE Changes that you make to the **Device Settings** tab are not reflected in the **Document Defaults** settings until the modified device settings have been applied. For example, the duplexing unit will not appear until you modify the **Configure** tab, apply the settings, and then re-open **Document Defaults**.

The **Device Settings** tab contains the following options:

- **Form to Tray Assignment**
- **Font Substitution Table**
- **PostScript Configure**
- **Installable Options**

Form to Tray Assignment

Many products support more than one source of media, such as upper and lower trays. You can assign a form (which defines the media size and margins) to each of your product media sources. When a form is matched to a source, you can select the form when you print from your software programs. The product prints from the tray to which that form is assigned.

Network administrators can use the **Form to Tray Assignment** setting to specify, in the driver, the media size that is loaded into each available tray. The use of forms constrains the choices that are available in the media-size list on the **Advanced** tab in the **Document Defaults** driver tabs. This constraint prevents (or reduces the likelihood of) tying up the printer with media-mount messages that occur when users request sizes or types that are not available.

The trays listed in the **Form to Tray Assignment** setting include standard trays and optional accessory trays. Generally, items that are installed separately have a separate **Installable Options** setting. For example, for the HP LaserJet 4345mfp, trays 3, 4 and 5 are listed in both the **Form to Tray Assignment** setting and the **Installable Options** setting.

The trays listed here are also listed as media sources on the **Page Setup** tab.

Font Substitution Table

Clicking this option opens the font substitution table and makes available the options for changing the TrueType-to-PostScript font mapping.

Postscript Configure

The following controls are available in the Postscript section of the PS Emulation Driver **Device Settings** tab.

Available PostScript Memory

This control specifies the amount of available postscript memory and provides a spin box for changing this value. The available postscript memory is a subset of the product total physical memory. It is usually best to set the postscript memory to match what is shown on the configuration page. To print a configuration page, follow these steps:

1. Press MENU.
2. Touch **INFORMATION**.
3. Scroll to, and then touch **PRINT CONFIGURATION**. The configuration page and the EIO Jetdirect page automatically print.

Output Protocol

This control specifies the protocol that the product uses for print jobs. The following options are available:

- **ASCII** (default)
- **TBCP**
- **Binary**

When you click **ASCII**, data is sent in ASCII format (7-bit), which might take longer to print but can be sent through any I/O channel, such as a serial, parallel, or network port.

When you click **TBCP** (Tagged Binary Communications Protocol), all data except special control characters is sent in binary (8-bit) format. The binary formats can be sent over parallel or serial communications ports and are faster than sending data in ASCII format.

When you click **Binary**, all data except special control characters is sent in binary (8-bit) format. The binary formats can be sent over parallel or serial communications ports and are faster than sending data in ASCII format.

Send Ctrl-D Before Each Job

This control specifies whether the product will be reset at the beginning of every postscript document. The default setting is **No**. Ctrl-D resets the product to its default setting to ensure that previous print jobs do not affect the current print job. Ctrl-D might cause a print job to fail if the

product is connected through a network. If your document fails to print when sent to a product connected through parallel or serial ports, change **No** to **Yes**.

Send Ctrl-D After Each Job

This control specifies whether the product will be reset at the end of every postscript document. The default setting is **Yes**. Ctrl-D resets the product to its default setting to ensure that future print jobs are not affected by the current print job. Ctrl-D might cause a print job to fail if the product is connected through a network. If your document fails to print when sent to a network printer, change **Yes** to **No**.

Job Timeout

This control specifies how long the document can take to get from the computer to the product before the product stops trying to print the document. If you specify **0 seconds**, the product continues trying to print indefinitely. The default setting is **0 seconds**. You can use the spin box to change this value to a maximum of **32,767 seconds**.

Wait Timeout

This control specifies how long the product waits to get more postscript information from the computer. After the specified time passes, the product stops trying to print the document and prints an error message. If you are trying to print a very complicated document, you might want to increase this value. If you specify **0 seconds**, the product waits indefinitely. The default setting is **300 seconds**. You can use the spin box to change this value to a maximum of **32,767 seconds**.

Minimum Font Size to Download as Outline

This control specifies the minimum font size (in pixels) for which the driver downloads TrueType fonts as outline (Type 1) fonts. A font smaller than the minimum setting is downloaded as a bitmap (Type 3) font. Use this option to fine-tune the **Automatic** setting for the **TrueType Font Download** option on the **Advanced** tab in **Document Defaults**. The default setting is **100** pixels. You can use the spin box to change this value to a maximum of **32,767** pixels.

Maximum Font Size to Download as Outline

This control specifies the maximum font size (in pixels) for which the driver will download TrueType fonts as bitmap (Type 3) fonts. A font larger than the maximum setting will be downloaded as an outline (Type 1) font. Use this option to fine-tune the **Automatic** setting or override the **Send TrueType as Bitmap** setting for the **TrueType Font Download** option on the **Advanced** tab in **Document Defaults**. The default setting is **600** pixels. You can use the spin box to change this value to a maximum of **32,767** pixels.

Installable Options

This section provides information to configure the printing options that you can install for the HP LaserJet 4345mfp. The following controls are available:

- **Tray 3**
- **Tray 4**
- **Tray 5**
- **Duplex Unit** (for 2-sided Printing)

- **Envelope Feeder**
- **Printer Hard Disk**
- **Mopier Mode**
- **Job Storage**
- **Accessory Output Bin**
- **Printer Memory**

Tray 3

This control specifies whether you have **Tray 3**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 3**, you must change this setting to **Tray 3 (500-sheet)**.

Tray 4

This control specifies whether you have **Tray 4**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 4**, you must change this setting to **Tray 4 (500-sheet)**.

Tray 5

This control specifies whether you have **Tray 5**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 5**, you must change this setting to **Tray 5 (500-sheet)**.

Duplex Unit (for 2-sided Printing)

The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and HP LaserJet 4345xm mfp models are equipped with automatic 2-sided printing (duplexing), which allows you to print on both sides of supported media. Automatic 2-sided printing is not supported for certain media types, including transparencies, labels, envelopes, and cardstock.

NOTE The HP LaserJet 4345mfp printer supports smart duplexing. The product uses the smart duplexing feature to detect information on both sides of the print job pages and only runs the pages through the duplexing unit if there is printable information on the second side of the page.

Envelope Feeder

The two selections for this option are **Installed** and **Not Installed**. If your HP LaserJet 4345mfp is equipped with an optional envelope feeder accessory the **Installed** option should be selected.

Printer Hard Disk

When this option is enabled, the **Stored Job** option and the **Mopier Mode** are enabled in the print driver. Use the **Stored Job** option to store print jobs and then print them later from the control panel. The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job.

Mopier Mode

The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job. Multiple-original printing (mopying) increases performance and reduces network traffic by transmitting the job to the product once, and then storing it on the hard disk. The remainder of the copies are printed at the fastest speed. All documents that are printed in mopier mode can be created, controlled, managed, and finished from the computer, which eliminates the extra step of using a photocopier.

The HP LaserJet 4345mfp supports the transmit-once mopying feature when the product has an installed hard disk or a minimum total memory of 288 MB, and the **Mopier Mode:** setting on the **Device Settings** tab is **Enabled**.

Job Storage

If your HP LaserJet 4345mfp is equipped with a hard disk drive, the **Job Storage** option should be enabled and all job storage options are available. If your HP LaserJet 4345mfp is *not* equipped with a hard disk drive but has a minimum of 48 MB of memory, limited job-storage options are available. When job storage is enabled, the product can store print jobs so that you can gain access to those print jobs later at the control panel.

Accessory Output Bin

The options for Accessory Output Bin are **Not Installed**, **HP 500-Sheet Stapler/Stacker**, **HP 3-Bin Mailbox - Mailbox Mode**, **HP 3-Bin Mailbox - Stacker Mode**, and **HP 3-Bin Mailbox - Function Separator**. If your HP LaserJet 4345mfp is equipped with one of these accessories, select the appropriate option.

Printer Memory

This option matches the setting to the amount of memory that is installed in the product. The driver generates ranges of memory that can be selected, up to the maximum that the product can accept. The driver can use this information to manage how the print driver uses the product memory.

When a minimum total memory of 48 MB is installed, **Job Storage** options and the **Mopier Mode** are enabled in the print driver. The **Job Storage** options allows you to store print jobs, and then print them later from the control panel. The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job.

4 HP PCL 6, HP PCL 5, and HP PS 3 emulation unidrivers for Windows

Introduction

This chapter describes the features of the HP LaserJet 4345mfp unidrivers. The unidrivers are the HP PCL 6 Unidriver, the HP PCL 5 Unidriver, and the HP Postscript 3 Emulation Unidriver (the HP PS Emulation Unidriver) for Windows 2000, Windows XP, and Windows Server 2003.

You can control print jobs from several places: the product control panel, the software program, and the driver user interface. Generally, for features that are common to two or more of these places (for instance, you can select the media input tray from any of them), settings that are established in the software program take precedence over print-driver settings. Print-driver settings override product control-panel settings.

HP PCL 6, HP PCL 5, and PS Emulation Unidriver features

NOTE For a comparison of features between the HP unidrivers and HP traditional print drivers in various operating systems, see the Driver-feature comparison in various operating systems section of this guide.

When you install the print-system software in Windows 2000, Windows XP, and Windows Server 2003, the HP PCL 6 Unidriver is installed by default. The HP PS Emulation Unidriver can be installed by performing a Custom Installation. The HP PCL 5 Unidriver can only be installed by using the Add Printer installation method.

The following sections describe the options that are available on each tab of the HP PCL 6, the HP PCL 5, and the HP PS Emulation Unidriver interface.

The sections also describe differences among the HP PCL 6, the HP PCL 5, and the HP PS Emulation Unidriver.

This section contains information about the following topics:

- Access to print drivers
- Help system
- Advanced tab features
- Paper/Quality tab features
- Effects tab features
- Finishing tab features
- Output tab features
- Job Storage tab features
- Services tab features
- Properties tabs

Access to print drivers

To gain access to driver settings from within most software programs, click **File**, click **Print**, and then click **Properties**. The appearance and names of the driver tabs can vary, depending on the operating system. These settings apply only while that software program is open.

You can also control the drivers directly from the Printers folder. These settings change the default settings that are used across all software programs. To gain access to the Printers folder, click **Start**, select **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Windows Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home). Right-click the product name, and then click **Printing Preferences** to gain access to the same set of driver tabs that the software program controls.

NOTE If your HP LaserJet 4345mfp is equipped with a hard-disk drive, all **Job Storage** options are available (**Proof and Hold**, **Private Job**, **Quick Copy**, and **Stored Job**). If your HP LaserJet 4345mfp is *not* equipped with a hard-disk drive, but has a minimum of 48 MB of memory, the **Proof and Hold** and **Private Job** options are available.

If, after right-clicking the product name, you click **Properties**, you gain access to a different set of tabs that control the driver behavior and driver connections.

Help system

The HP PCL 6 Unidriver, the HP PCL 5 Unidriver, and the HP PS Emulation Unidriver include a full-featured Help system to provide assistance with printing and configuration options.

NOTE Bubble Help, a feature of HP Traditional PCL 6 and HP traditional PCL 5 drivers, is not available in the HP PCL 6, PCL 5, and HP PS Emulation Unidrivers.

What's this? Help

Windows 2000, Windows XP, and Windows Server 2003 support "What's this?" Help. You can gain access to "What's this?" Help messages in any of the following ways:

- Right-click a control and then click **What's this?**. A pop-up Help window appears.
- Click the **?** button in the upper-right corner of the frame, next to the **X**, to change the cursor to an arrow with a question mark. When you use this special cursor to select a control, the pop-up Help window for that feature appears.
- Press the F1 key, and the Help window for the currently selected control appears.

Context-sensitive Help

When you click the **Help** button on a driver tab or in a dialog box, a context-sensitive Help message appears.

Incompatible Print Settings messages

Incompatible print settings (constraint) messages are unsolicited messages that appear in response to specific actions that you take. These messages alert you that the selections are illogical or impossible given the capabilities of the product or the current settings of other controls.

NOTE Constraint messages are limited for HP unidrivers. The HP unidrivers accept some settings that are illogical or impossible for the printer to perform. If you try to print with incompatible settings, the printed documents might have unexpected results because the print driver did not provide feedback that the settings were incompatible. If print jobs do not print as expected, check the product documentation for the product capabilities.

In Windows 2000, Windows 2000, and Windows Server 2003 operating environments, some technically invalid print-driver configurations result in the appearance of warning messages. Printing on both sides, for instance, is not possible when the Envelope #10 media type is selected. The following illustration shows an **Incompatible Print Settings** message.

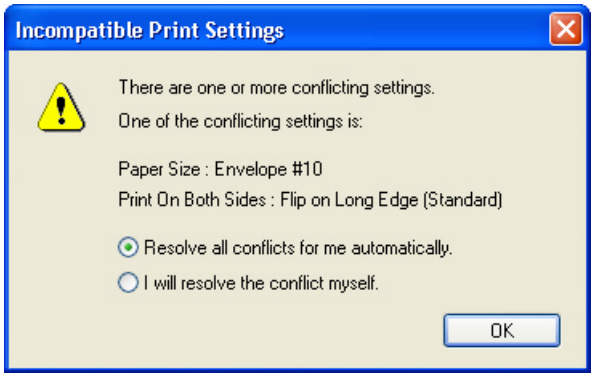

Figure 4-1 **Incompatible Print Settings** message

Clicking the **Resolve all conflicts for me automatically** option button and then clicking **OK** accepts the change that was just made, and the driver then resets the conflicting control to a setting that is compatible with the new value. If you want to keep the conflicting setting, click **I will resolve the conflict myself** and then click **OK**.

NOTE If you select the **Resolve all conflicts for me automatically** option, the settings that are selected by the driver to resolve the conflict may not correctly reflect the settings that you intended to use, and so you may get unexpected results. It is best if you try to resolve the conflict yourself.

Advanced tab features

You can use the **Advanced** tab to change the layout of printed pages. Use this tab to configure special controls that are not commonly used, as well as to control features such as media size and copies in the driver (although most current software programs support these features in the print dialog box or through the software-program page settings). The following illustration shows the **Advanced** tab.

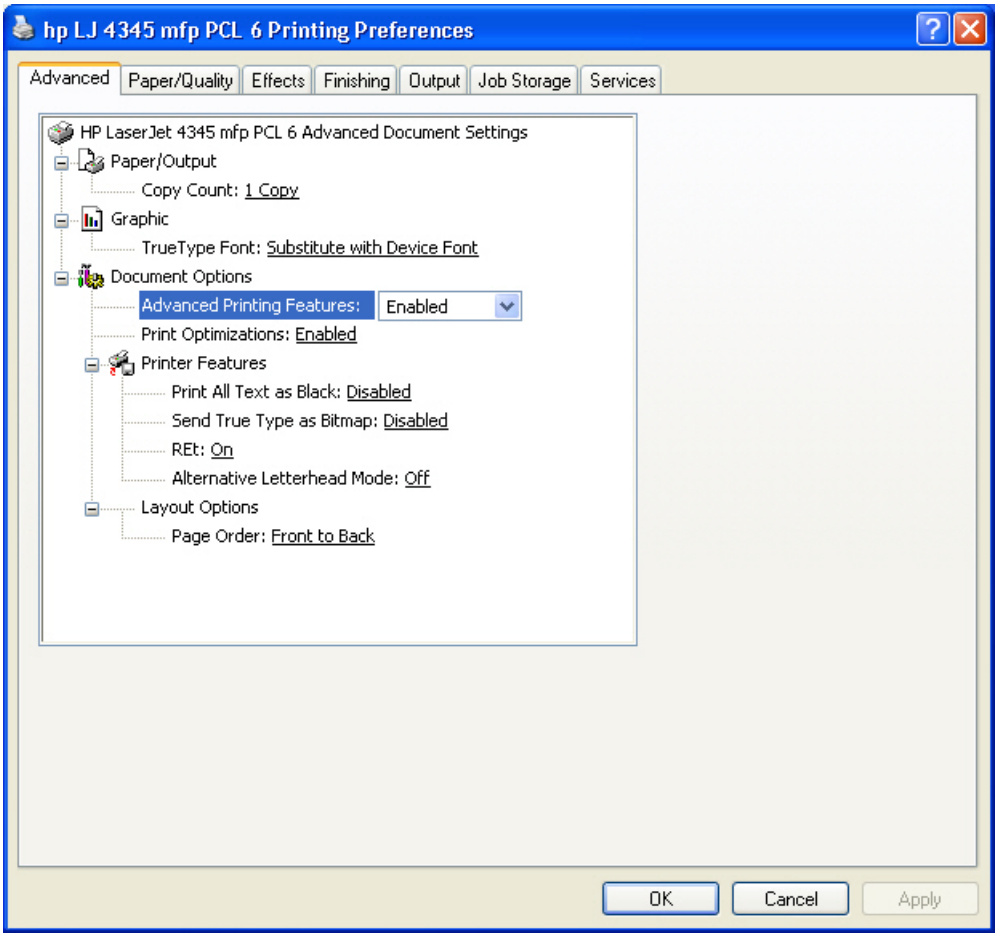

Figure 4-2 The default appearance of the **Advanced** tab

The **Advanced** tab contains the following controls:

- **Paper/Output** settings
- **Graphic** settings
- **Document Options** settings

Paper/Output

The **Paper/Output** settings contain the following controls:

- **Copy Count** setting
- **Collated** check box (appears when you select **Copy Count**)

Copy Count

This driver setting is useful for software programs that do not provide a copy count. If a copy count is available in the software program, set the copy count in the software program. **Copy Count** specifies the number of copies to print.

The number of copies that you request appears in the **Copy Count** option. You can select the number by typing in the box or by using the up and down arrows to the right of the text box. Valid entries are numbers from 1 to 9999 for the HP LaserJet 4345mfp. The copies value will not advance from the maximum number (9999) to 1 when the up arrow is used, or change from 1 to the maximum number (9999) when the down arrow is used. When you click another group box or leave the **Advanced** tab, invalid entries into the edit box (such as non-numerical input, numbers less than 1, or numbers greater than the maximum allowed) are changed to the last valid value that appeared in the box. The default number of copies is 1.

Because you can set the number of copies that you want from some software programs, conflicts between the software program you are using and the driver can arise. In most cases, the software program and the driver communicate, so that the number of copies set in one location (such as the program) will appear in the other (such as the driver). For some programs, this communication does not take place, and the copies values are treated independently. For these programs, setting 10 copies in the program and then setting 10 copies in the driver will result in 100 copies (10 x 10) being printed. It is recommended that you set the number of copies in the program, wherever possible.

Collated

The **Collated** check box appears next to the **Copy Count** setting. The check box is selected, but is not available. It becomes available and can be changed when the **Copy Count** setting is greater than 1.

When collated, pages print consecutively for each copy of the document. When uncollated, copies of each page print together.

This setting is not synchronized with the collate setting in the software-program **Print** dialog box. Settings in the software program override settings in the print driver. For instance, when using Microsoft Word, the **Collate** check box in the **Print** dialog box is selected by default. However, in the print driver, the **Collated** check box in the **Advanced** tab is not selected by default. The software program setting takes precedence over the driver setting, and the printed output is collated by default. To obtain uncollated printed output, clear the **Collate** setting in both the driver and the software program. Similarly, if the **Collated** check box is selected in the driver, but the **Collate** setting is not enabled in the software program, the printed output is uncollated.

Graphic options

The **Graphic** section on the **Advanced** tab contains the **True Type Font** setting. The options for this setting are **Substitute with Device Font** and **Download as Softfont**. Select **Substitute with Device Font** (the default) to use equivalent printer fonts for printing documents that contain True Type fonts. This will permit faster printing; however, you might lose special characters that the printer font does not support. Select **Download as Softfont** to download True Type fonts for printing instead of using printer fonts.

Document Options

The **Document Options** settings contain the following controls:

- **Advanced Printing Features**
- **Print Optimizations**

Advanced Printing Features

When the **Advanced Printing Features** setting is **Enabled**, metafile spooling is turned on and **Finishing** tab options such as **Page Order**, **Booklet Layout**, and **Pages per Sheet** are available,

depending on your product. For normal printing, leave the **Advanced Printing Features** setting at the default (**Enabled**). If compatibility problems occur, you can disable the feature. However, some advanced printing features might still be available in the print driver, even though they have been disabled. If you select an advanced printing feature in the print driver that has been disabled on the **Advanced** tab, the feature is automatically re-enabled.

Print Optimizations

NOTE Print Optimization settings are available only in the HP PCL 6 and HP PCL 5 unidrivers. They are not available in the HP PS Emulation Unidriver.

The default setting for **Print Optimizations** is **Enabled**. When this feature is enabled and your document contains overlapping text and graphics, text placed on top of a graphic might not print correctly. If the printed output is not correct, you can disable this feature. When disabled, print optimization features, such as substituting device fonts for TrueType fonts and scanning for horizontal and vertical rules, are turned off.

Printer Features

The following **Printer Features** are available:

- **Print All Text as Black**
- **Send True Type as Bitmap** (HP PCL 6 and HP PCL 5 unidrivers only)
- **REt**

Print All Text as Black

The **Print All Text as Black** feature is **Disabled** by default. When **Enabled** is selected, the driver prints all text as black regardless of the original document text color. Color text is printed as black, except for white text, which remains white. (White text is a reliable method of printing reverse typeface against a dark background.) This setting does not affect graphic images on the page, nor does it affect any text that is part of a graphic.

Send TrueType as Bitmap

NOTE The **Send TrueType as Bitmap** option is available only in the HP PCL 6 and HP PCL 5 unidrivers. It is not available in the HP PS Emulation Unidriver.

Send True Type as Bitmap provides an alternative for those software programs that have trouble using TrueType fonts for special graphic purposes such as shading, rotation, or slanting. The setting is **Disabled** (off) by default. The TrueType fonts are first converted to bitmap soft fonts before downloading. The **Enabled** setting causes the driver to send TrueType fonts to the printer as outlines, which retains the standard format (outline) of the fonts.

REt

Resolution Enhancement technology (REt) refines the print quality of characters by smoothing out jagged edges that can occur on the angles and curves of a printed image. It is **On** by default. Select **Off** if graphics, particularly scanned images, are not printing clearly.

Alternative letterhead mode

Under normal operation, the product prints duplex jobs with a different orientation than single-sided jobs. This becomes a problem when printing on letterhead, because the user has to switch the orientation of the letterhead media if they need to go back and forth between duplex and single-sided jobs. Alternative letterhead mode solves this problem.

When this feature is selected, you can load letterhead or pre-printed mediain the same way for all print jobs, whether you are printing duplex or single-sided jobs. To use it, load the media as you would for a *duplex* letterhead job. (This is the exact opposite of how you would load the media for a single-sided letterhead job. See the User Guide for details.) If the product tray has an icon that indicates to load the media either face-up or face-down, load the media in the opposite direction from the orientation that is shown. When **Alternative Letterhead Mode** is on, both single-sided and double-sided jobs will print the correct way, without having to change the orientation of the letterhead or pre-printed media.

Graphics Mode

NOTE The **Graphics Mode** option is available only in the HP PCL 5 Unidriver. It is not available in the HP PCL 6 and HP PS Emulation Unidrivers.

Use the **Graphics Mode** feature to select one of the following settings:

- **Send Graphics as Vector**. Select this setting to send graphics to the product as a combination of HP Graphics Language, version 2 (HP-GL/2) and raster images. This setting might produce higher-quality output.
- **Send Graphics as Raster**. Select this setting to send all graphics to the product as images composed of individual dots. This setting might improve printing speed in some cases.

Layout Options

The **Layout Options** section contains the **Page Order** setting.

Page Order

Page Order specifies the order in which the pages of your document are printed. **Front to Back** prints the document so that page 1 prints first. **Back to Front** prints the document so that page 1 prints last. The **Back to Front** setting is useful if you are printing to a face-up output bin to achieve output in the correct order.

NOTE The page-ordering operation works on whole sheets of media rather than on individual logical pages. Accordingly, if you set **Pages per Sheet** (on the **Finishing** tab) to be greater than one, the ordering of logical pages on a physical sheet of media does not change.

Paper/Quality tab features

Use the **Paper/Quality** tab to specify the size, type, and source of the media. You can also use this tab to indicate different media-selection choices for the front cover, first page, other pages, last page, and back cover of the document. The following illustration shows the **Paper/Quality** tab.

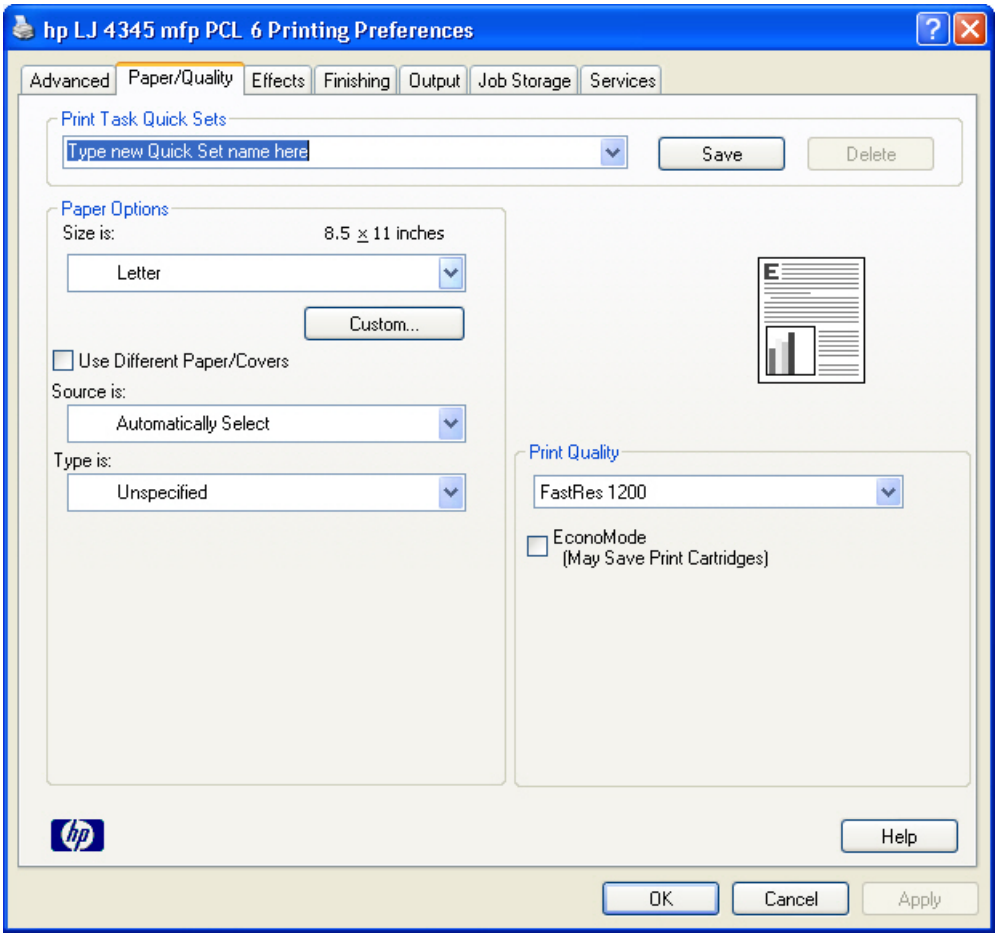

Figure 4-3 **Paper/Quality** tab

The **Paper/Quality** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Paper Options** group box
- Document preview image
- **Print Quality** group box

Print Task Quick Sets

The first group box in the upper portion of the **Paper/Quality** tab is **Print Task Quick Sets**. Any change to the **Print Task Quick Sets** group box that is made on the **Paper/Quality** tab affects most of the **Printing Preferences** driver tabs (the **Paper/Quality**, **Effects**, **Finishing**, **Output**, and **Job Storage** tabs) because they are all the same control.

Use the **Print Task Quick Sets** setting to store the current combination of driver settings that appear on all of the other print driver tabs (except the **Advanced** tab, where the setting is not available). **Print Task Quick Sets** are either preset by network-administrator settings or user-defined printing specifications (such as media size, pages per sheet, and so on). The **Print Task Quick Sets** control does *not* appear on the driver **Properties** tabs.

NOTE Administrators can predefine print task quick sets for their users. These administrator print task quick sets are defined on the server and are available to users, but usually cannot be modified by users. Users can also define print task quick sets for their own use. User-defined print task quick sets are described later in this section.

The following selections are available in the **Print Task Quick Sets** drop-down menu:

- **Default Print Settings**
- **User Guide Print Settings**

Default Print Settings

When you select **Default Print Settings**, nearly all of the settings are restored to the combination that existed after the driver was installed (the original settings). However, if the attribute combinations that are associated with watermark definitions, custom media sizes, or the other quick sets have been changed or deleted, the original settings for those items are not restored.

Type a new Quick Set name here appears in the **Print Task Quick Sets** menu automatically if no other driver settings have been changed since the driver was installed, or if all of the driver settings match the original settings. Otherwise, the setting in the **Print Task Quick Sets** menu is the same label that appeared when you last closed the printing **Properties** dialog box by clicking **OK**.

The following table shows the default settings for **Print Task Quick Sets**. See the HP Driver Preconfiguration section for information about preconfigurable driver settings.

Table 4-1 Print Task Quick Set default values for the HP LaserJet 4345mfp

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Default setting for other languages (if different)	Preconfigurable[1]
Print on Both Sides	**Finishing** tab, **Document Options** group box	Off		Yes
Flip Pages Up	**Finishing** tab, **Document Options** group box	Unavailable; **Off** when activated		Yes
Booklet Layout	**Finishing** tab, **Document Options** group box	Unavailable; **Off** when activated		Yes
Pages per Sheet	**Finishing** tab, **Document Options** group box	1		Yes
Print Page Borders	**Finishing** tab, **Document Options** group box	Unavailable; **Off** when activated		Yes
Page Order	**Finishing** tab, **Document Options** group box	Unavailable; **Right then Down** when activated		Yes
Orientation	**Finishing** tab, **Orientation** group box	Portrait		Yes
Rotate by 180 degrees	**Finishing** tab, **Orientation** group box	Off		Yes
Resizing Options	**Effects** tab, **Resizing Options** group box	Actual Size		Yes

Table 4-1 Print Task Quick Set default values for the HP LaserJet 4345mfp (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Default setting for other languages (if different)	Preconfigurable[1]
Print document on	**Effects** tab, **Resizing Options** group box	Off - print on the size specified in the **Paper/ Quality** tab		Yes
Size to print on	**Effects** tab, **Resizing Options** group box	Actual Size	The default value depends on regional media size.	Yes
Scale to Fit	**Effects** tab, **Resizing Options** group box	Unavailable; **On** when activated		Yes
% of Normal Size	**Effects** tab, **Resizing Options** group box	Off		Yes
Watermarks	**Effects** tab	(none)		Yes
Watermarks First Page Only	**Effects** tab, **Watermarks** group box	Unavailable, **Off** when activated		Yes
Current watermarks	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	(none)		Yes[2]
Watermark Message	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	(none)		Yes[2]
Watermark Message Angle	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	Diagonal		Yes[2]
Watermark Message Angle (angle)	**Effects** tab, **Watermark Details** dialog box (Click **Edit** for **Watermark Details**.)	Unavailable unless the**Angle** option is selected; **52** (degrees) when activated		Yes
Watermark Font Name	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Arial	Language-dependent	Yes[2]
Watermark font color	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Gray		Yes
Watermark Font Shading	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Very Light		Yes[2]
Watermark Font Size	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	80		No
Watermark Font Style	**Effects** tab, **Watermark Details** dialog box, **Font Attributes** group box	Regular		Yes[2]

Table 4-1 Print Task Quick Set default values for the HP LaserJet 4345mfp (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Default setting for other languages (if different)	Preconfigurable[1]
Size is:	**Paper/Quality** tab, **Paper Options** group box	Letter	The default value depends on regional media size.	Yes
Use Different Paper/Covers	**Paper/Quality** tab, **Paper Options** group box	Off - all of the pages use the same media		No
Source is:	**Paper/Quality** tab, **Paper Options** group box	Automatically Select		Yes
Type is:	**Paper/Quality** tab, **Paper Options** group box	Unspecified		Yes
Print Quality	**Paper/Quality** tab, **Print Quality** group box	FastRes 1200		Yes
EconoMode (might save Print Cartridges)	**Paper/Quality** tab, **Print Quality** group box	Off		Yes
Staple:	**Output** tab, **Output Options** group box	None		Yes
Bin:	**Output** tab, **Output Bin Options** group box	Automatically Select		Yes
Unlabeled group box	**Job Storage** tab	Status message about the destination of the job		No
Job Storage Mode	**Job Storage** tab, **Job Storage Mode** group box	Off is selected		No
Proof and Hold	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected		No
Private Job	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected		No
Quick Copy	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected		No
Stored Job	**Job Storage** tab, **Job Storage Mode** group box	Available, not selected		No
Windows User Name	**Job Storage** tab, **User Name** group box	Unavailable unless a Job Storage option is selected		No
Job Name	**Job Storage** tab, **Job Name** group box	Unavailable unless a Job Storage option is selected		No
PIN to Print	**Job Storage** tab, **Require PIN** group box	Unavailable unless a Job Storage option is selected		No

Table 4-1 Print Task Quick Set default values for the HP LaserJet 4345mfp (continued)

Driver feature	Feature setting location	Default values for U.S. English Print Task Quick Sets	Default setting for other languages (if different)	Preconfigurable[1]
Display Job ID when printing	**Job Storage** tab, **Job Notification Options** group box	Unavailable unless a Job Storage option is selected		No
If Job Name Exisits	**Job Storage** tab, **Job Name** group box	Unavailable unless a Job Storage option is selected		No

[1] Preconfigurable by using one of the HP Preconfiguration tools. For more information, See HP Driver Preconfiguration, or go to www.hp.com/support/lj4345mfp.

[2] Not supported in Windows 98 and Windows Me.

User Guide Print Settings

The **User Guide Print Settings** option provides a Print Task Quick Set for optimal printing of the *HP LaserJet 4345mfp User Guide*.

When you select **User Guide Print Settings**, all of the settings are restored to the default settings, except for the following settings:

- **Print on Both Sides** is set to **ON**
- **Flip Pages Up** is set to **ON**
- **Pages per Sheet** is set to **2**
- **Page Order** is set to **Right then Down**

Type new Quick Set name here

By default, the **Print Task Quick Sets** menu is set to **Type new Quick Set name here**. When you change any of the default settings on any of the **Printing Preferences** driver tabs and you want to save the configuration as a Print Task Quick Set, highlight the words **Type new Quick Set name here**, type the name you want for your new Print Task Quick Set, and then click **Save**. Print Task Quick Sets are saved in the system registry. To delete a Print Task Quick Set, select it from the drop-down menu and click **Delete**.

NOTE Administrators can predefine print task quick sets for their users. These administrator print task quick sets are defined on the server and are available to users, but usually cannot be modified by users. Users can also define print task quick sets for their own use. User-defined print task quick sets are described later in this section.

You can store a maximum of 25 Print Task Quick Sets on a particular system. If you attempt to save too many, a message box appears that reads, "There are too many Print Task Quick Sets defined. Please delete some before adding new ones."

Paper Options

The settings specified in the **Paper Options** group box on the **Paper/Quality** tab apply to all of the pages of the document. The following illustration shows the **Paper Options** group box and the selections that are available by default.

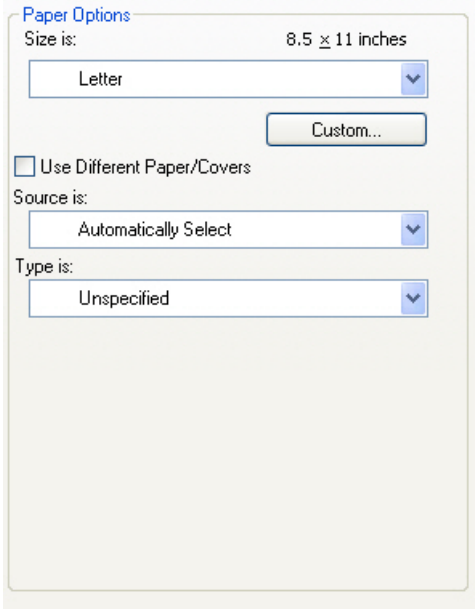

Figure 4-4 **Paper Options** group box

The appearance of the **Paper Options** group box changes when the **Use Different Paper/Covers** check box is selected. For convenience, the settings in the **Paper Options** group box are described below in the following order:

- Size is
- Custom
- Source Is
- Type is
- Use Different Paper/Covers

Size is

The **Size is:** setting is a drop-down menu that lists all of the supported media sizes.

When you move the mouse over the dimensions label, the mouse cursor changes from an arrow to a gloved hand. Click the dimensions label to toggle between English and metric units.

Because driver settings are overridden by media-size settings in most software programs, it is generally best to use the driver to set media size only when you are printing from software programs that lack a media-size setting, such as NotePad, or when you are producing a book or a booklet that does not require different media sizes.

NOTE Certain software programs can override the size command and specify different media sizes within a single document.

For information about media sizes, see the Media attributes section of this guide.

Custom

The **Custom Paper Size** dialog box appears when you click the **Custom** button on the **Paper/Quality** tab. The following illustration shows the initial appearance of the **Custom Paper Size** dialog box.

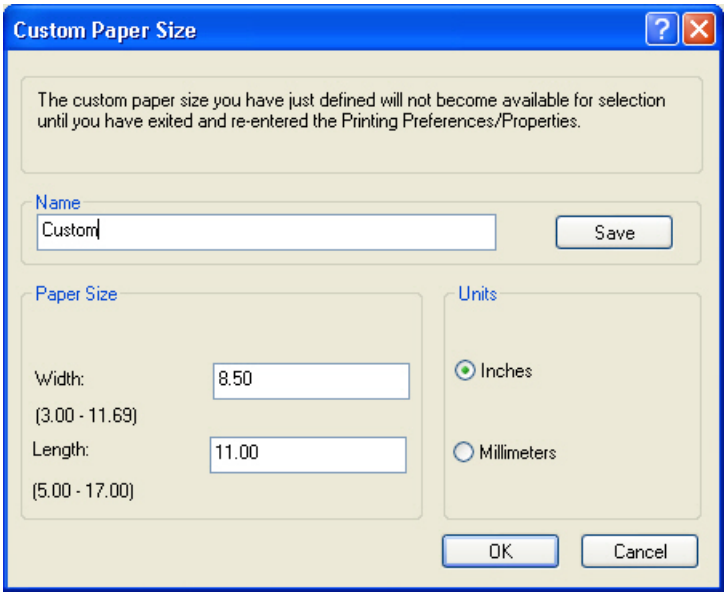

Figure 4-5 Custom Paper Size dialog box

Name

Use the **Name** text box to type a new name for a custom media size.

The name that appears in the **Name** text box is one of three things, depending on the following conditions:

- If a saved custom media size has been selected from the drop-down menu on the **Paper/Quality** tab, then the **Name** drop-down menu shows the name of the selected custom media size.
- If a standard media size has been selected on the **Paper/Quality** tab, then the **Name** drop-down menu shows the default name of "Custom."
- If a new name has been typed into the **Name** text box for the purpose of saving a new size or renaming an existing size, then that new name will remain in the text box until the new size is saved or the dialog box is closed.

If you type a new name into the **Name** text box, but then do not click the **Save** button, you should be able to change the width and height values without losing the name. However, if you close the dialog box without clicking the **Save** button, any unsaved name or size values are lost without warning.

Paper size

The width and height values can be changed by typing numeric strings into the edit boxes in the **Paper Size** group box.

Any entry that is greater than the maximum limits of the width and height control is rounded down to the maximum valid entry, while any entry that is smaller than the minimum limits of the width and height control is rounded up to the minimum valid entry.

If units are in millimeters, the custom media-size range minimum is the limit rounded up to the nearest whole millimeter. The custom media-size range maximum is the limit rounded down to the nearest whole millimeter. Any non-numerical entry reverts to the last valid entry. Width and height entries are validated when the focus has changed.

The resolution of each control is one millimeter or one-tenth of an inch, depending on the current measurement units.

Units

To change measurement units, select one of the radio buttons in the **Units** group box (either **Inches** or **Millimeters**).

Custom width and height control limits

The minimum media size for the HP LaserJet 4345mfp is 76.2 x 127 mm (3 x 5 inches) and the maximum is 215.9 x 355.6 mm (8.5 x 14 inches). The following table summarizes media size limits for each media-handling device.

Table 4-2 PCL 6 custom media sizes

Tray	Dimensions	Minimum	Maximum
Tray 1 (multipurpose)	Width	76.2 mm (3 inches)	215.9 mm (8.5 inches)
	Height	127.0 mm (5 inches)	355.6 mm (14 inches)
Tray 2 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 3 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 4 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 5 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Duplexing unit	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported
Envelope feeder	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported
HP 3-Bin Mailbox	Width	120.0 mm (4.72 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Stacker, Stapler/Stacker	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported

When the **Use Different Paper/Covers** check box is selected and different options are configured, the **Size is:**, **Source is:**, and **Type is:** menus change, offering a variety of options. For more information, see the Use Different Paper/Covers section in this chapter of the guide.

Source Is

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the printer accessories. Any optional source trays that are installed through the **Device Settings** tab also appear here.

The **Source is:** drop-down menu can contain the following options:

- **Automatically select**
- **Printer Auto Select**
- **Manual Feed in Tray 1**
- **Tray 1** (100-sheet multipurpose tray)
- **Tray 2** (500-sheet tray)
- **Tray 3** (500-sheet tray)
- **Tray 4** (500-sheet tray)
- **Tray 5** (500-sheet tray)

The default setting is **Automatically Select**. When this setting is selected, the HP LaserJet 4345mfp uses the source tray that supports the media size that you have selected. If you select a source tray other than **Automatically select**, make sure that the correct media size is loaded in the source tray. For information about media sources, see the Media attributes section of this guide.

Type is

The **Type is:** drop-down menu shows all the media types that the HP LaserJet 4345mfp supports. When you use the default setting, **Unspecified**, the product uses the default media type, which is usually **Plain**.

The following standard types appear in the lists:

- Unspecified
- Plain
- Preprinted
- Letterhead
- Transparency
- Prepunched
- Labels
- Bond
- Recycled

- Color
- Cardstock (164 to 200 g/m^2)
- Rough
- Envelope

The default setting is **Unspecified**, and the program selects the media type. If you select a different setting, make sure the correct media type is loaded in the tray you selected in the **Source is:** setting. For more information about media types, see the Media attributes section of this guide.

Use Different Paper/Covers

You can print books with different media types using the **Use Different Paper/Covers** options.

When you select the **Use Different Paper/Covers** check box, the following settings can appear in the group box, along with the associated options:

- **Front Cover**
- **First Page**
- **Other Pages**
- **Last Page**
- **Back Cover**

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings that you select remain configured until you close the software program.

Each option for the **Use Different Paper/Covers** setting is described in the following sections.

Front Cover

Use the **Front Cover** options to include a blank or preprinted front cover on a document, or to include a front cover from a source tray that is different from the one that is used for the remainder of the document.

The following illustration shows the **Front Cover** setting and options.

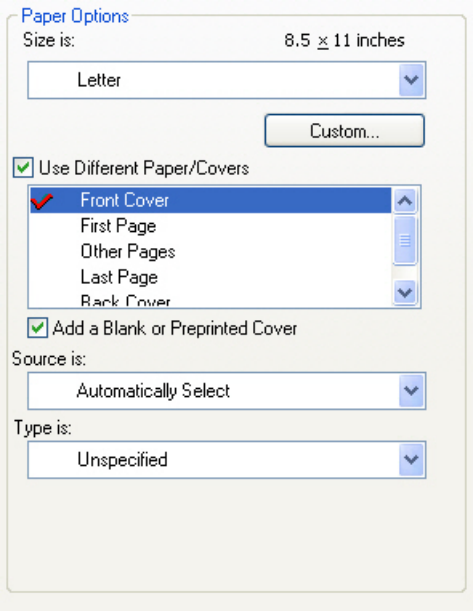

Figure 4-6 **Front Cover** options

The following are the **Front Cover** options:

- **Size is:** drop-down menu
- **Add a Blank or Preprinted Cover** check box
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** setting specifies the media size to use for the entire print job. Changes made to the **Size is:** setting here override any previous **Size is:** settings that you made in other **Use Different Paper/ Covers** options.

When you select **Front Cover**, you must also select the **Add a Blank or Preprinted Cover** check box to enable the setting. When you select this check box, the **Source is:** and **Type is:** drop-down menus become available and a check mark appears next to the **Front Cover** option.

The **Source is:** setting specifies the source tray to use for adding a front cover to the document. The list of source trays depends on the printer accessories. Any optional trays that are installed through the **Device Settings** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the printer supports. For more information about the **Type is:** drop-down menu settings, see the **Type is:** in the Type is section of this chapter.

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/ Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings you select remain configured until you close the software program.

First Page

Use the **First Page** options to select an alternative media size, type, or source for the first page of a document. The following illustration shows the appearance of the **Paper Options** group box when you select the **Use Different Paper/Covers** check box.

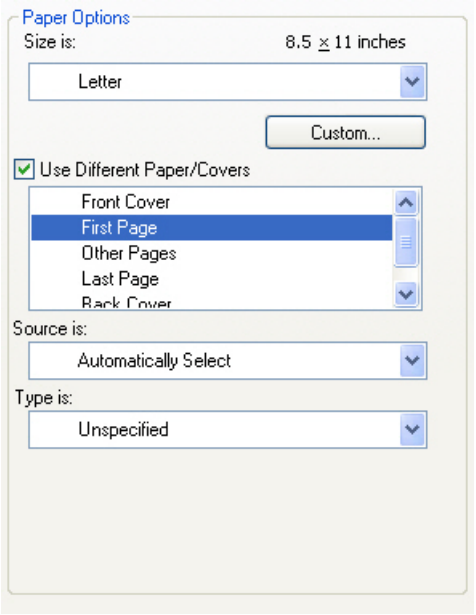

Figure 4-7 First Page options

The following are the **First Page** options:

- **Size is:** drop-down menu
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** setting specifies the media size to use for the entire print job. Changes made to the **Size is:** setting here override any previous **Size is:** settings that you made in other **Use Different Paper/Covers** options.

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the product accessories. Any optional trays that are installed through the **Device Settings** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the printer supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings you select remain configured until you close the software program.

Other Pages

Use the **Other Pages** options to select an alternative media size, type, or source for the other pages of the document.

The following illustration shows the appearance of the **Paper Options** group box when you select the **Use Different Paper/Covers** check box.

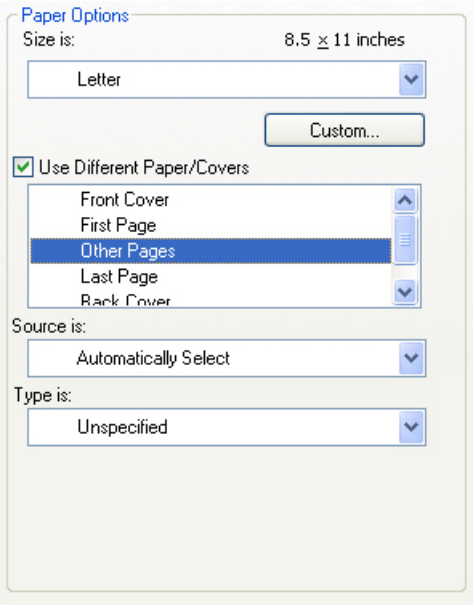

Figure 4-8 **Other Pages** options

The following are the **Other Pages** options:

- **Size is:** drop-down menu
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** setting specifies the media size to use for the entire print job. Changes made to the **Size is:** setting here override any previous **Size is:** settings that you made in other **Use Different Paper/Covers** options.

The **Source is:** setting specifies the source tray to use for printing a document. The list of source trays depends on the printer accessories. Any optional trays that are installed through the **Device Settings** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the printer supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings you select remain configured until you close the software program.

Last Page

Use the **Last Page** options to select an alternative media size, type, or source for the last page of a document. The following illustration shows the appearance of the **Paper Options** group box when you select the **Use Different Paper/Covers** check box.

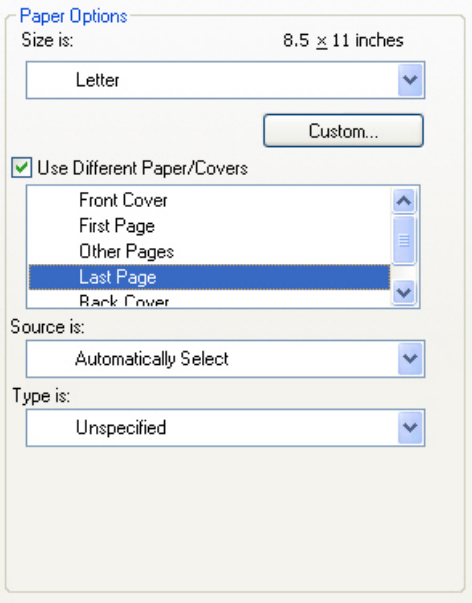

Figure 4-9 **Last Page** options

The following are the **Last Page** options:

- **Size is:** drop-down menu
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** setting specifies the media size to use for the entire print job. Changes made to the **Size is:** setting here override any previous **Size is:** settingsthat you made in other **Use Different Paper/Covers** options.

The **Type is:** drop-down menu shows all of the media types that the printer supports. For more information about the **Type is:** drop-down menu settings, see the description for **Type is:** in the Type is section of this chapter.

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings you select remain configured until you close the software program.

Back Cover

Use the **Back Cover** options to include a blank or preprinted back cover on a document, or to include a back cover from a source tray that is different from the one used for the remainder of the document.

The following illustration shows the **Back Cover** setting and options.

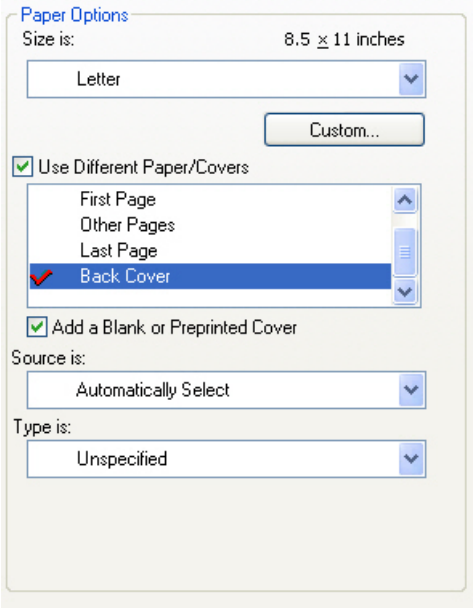

Figure 4-10 Back Coverr setting

The following are the **Back Cover** options:

- **Size is:** drop-down menu
- **Add a Blank or Preprinted Cover** check box
- **Source is:** drop-down menu
- **Type is:** drop-down menu

The **Size is:** setting specifies the media size to use for the entire print job. Changes made to the **Size is:** setting here override any previous **Size is:** settings that you made in other **Use Different Paper/ Covers** options.

When you select **Back Cover**, you must also select the **Add a Blank or Preprinted Cover** check box to enable the setting. When you select this check box, the **Source is:** and **Type is:** drop-down menus become available and a check mark appears next to the **Back Cover** option.

NOTE The **Back Cover** options are not available when the **Booklet Printing Layout** setting is enabled on the **Finishing** tab. The back cover setting is unavailable, because this page would otherwise be printed in the middle of a booklet.

The **Source is:** setting specifies the source tray to use for adding a back cover to the document. The list of source trays depends on the printer accessories. Any optional trays that are installed through the **Device Settings** tab also appear here. For more information about the **Source is:** setting, see the Source Is section of this chapter.

The **Type is:** drop-down menu shows all of the media types that the printer supports. For more information about the **Type is:** drop-down menu settings, see the **Type is:** in the Type is section of this chapter.

NOTE You must use the same size of media for the entire print job. All **Use Different Paper/ Covers** options use the last **Size is:** setting that you select in *any one* of the **Use Different Paper/Covers** options.

When you change the type and source of the media and covers, the settings you select remain configured until you close the software program.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image is always oriented so that the contents of the page are right-side-up. The document preview image appears in the upper-right corner of the **Paper/Quality**, **Effects**, **Finishing**, and **Output** tabs.

Switching between tabs does not change the location or appearance of the document preview image. When you move the mouse over the document preview image, the mouse cursor changes from an arrow to a gloved hand. You can toggle between portrait and landscape page orientation by clicking on the image.

Print Quality group box

The **Print Quality** group box contains the **Print Quality** drop-down box and the **EconoMode** check box.

The default setting for **Print Quality** is **FastRes 1200** for the PCL 6 print driver or **600 dpi** for the PCL 5 and PS print drivers.

This setting controls resolution, which refers to the number of lines per inch (lpi) used to print the page. As resolution is increased, the quality (clarity and visual appeal) of print on the page is improved. However, higher resolution may also result in longer printing times. The following Print Quality options are available in the drop-down box:

- **ProRes 1200 (180 lpi)**
- **ProRes 1200 (212 lpi)**
- **FastRes 1200**
- **600 dpi**

The **EconoMode** check box can be selected in conjunction with any of the print quality settings. When you select EconoMode, the product uses less toner on each page. Using this option might extend the life of your print cartridge and can lower the cost per page, but the option also reduces print quality. Using the EconoMode feature with non-HP print cartridges can result in spillage or printer damage.

Effects tab features

Use the **Effects** tab to create unique media effects such as scaling and watermarks. The following illustration shows the **Effects** tab.

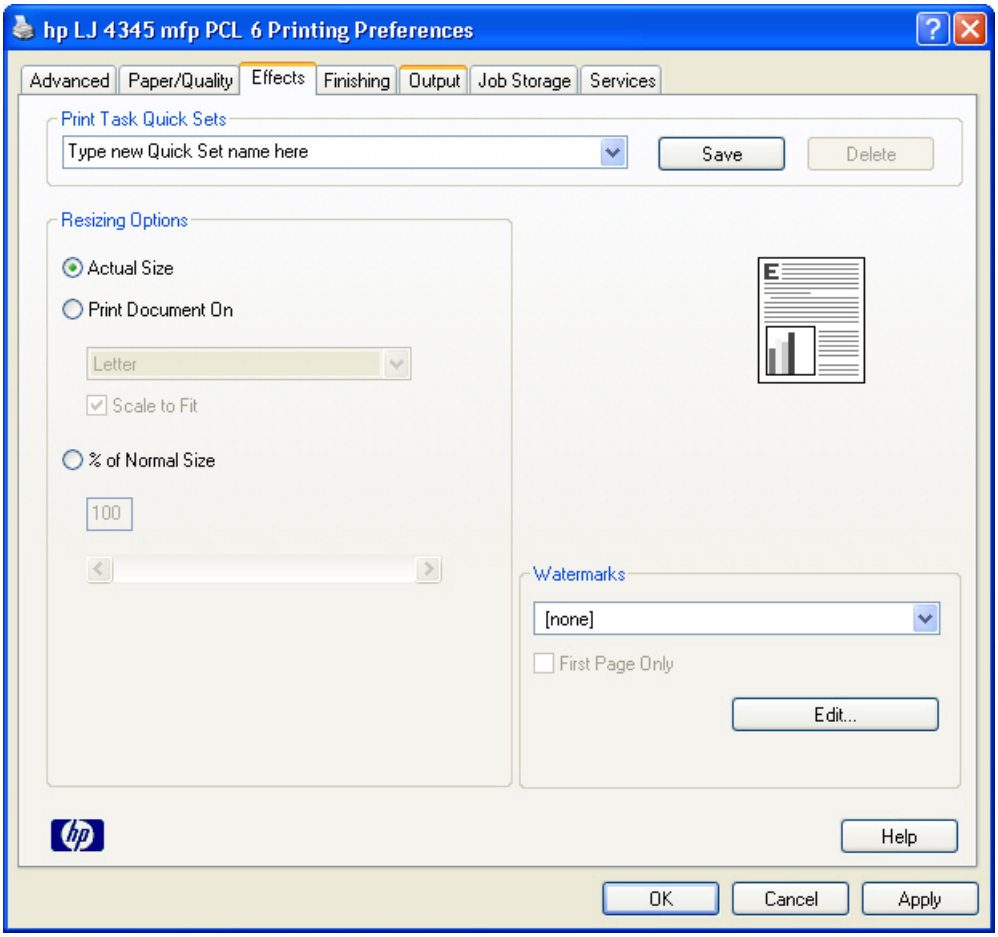

Figure 4-11 **Effects** tab

The **Effects** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Resizing Options** group box
- Document preview image
- **Watermarks** group box

Print Task Quick Sets

Use the **Print Task Quick Sets** control to store the current combination of driver settings that appear on all other **Printing Preferences** driver tabs. Print task quick sets are either preset or user-defined printing specifications, such as media size and pages per sheet. For more information, see the Paper/ Quality tab features section of this guide.

Resizing options

The **Resizing Options** group box consists of the following controls:

- **Actual Size** (default)
- **Print Document On** setting
- **Scale to Fit** option
- **% of Normal Size** setting

Actual Size

Actual Size is the default setting. It prints the document without changing the document size.

Print Document On

Select the **Print Document On** radio button to format the document for one media size and then print the document on a different media size, with or without scaling the image to fit the new media size.

The **Print Document On** control is disabled by either of the following conditions:

- The **% of Normal Size** value is not 100.
- The **Pages per Sheet** value (on the **Finishing** tab) is not 1.

When **Print Document On** is selected, the drop-down menu shows the media sizes on which you can print. The list contains all of the standard media sizes that are supported by the selected media source and any custom sizes that you have created. When **Print Document On** is selected, **Scale to Fit** is automatically selected. Clear this check box if you do not want your document reduced or enlarged to fit on the selected media size.

Scale to Fit

The **Scale to Fit** check box specifies whether each formatted document-page image is scaled to fit the target media size. By default, **Scale to Fit** is selected when **Print Document On** is selected. If the setting is turned off, then the document page images will not be scaled, and are instead centered at full size on the target media. If the document size is larger than the target media size, then the document image is clipped. If it is smaller, then it is centered within the target media. The following illustration shows preview images for a document formatted for Legal-size media with the **Print Document On** check box selected, and the target size specified as **Letter**.

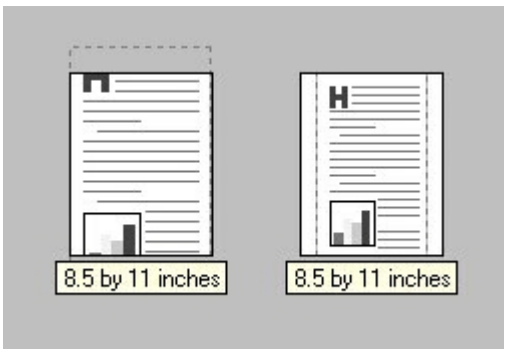

Figure 4-12 Preview images - Legal on Letter; Scale to Fit off (left) and on (right)

When the size for which the document is formatted (that is, the logical size) differs from the target size, the preview image uses a dashed gray line to show the boundaries of the logical page in relation to the target page size.

% of Normal Size

The **% of Normal Size** option provides a slider bar to use for scaling the percentage setting. The default setting in the entry box is 100 percent of normal size. Normal size is defined as the media size that is selected within the driver or what the driver receives from the software program (if the software program does not negotiate the media size with the driver). The driver scales the page by the appropriate factor and sends it to the product.

The limits of the range are from 25 percent to 400 percent, and any values outside the range are adjusted to those limits as soon as the focus is removed from the control (that is, when the Tab key is pressed or another control is selected).

Any change to the scale also changes the page preview, which increases or decreases from the upper-left corner of the preview.

The slider bar controls the scale directly. The value in the edit box changes as the scroll bar indicator is dragged, and the preview image is updated to the new image scale. Each click on the scroll bar arrows increases or decreases the scale by one percent. Each click on the slider bar affects the scale by 10 percent.

You cannot achieve an exact value by dragging the scroll bar indicator at the default Windows resolution; use the scroll bar indicator to approximate the desired value, and then use the scroll bar arrows to refine the value.

The following settings disable **% of Normal Size**:

- **Print Document On** (on the **Effects** tab) is selected
- **Pages per Sheet** (on the **Finishing** tab) is not 1

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image is always oriented so that the contents of the page are right-side-up. The document preview image appears in the upper-right corner of most **Printing Preferences** driver tabs (the **Paper/Quality**, **Effects**, **Finishing** and **Output** tabs).

Switching between tabs does not change the location or appearance of the document preview image. When you move the mouse over the document preview image, the mouse cursor changes from an arrow to a gloved hand. You can toggle between portrait and landscape page orientation by clicking the document preview image.

Watermarks

Use the **Watermarks** feature to choose a watermark, create your own custom watermarks (text only), or edit an existing watermark. The following watermarks are preset in the driver:

- **(none)**
- **Confidential**
- **Draft**

- **SAMPLE**

The drop-down menu shows alphabetically sorted watermarks that are currently available on the system, plus the string "(none)", which indicates that no watermark is selected. This is the default setting. Any watermark that is selected from this list appears in the preview image.

When the **First Page Only** check box is selected, the watermark is printed only on the first page of the document. The **First Page Only** check box is disabled when the current watermark selection is "(none)".

Watermarks are applied to logical pages. For example, when **Pages per Sheet** is set to "4" and **First Page Only** is turned off, four watermarks appear on the physical page (one on each logical page).

Click **Edit...**, and the **Watermark Details** dialog box appears.

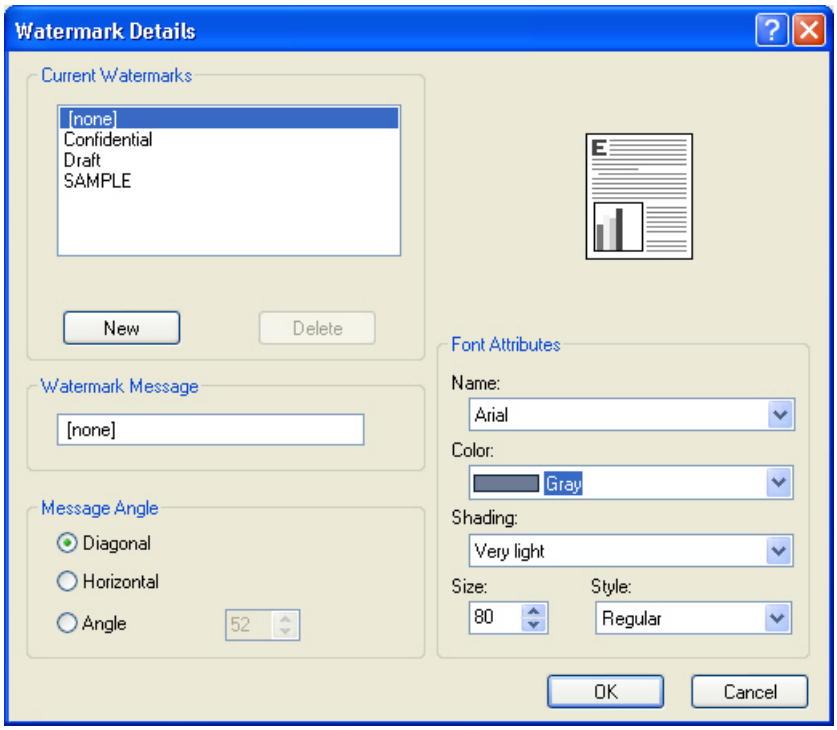

Figure 4-13 Watermark Details

The dialog box shows a preview image and provides options for creating a new watermark and controlling the message angle and font attributes.

Click **OK** to accept all of the changes that are made in the **Watermark Details** dialog box. However, clicking **Cancel** does not cancel all of the changes. If you make changes to a watermark, and then select a different watermark or click **New**, all of the changes made to the previous watermark are saved, and only the current, unsaved changes can be canceled.

Current watermarks

The **Current Watermarks** group box contains a list of available watermarks, both predefined watermarks that are available in the driver and any new watermarks you have created.

To create a new watermark, click **New**. The new watermark appears in the **Current Watermarks** list and in the **Watermark Message** edit box as **Untitled** until you name it. The name that you type in

the **Watermark Message** field appears in the **Current Watermarks** group box in the **Watermark Details** dialog box and in the **Watermarks** group box on the **Effects** tab.

To name the new watermark, type the selected watermark text in the **Watermark Message** edit box.

To delete a watermark, select the watermark in the **Current Watermarks** list and click **Delete**. A warning appears asking whether you are sure you want to delete the selected item. Click **Cancel** if you want to keep the watermark. Click **OK** to delete the selected watermark.

NOTE You can have no more that 30 watermarks in the **Current Watermarks** list at one time. When you reach the limit of 30 watermarks, the **New** button is disabled.

To edit an existing watermark, select the watermark in the **Current Watermarks** list. If you change the **Watermark Message** for that watermark, you are, in effect, creating a new watermark.

Watermark Message

The **Watermark Message** is also the name that identifies the watermark in the **Current Watermarks** list, except when more than one watermark has the same message. For example, you might want several different watermarks with the message DRAFT, each with a different typeface or font size. When this occurs, the string is appended with a space, a pound sign, and a number (for example, **Draft #2**). When a number is added, the number two is used first, but if the resulting name is also in the list, then the number increases until the name is unique (**Draft #3**, **Draft #4**, and so on).

Message Angle

Use the controls in the **Message Angle** group box to print the watermark in different orientations on the page. The settings are **Diagonal**, **Horizontal**, or **Angle** (custom). The default is **Diagonal**. All three settings automatically center the watermark string within the page; the selection of a particular setting affects only the angle of the string placement. **Diagonal** places the text along a line that spans the lower-left to upper-right corners of the page. **Horizontal** places the text along a line that spans the mid-left and mid-right edges of the page. **Angle** places the text at the specified angle across the page.

Font Attributes

Use the controls in the **Font Attributes** group box to change the font and the shading, size, and style of the font.

The **Font Attributes** group box contains the following controls.

- **Name** drop-down menu
- **Color** drop-down menu
- **Shading** drop-down menu
- **Size** spin box
- **Style** drop-down menu

Name

The **Name** drop-down menu lists fonts that are currently installed on the system. The default is language-dependent.

Color

The **Color** drop-down menu contains a single setting: **Gray**.

Shading

The default **Shading** setting for new and preset watermarks is **Very Light**. The following range of shades is available from the **Shading** drop-down menu.

- **Lightest**
- **Very Light** (default)
- **Light**
- **Medium Light**
- **Medium**
- **Medium Dark**
- **Dark**
- **Very Dark**
- **Darkest**

These values represent the intensity of the gray that is used. A choice of **Light** produces a lightly saturated gray watermark. A choice of **Lightest** produces the lightest shade of watermark; **Darkest** produces a black watermark.

Size

Font sizes from 1 to 999 points are available from the **Size** menu. The default point size is language-dependent. The choice of **Regular**, **Bold**, **Italic**, and **Bold Italic** is available from the **Style** drop-down menu.

Style

The choice of **Regular**, **Bold**, **Italic**, and **Bold Italic** is available from the **Style** drop-down menu. The default **Style** setting for new and preset watermarks is **Regular**.

Default settings

The default settings for new watermarks are **Arial** font, **Gray** color, **Very Light** shading, **80** points, and **Regular** style. The default settings for preset watermarks are **Arial** font, **Very Light** shading, and **Bold** style. The default point size for preset watermarks is language-dependent, and varies.

Finishing tab features

Use the **Finishing** tab to print booklets and control the media output. The following illustration shows the **Finishing** tab.

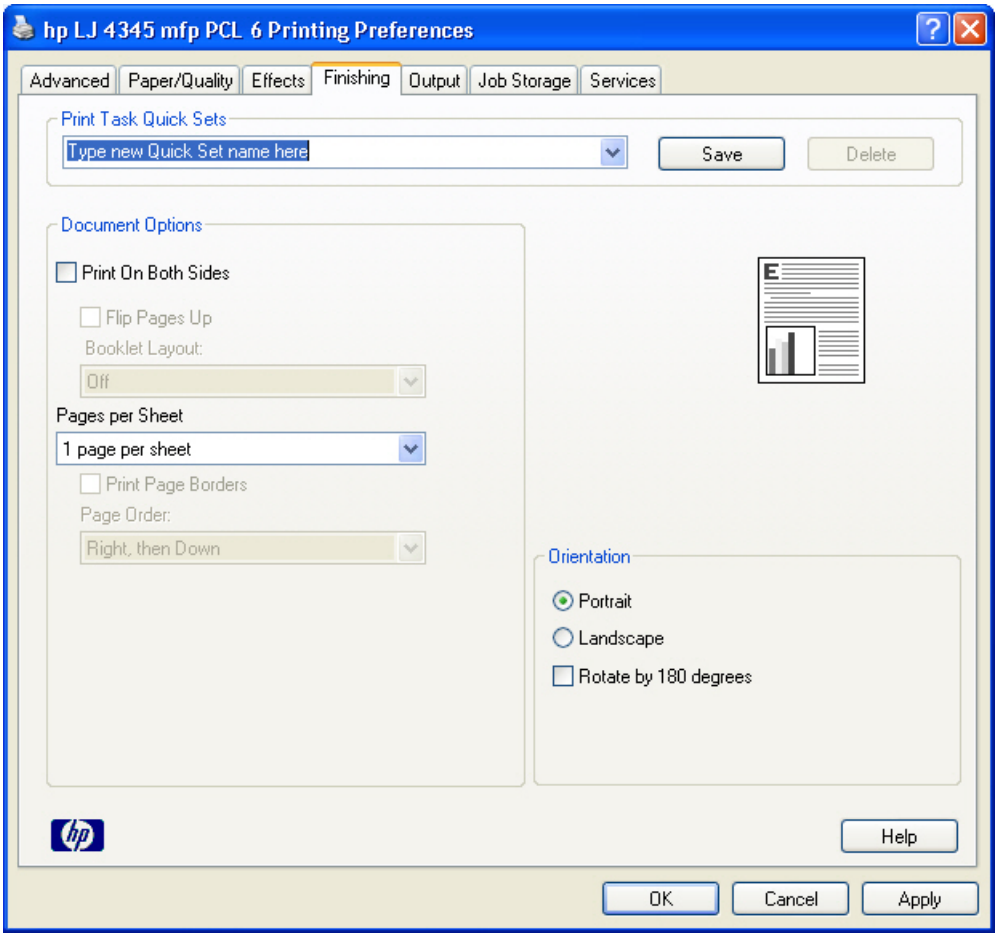

Figure 4-14 Finishing tab

The **Finishing** tab contains the following controls:

- **Print Task Quick Sets** group box
- **Document Options** group box
- Document preview image
- **Orientation** group box

Print Task Quick Sets

Use the **Print Task Quick Sets** control to store the current combination of driver settings that appear on all other **Printing Preferences** driver tabs. Print task quick sets are either preset or user-defined printing specifications, such as media size and pages per sheet. For more information, see the Paper/ Quality tab features section of this guide.

Document Options

The **Document Options** group box contains the following controls:

- **Print on Both Sides** check box
- **Flip Pages Up** option
- **Booklet Layout** drop-down menu
- **Pages per Sheet** drop-down menu
- **Print Page Borders** check box
- **Page Order** drop-down menu

Print on Both Sides

The default setting for the **Print on Both Sides** option is off (not selected). The **Print on Both Sides** check box is always available, but selecting **Print on Both Sides** with the following media types or sizes will cause the driver to display an **Incompatible Print Settings** message when the print job is sent.

- Media types: **Labels**, **Transparency**, or **Envelope**.
- Media sizes: **Envelope #10**, **Envelope B5**, **Envelope C5**, **Envelope DL**, or **Envelope Monarch**.

When the **Print on Both Sides** option is selected, a small warning icon will appear next to these media types and sizes in the drop-down menus on the **Paper/Quality** tab, indicating the incompatibility.

Selecting **Print on Both Sides** also makes the **Flip Pages Up** and **Booklet Layout** options available.

Automatically printing on both sides

The duplexing unit in the product prints on two sides of a sheet of media when the **Print on Both Sides** option is specified in the print job. The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, andHP LaserJet 4345xm mfp models come with a duplexing unit installed.

The HP LaserJet 4345mfp supports smart duplexing. The smart duplexing feature increases printing performance by not sending one-page print jobs or single-sided pages of a duplexed print job through the duplexing unit even when the duplexing feature has been enabled in the driver.

All media types support the smart duplexing feature, except for media types that cannot be printed on both sides, such as labels and transparencies, and the following media types:

- Prepunched
- Preprinted
- Letterhead

When the media type is set to **Unspecified**, the smart duplexing feature is disabled.

To achieve the best print quality when printing on the second side of the page, the printer needs to make adjustments to its print modes. When you select a media type, you are, in effect, instructing the printer to use a group of settings (such as fuser temperature and print speed) to print the media with the best possible quality. This group of settings is known as a mode or print mode, and a different

print mode is used with each media type. Print-mode adjustments are automatic when the duplexing unit is used.

Flip Pages Up

The **Flip Pages Up** check box, enabled only when **Print on Both Sides** is selected, is used to specify the duplex-binding option. By default, the **Flip Pages Up** check box is not selected. The following table demonstrates the results of selecting this box, depending on the media orientation selected on the **Finishing** tab.

Table 4-3 Page orientation

Orientation (Finishing tab)	Flip Pages Up selected	Flip Pages Up not selected
Portrait	Short-edge binding	Long-edge binding
Landscape	Long-edge binding	Short-edge binding

When **Print on Both Sides** is selected, the document preview image changes to show a spiral binding along either the left edge or the top edge of the page. In addition, a folded-over corner appears in the lower-right portion of the preview image, indicating that printing occurs on the back side. An arrow on the folded-over corner points in the direction that the pages would be flipped if they were bound together.

Short-side binding is for print jobs with pages that read by flipping over like the pages of a note pad. Long-side binding is for print jobs with pages that read by turning like the pages of a book.

Booklet layout

The **Booklet Layout** drop-down menu, visible when **Print on Both Sides** is selected, offers choices that are based on the current media size. The default setting for the **Booklet Printing** drop-down menu is **Off**. The following options are available in the **Booklet Layout** drop-down menu.

- **Left Edge Binding**
- **Right Edge Binding**

When you select **Left Edge Binding** or **Right Edge Binding**, the document preview image changes to show the location of the binding. If the **Pages per Sheet** setting is on the default setting of 1, it automatically changes to **2 pages per sheet**. If you change the **Pages per Sheet** setting manually to 4, 6, 9, or 16 pages per sheet, the booklet setting is disabled. See the Printing a Booklet section of this chapter for more information.

Book and Booklet Printing

The HP LaserJet 4345mfp supports book and booklet printing.

A book is a print job consisting of at least two pages that can have a different media type for the front cover, first page, other pages, last page, or back cover. Use the **Front Cover**, **First Page**, **Other Pages**, **Last Page**, and **Back Cover** settings on the **Paper/Quality** tab (available when you select the **Use Different Paper** check box) to select different media for the front cover, first page, other pages, and back cover.

A booklet is a print job that places two pages on each side of a sheet that can be folded into a booklet that is half the size of the media. Use the **Booklet Layout** drop-down menu on the **Finishing** tab to control booklet settings.

Printing a Booklet

Complete the following steps to print a booklet in most software programs.

1. Click **File**, click **Print**, and then click **Properties**.
2. Click the **Finishing** tab and select the **Print on Both Sides** check box.
3. In the **Booklet Layout** drop-down menu, select the type of booklet printing that you want (for example, **Right Edge Binding**).
4. Click **OK** in the print driver.
5. Click **OK** in the print dialog box to print.

Printing a Book

You can print a book in which the front cover, first page, other pages, last page, and back cover have different media types. For more information, see Paper/Quality tab features of this chapter.

Pages per Sheet

Use the **Pages per Sheet** option to select the number of pages that you want to print on a single sheet of media. If you choose to print more than one page per sheet, the pages appear smaller and are arranged on the sheet in the order that they would otherwise be printed. The **Pages per Sheet** drop-down menu provides six settings:

- **1 page per sheet** (default)
- **2 pages per sheet**
- **4 pages per sheet**
- **6 pages per sheet**
- **9 pages per sheet**
- **16 pages per sheet**

NOTE When you select an option other than **2 pages per sheet**, booklet printing is unavailable.

Print Page Borders

Related controls indented beneath the **Pages per Sheet** edit box are **Print Page Borders** and **Page Order**, which become active when **Pages per Sheet** is greater than 1.

Print Page Borders sets a line around each page image on a printed sheet to help visually define the borders of each logical page.

Page Order

The **Page Order** drop-down menu contains four selections:

- **Right, then Down**
- **Down, then Right**

- **Left, then Down**
- **Down, then Left**

The preview document image changes to reflect alterations in these settings, as shown by the examples in the following illustration.

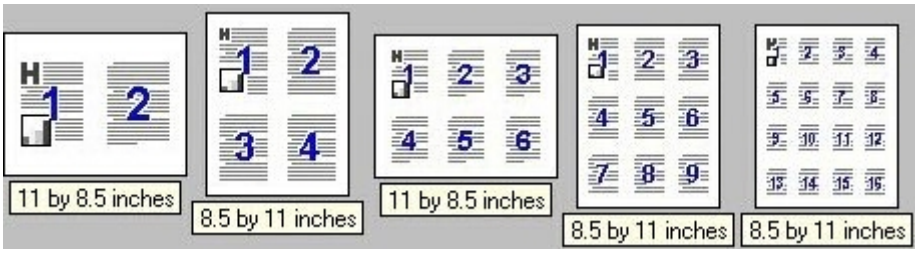

Figure 4-15 Page-order preview images

- **2 pages per sheet**
- **4 pages per sheet**
- **6 pages per sheet**
- **9 pages per sheet**
- **16 pages per sheet**

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image is always oriented so that the contents of the page are right-side-up. The document preview image appears in the upper-right corner of most **Printing Preferences** driver tabs (the **Paper/Quality**, **Effects**, **Finishing**, and **Output** tabs).

Switching between tabs does not change the location or appearance of the document preview image. When you move the mouse over the document preview image, the mouse cursor changes from an arrow to a gloved hand. You can toggle between portrait and landscape page orientation by clicking the document preview image.

Orientation

Orientation refers to the layout of the image on the page, and does not affect the manner in which media is fed into the printer. You can specify the orientation of the print job. The three available orientations are portrait, landscape, and rotated. The default orientation is **Portrait**.

NOTE Nearly all software programs establish the orientation for the printed page, so the page orientation in the driver is useful only for the few software programs that do not set an orientation.

The **Orientation** group box contains three options:

- **Portrait.** The top edge of the document is the shorter edge of the media.
- **Landscape.** The top edge of the document is the longer edge of the media.
- **Rotate by 180 degrees.** This creates a landscape or portrait orientation in which the image is rotated 180 degrees. This setting is useful for printing prepunched media.

NOTE You can toggle orientation between portrait and landscape by clicking the document preview image. If you select the **Rotate by 180 degrees** check box, no change occurs in the document preview image.

Output tab features

The **Output** tab provides output options for print jobs. The controls that appear on the tab depend on the current physical configuration of the product, either obtained automatically through bidirectional communication or configured manually.

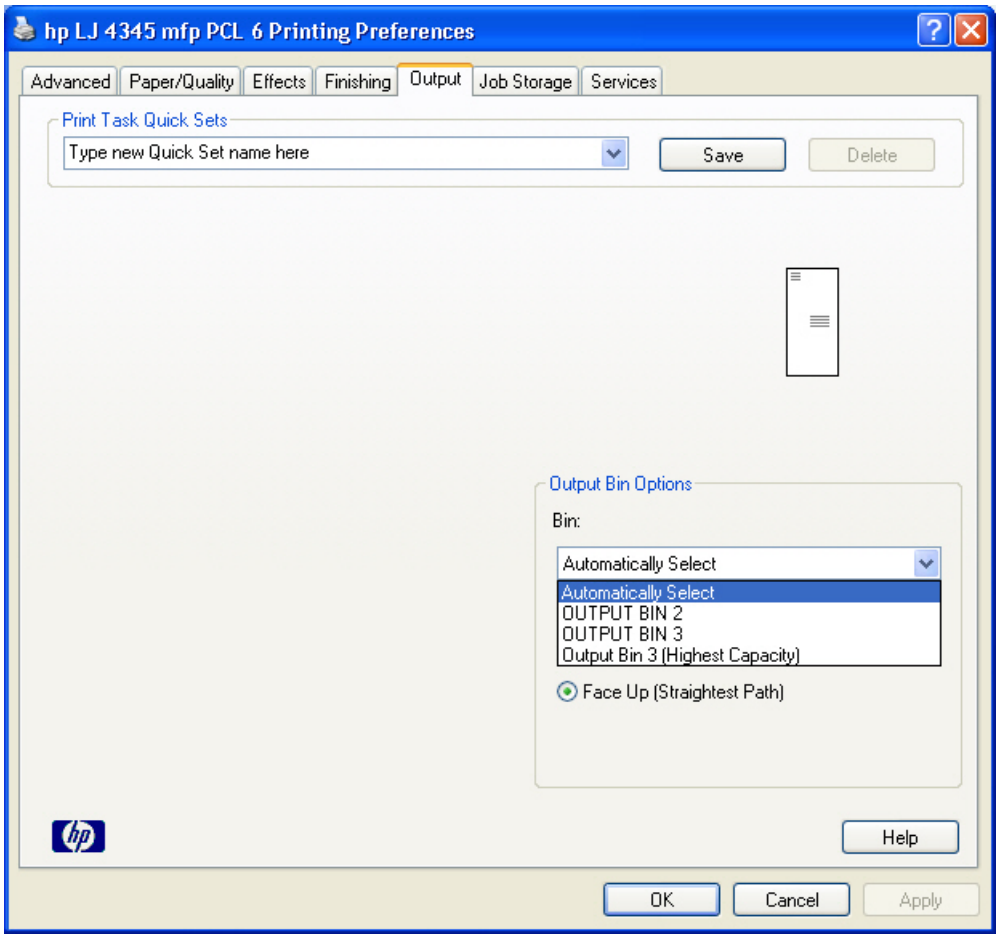

Figure 4-16 Output tab

The **Output** tab can contain the following controls:

- **Print Task Quick Sets** group box
- **Output Options** group box
- Document preview image
- **Output Bin Options** group box

Print Task Quick Sets

Use the **Print Task Quick Sets** control is to store the current combination of driver settings that appear on all other **Document Defaults** driver tabs. Print Task Quick Sets are either preset (by the administrator) or user-defined printing specifications, such as media size and pages per sheet. For more information, see Finishing tab features.

Output Options

If the stapler/stacker accessory is installed, the **Output Options** group box appears, containing the **Staple** drop-down menu. The options are **None** or **One Staple Angled (Max 30 Sheets)**. Select **One Staple Angled (Max 30 Sheets)** to staple the finished print job. When you select the staple option, the page preview image displays where the staple will be placed on the page.

NOTE For some custom paper sizes, the product may assume a specific media feed orientation (that is, which edge goes into the product first). If you encounter unexpected results in the staple placement, try using a different feed orientation.

Document preview image

The document preview image is a line-drawn image of a page that represents graphics and text. The document preview image is always oriented so that the contents of the page are right-side up. The document preview image appears in the upper-right corner of most **Printing Preferences** driver tabs (the **Paper/Quality**, **Effects**, **Finishing**, and **Output** tabs).

Switching between tabs does not change the location or appearance of the document preview image. When you move the mouse over the document preview image, the mouse cursor changes from an arrow to a gloved hand. You can toggle between portrait and landscape page orientation by clicking the document preview image.

Output Bin Options

The available **Output Bin Options** depend on which accessory output device is installed on the product. The **Face Down (Faster)** and the **Face Up (Straightest Path)** options are available with all accessory output devices.

If you install the **HP 3-Bin Mailbox-Mailbox Mode** as the accessory output device, the **Bin** drop-down menu appears with the available output bin options. The options are **Automatically Select** (the default), **Bin 1**, **Bin 2**, and **Bin 3 (High Capacity)**.

Hint The **HP 3-Bin Mailbox-Mailbox Mode** output bins can be configured by using HP Web Jetadmin. For more information, see Configuring accessory output bins through HP Web Jetadmin in chapter 7 of this guide.

Job Storage tab features

Use the Job Storage features to store print jobs in the HP LaserJet 4345mfp memory for printing at a later time. These job-storage features are described in the following sections.

The **Job Storage** tab appears among the driver tabs *only* if Job Storage is enabled. To support job-storage features for complex jobs, or if you often print complex graphics, print postscript (.PS) documents, or use many downloaded fonts, HP recommends that you install additional memory, install a hard disk, or both. Added memory also gives you more flexibility in supporting job-storage features. A minimum total memory of 48 MB is required to use job-storage features.

After a hard disk or additional memory is installed, the driver must be configured to reflect the changes in the product. If bidirectional communication is enabled in your environment, the Update Now feature can be used to update the drivers. For more information, see the Automatic Configuration in this chapter.

To configure the drivers manually after installing a hard disk or additional memory, follow these steps:

1. Click **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional) or **Printers and Other Hardware Devices** (Windows XP Home).
2. Right-click the product name, click **Properties**, and then click the **Device Settings** tab.
3. If additional memory has been installed, select **Printer Memory:** under **Installable Options**, and then select the new total amount of memory installed.
4. If a hard disk has been installed, select **Printer Hard Disk:** under **Installable Options**, and then select **Installed** in the drop-down menu.
5. Click **OK** to make the printer hard disk and job-storage features available.

NOTE You can disable Job Storage while leaving the product hard disk enabled. To disable Job Storage, click **Start**, select **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Windows Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home). Right-click the product name, click **Properties**, click the **Device Settings** tab, select **Job Storage:**, and then select **Disabled** in the **Change 'Job Storage' Setting** dialog box that appears. When **Job Storage** is disabled, the **Job Storage** driver tab is not visible.

Job Storage tab

The following illustration shows the **Job Storage** tab.

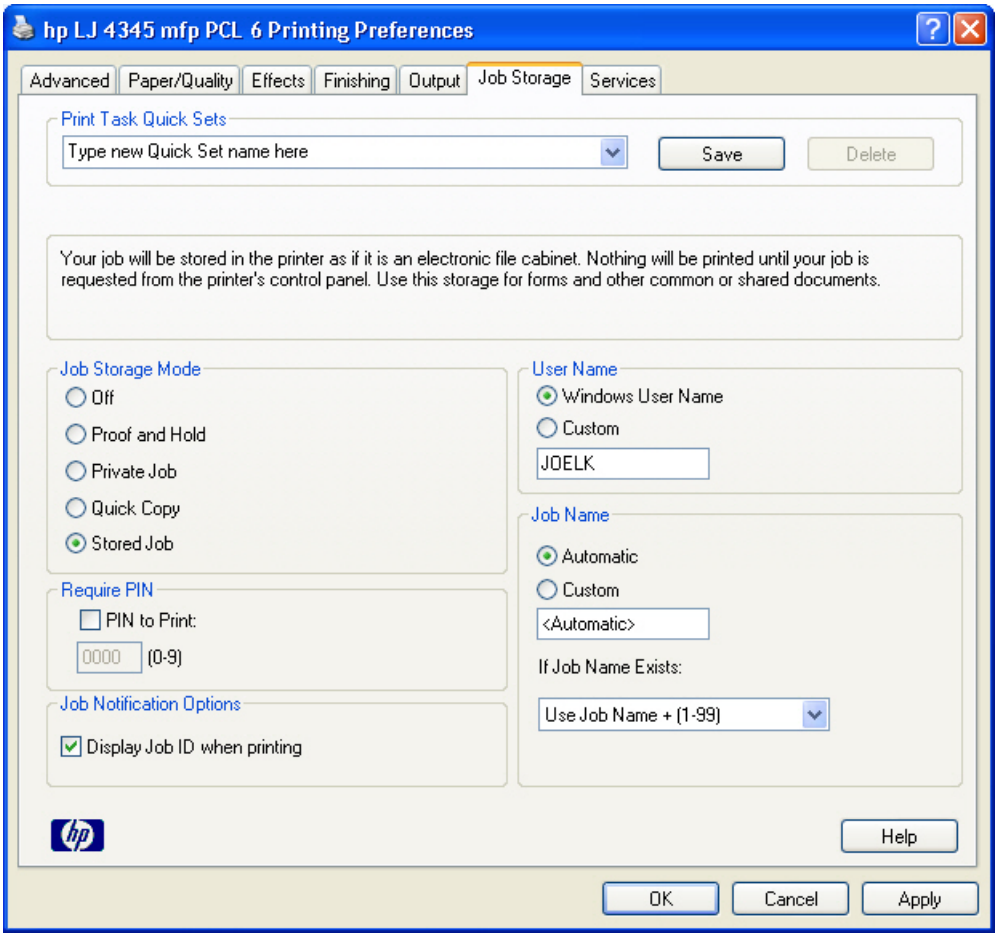

Figure 4-17 **Job Storage** tab

The **Job Storage** tab contains the following controls:

- **Print Task Quick Sets** group box
- status group box (unlabeled)
- **Job Storage Mode** group box
- **Require PIN** group box
- **Job Notification Options** group box
- **User Name** group box
- **Job Name** group box

Print Task Quick Sets

Use the **Print Task Quick Sets** control to store the current combination of driver settings that appear on all other **Printing Preferences** driver tabs. Print task quick sets are either preset or user-defined printing specifications, such as media size and pages per sheet. For more information, see the Paper/ Quality tab features section of this guide.

Status group box

The unlabeled group box on the **Job Storage** tab contains a status message about the destination of a print job. The status information changes depending on the selections that are made on the **Job Storage** tab.

Job Storage Mode

Use the **Job Storage Mode** options on the HP LaserJet 4345mfp to store documents at the product and then control their printing at the product control panel. This feature is intended to provide greater flexibility, convenience, security, and cost savings.

The HP LaserJet 4345mfp offers the following **Job Storage Mode** options:

- **Off**
- **Proof and Hold**
- **Private Job**
- **Quick Copy**
- **Stored Job**

These options and the settings that control them are described below.

Off

When selected, this option turns the **Job Storage** feature off (it is disabled), which means that the print job will not be stored in the product.

Proof and Hold

To use the **Proof and Hold** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When selected, this option stores the print job in memory and prints only the first copy of the job, allowing you to check the first copy. If the document prints correctly, you can print the remaining copies of the print job at the control panel. You can set the number of proof-and-hold print jobs that can be stored in the product at the control panel.

After it is released for printing, the proof-and-hold job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. Proof-and-hold jobs are deleted if you turn off the product.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document.

Private Job

To use the **Private Job** option, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Private Job**, the print job is sent to the product, but is not printed until you request the job at the product control panel. Selecting **Private Job** activates the **Require PIN** group box. The print job can be printed only after you type the correct PIN at the control panel. After the job is

printed, the job is deleted from the product. This feature is useful when you are printing sensitive or confidential documents that you do not want to leave in an output bin after printing.

After it is released for printing, the private job is immediately deleted from the product. If more copies are needed, you must reprint the job from the software program. Private jobs are deleted if you turn off the product.

Using a PIN for Private Job

The **Private Job** option can be secured by a four-digit personal identification number (PIN). You must type in this number at the product control panel before the product can print the job.

The group box labeled **Require PIN** is usually inactive. It becomes active when you select the **Private Job** option.

The Private Job/PIN coupling has a PIN restriction of four ASCII numeric characters (0 though 9). If you type non-numeric characters, they are removed immediately. If you type more than four characters, the characters past the fourth are truncated. The field temporarily accepts fewer than four digits in the string, but when the edit field loses focus, the zeroes pad the left end until the PIN contains exactly four digits. The default initialized value for the PIN is 0000 for **Private Job**.

Quick Copy

To use the **Quick Copy** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

When you select **Quick Copy**, the entire print job prints and a copy of the print job is stored on the product, after which you can print additional copies of the print job at the product control panel. The number of quick-copy print jobs that can be stored in the product is set by using the product control panel.

NOTE The product configuration can be set to hold a maximum of 50 quick-copy or proof-and-hold jobs. The number is set at the product control panel in the **CONFIGURATION** menu, and the default is 32. When this preset limit is reached, the new document overwrites the oldest held document. **Quick Copy** jobs are deleted if you turn off the product.

Stored Job

To use the **Stored Job** option, a hard disk must be installed, Job Storage must be enabled, and the product must have a minimum total memory of 48 MB.

Use the **Stored Job** option to send a print job directly to the product hard disk without printing it. The print job is stored in the product as if it is an electronic file cabinet. After the print job is stored on the product hard disk, you can print the job at the product control panel.

The job remains stored in the product until it is deleted. Stored jobs remain on the product hard disk when the product is turned off. Use this feature for forms and other common or shared documents.

A stored job can be managed in two ways: as either a private or a public job. Use a private stored job to send a print job directly to the product, which can then be printed only after you type in a PIN at the product control panel. (You can set the PIN in the **Require PIN** group box.) After the job is printed, the job remains in the product and can be printed again at the product control panel. The private mode is initiated by selecting the **PIN to Print** check box. In this mode, a PIN that is typed at the product control panel is required in order to release the job.

The group box labeled **Require PIN** is usually inactive. The **PIN to Print** check box becomes available when you select **Stored Job**. If you select the **PIN to Print** check box, you must type a PIN to make the stored job private.

NOTE A private stored job is not the same as a private job (see above). *Private* jobs are deleted from the product after they are printed. *Private stored* jobs are retained in the product after printing, but require that a PIN be typed each time they are printed.

Require PIN

The **Require PIN** group box is usually inactive. The option within the group box, **PIN to Print**, is activated if you select either of the following options:

- Select **Private Job**. If selected, you must type in the PIN number at the product control panel in order to make the job print. For more information, see Using a PIN for Private Job.
- Select **Stored Job**, and then select the **PIN to Print** check box. If the **PIN to Print** check box is selected, you must type a PIN in order to make the stored job private. For more information, see Stored Job.

Job notification

Clicking a job storage mode selection causes the **Job Notification Options** group box to become available. The **Display Job ID when printing** check box is selected by default. The **Display Job ID when printing** option causes a pop-up dialog box to appear when the job-storage print job is printed. The dialog box shows the user name and job name that are associated with the stored print job, as well as the product name, port, and location.

User Name

Selecting a job storage option causes the **User Name** group box to become available. Use the **User Name** settings to help identify the job at the product control panel. The following are the **User Name** settings:

- **Windows User Name.** This option associates your Windows user name with the stored print job. The Windows user name is automatically displayed in the text field below the **Windows User Name** options.
- **Custom.** Use this option to type a custom name for the stored print job. When you click the **Custom** option button, the text field below the option becomes available. The **User Name** field can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

Job Name

Selecting a job storage option causes the **Job Name** group box to become available. Use the **Job Name** options to specify a name to identify the job at the control panel. The following are the **Job Name** settings:

- **Automatic**. This option automatically generates the job name associated with the stored print job. The file name of the print job is used if it is available to the print driver. Otherwise, the software program name or a time stamp is used for the job name.
- **Custom**. Use this to type a custom job name for the stored print job. When you click the **Custom** option button, the text field below the option becomes available.
- **If Job Name Exists**. Use this drop-down menu to choose whether a duplicate job name should have a number appended to it, or whether it should overwrite the existing job with the same name.

The **Job Name** field can contain no more than 16 characters. If you try to type a lowercase character, it automatically shifts to uppercase. If you try to type a character in an ASCII code of fewer than 32 or more than 126 characters, the character is removed from the edit field, along with all of the characters that follow it. If you try to type more than 16 characters, any character beyond 16 is truncated.

If **Custom** is selected, but no job name is specified, as soon as the focus is removed from the control (that is, when the Tab key is pressed or another control is selected), the empty string is replaced with **<Automatic>**. In those languages for which **<Automatic>** cannot be translated without the use of invalid characters, the driver uses a string of three dashes. The acceptable characters for job name and user name vary for each operating system. The string must be of a length and type that can appear on the product control-panel display.

Using Job Storage features when printing

To use Job Storage features when printing, follow these steps:

1. Click **File** and then click **Print** from the software program. The **Print** dialog box appears.

   NOTE Clicking the print icon in the software program toolbar prints the job without Job Storage features.

2. Click **Properties**. The **Properties** dialog box appears.
3. Click the **Job Storage** tab.
4. Select the Job Storage options (described previously) by clicking the appropriate option button, and then complete any required fields.
5. Click **OK**.
6. Click **OK**. The Job Storage Identification dialog box appears.
7. Click **OK**.

Releasing a Job Storage print job

After you send a print job that uses the **Job Storage** feature, you can release the job to print by using the product control panel.

1. Press MENU to open the menus.
2. Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.
3. Touch the appropriate user name and a list of stored jobs for that user appears.
4. Touch the Job Name, and then touch **PRINT**.
5. If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.
6. Select the number of copies to print.
7. Touch **OK** to print the job.

Deleting a Job Storage print job

Sometimes it is necessary to delete a print job from the product hard disk. You can do this from the product control panel.

1. Press MENU to open the menus.
2. Scroll to and then touch **RETRIEVE JOB**. A list of user names appears.
3. Touch the appropriate user name and a list of stored jobs for that user appears.
4. Scroll to the Job Name, and then touch **DELETE**.
5. If a PIN number is assigned to the job, type the PIN number by using the control panel, and then touch **OK**.

   If no PIN number is assigned to the job, continue with step 6.
6. Touch **DELETE**.
7. Touch **YES** to delete the job.

Services tab features

The Status tab provides product and supply status information.

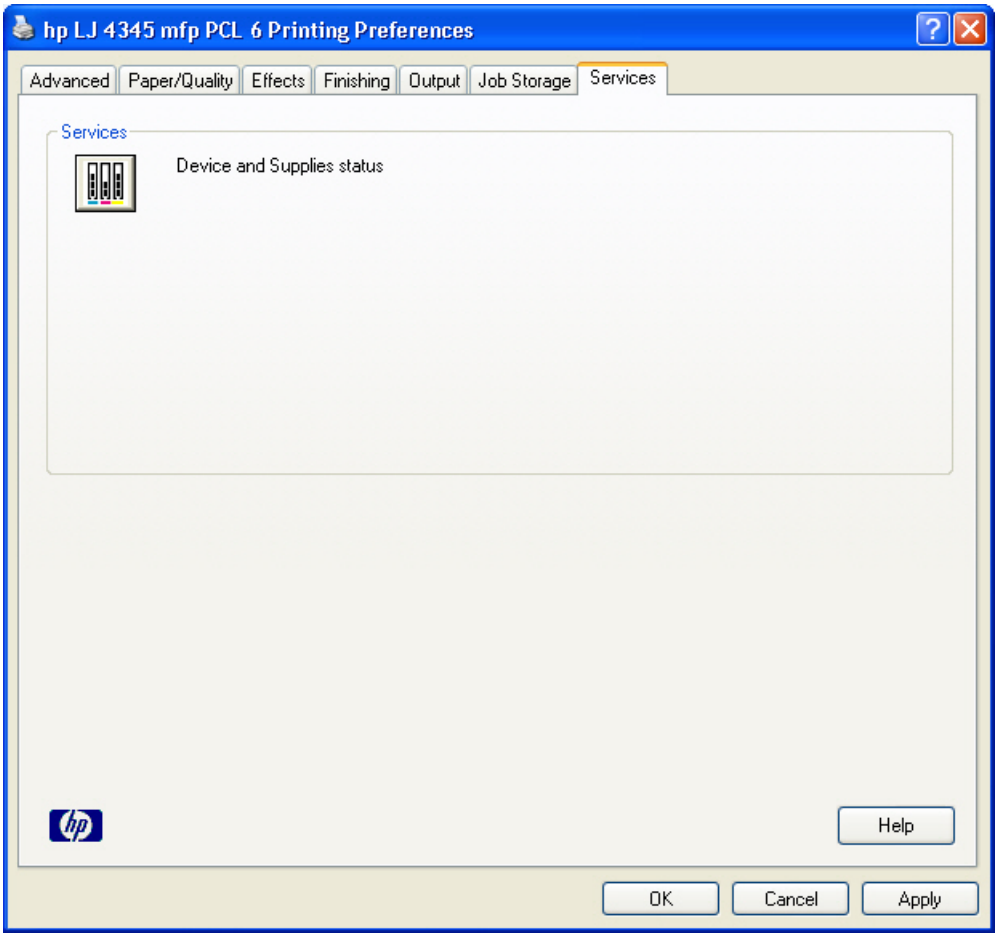

Figure 4-18 **Services** tab

Click the **Device and Supplies status** icon on the **Services** tab to open the **Device Status** page of the HP Embedded Web Server. This page shows the current status of the product, the percentage of life remaining for each supply, and supply ordering information.

Access to the **Device Status** page is available for any product that is connected to the network. For more information about the HP Embedded Web Server, see the HP Embedded Web Server section of this guide.

Properties tabs

The **Properties** tabs contain information about and options for configuring the product.

Device Settings

NOTE The **Device Settings** tab is in the **Properties** for the print driver. To gain access to the print driver **Properties**, click **Start** on the Window task bar, select **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Windows Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home). Right-click the product name, and then click **Properties**.

Available options depend on the feature. The following illustration shows the **Device Settings** tab.

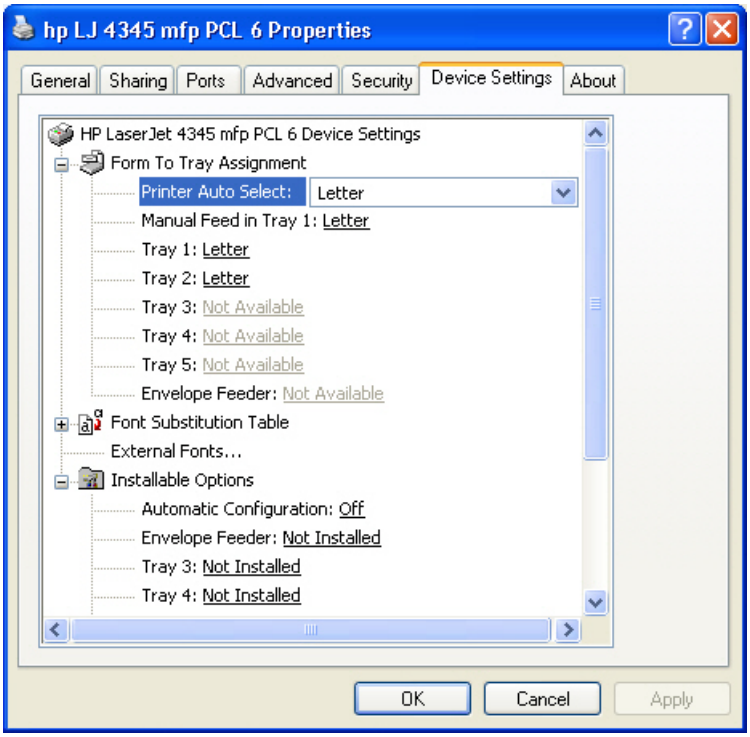

Figure 4-19 **Device Settings** tab

The **Device Settings** tab contains the following controls for media-handling devices and for managing the HP LaserJet 4345mfp.

- **Form to Tray Assignment** options
- **Font Substitution Table**
- **External Fonts** option
- Postscript options (for the HP PS Emulation Unidriver only)
- **Installable Options** options

Form to Tray Assignment

A network administrator can use **Form to Tray Assignment** to specify the media size in each tray.

The HP LaserJet 4345mfp supports more than one source of media. You can assign a form (which defines the media size and margins) to each of your printer media sources. When a form is matched to a source, you can select the form when you print. The product prints from the tray to which that form is assigned.

Network administrators can use the **Form to Tray Assignment** setting to specify, in the driver, the media size that is loaded into each available tray. The use of forms constrains the choices that are available in the media-size list on the **Paper/Quality** tab in the **Printing Preferences** driver tabs. This constraint prevents (or reduces the likelihood of) tying up the printer with media-mount messages that occur when users request sizes or types that are not available.

The trays listed in the **Form to Tray Assignment** setting include standard trays and optional accessory trays. Generally, items that are installed separately have a separate **Installable Options**

setting. For example, for the HP LaserJet 4345mfp, trays 3, 4, and 5 are listed in both the **Form to Tray Assignment** setting and the **Installable Options** setting.

The trays listed here are also listed as media sources on the **Paper/Quality** tab.

Configuring the trays

1. Select the appropriate tray in the **Form to Tray Assignment** list.
2. Use the drop-down menu to select the media size (or form) that is loaded in that tray.
3. Repeat steps 1 and 2 for the remaining trays.
4. Click **OK** to enable your settings, or, if necessary, click the **Cancel** button to reconfigure all of the trays, and remove the size and type constraints that have been imposed on the **Paper/Quality** tab.

Font Substitution Table

Use the **Font Substitution Table** settings to install and remove external fonts for the product. External fonts can be soft fonts or DIMM fonts.

Expanding the **Font Substitution Table** option causes a list of fonts to appear, as show in the following illustration. Use the settings to change the TrueType-to-printer font mappings.

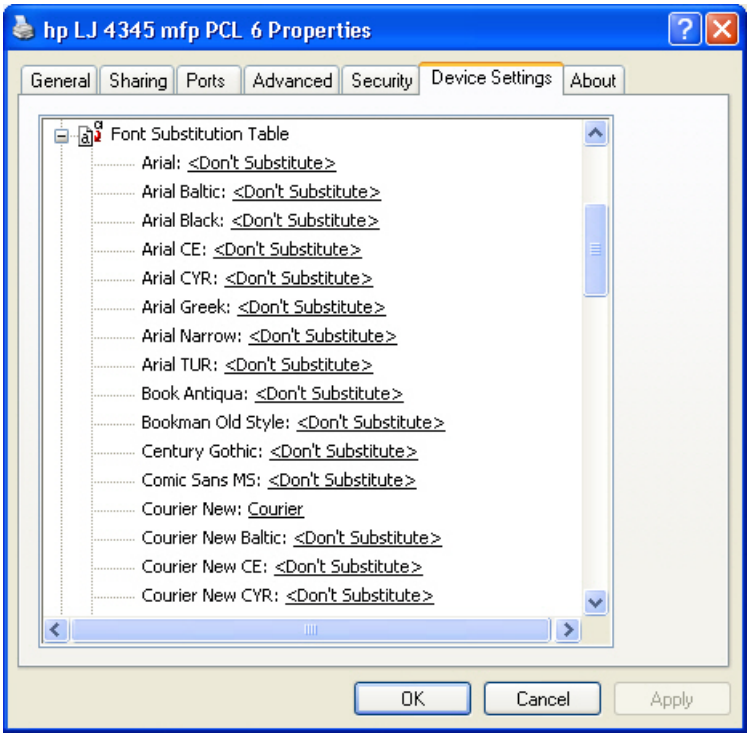

Figure 4-20 Font Substitution Table

External Fonts

NOTE The External Fonts option is available only in the HP PCL 6 and HP PCL 5 unidrivers. It is not available in the PS Emulation Unidriver.

Use the **External Fonts** option to install and remove external fonts for the product. External fonts can be soft fonts or DIMM fonts.

Clicking the **External Fonts** option causes the **Properties** button to appear. Clicking the **Properties** button opens the **Font Installer** dialog box, which is shown in the following illustration.

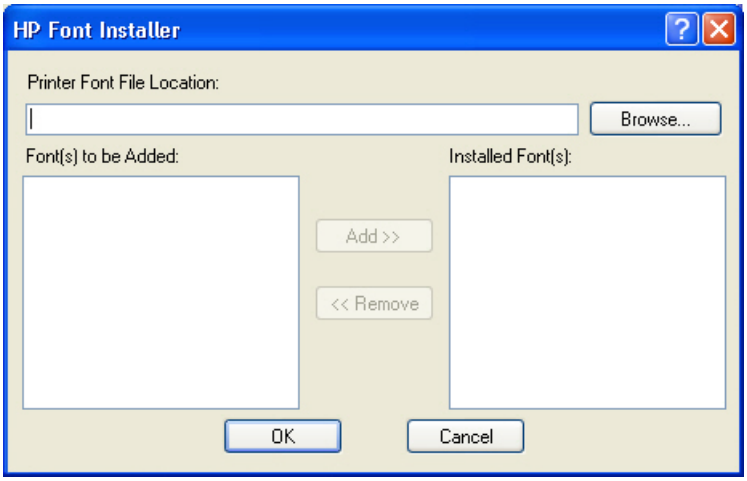

Figure 4-21 HP **Font Installer** dialog box

Installing external fonts

Follow these steps to install external fonts.

1. Click **Start**, select **Settings**, and then click Printers (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Windows Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home).
2. Right-click the name of the product, and then click **Properties**.
3. Click the **Device Settings** tab.
4. Click the **External Fonts** option. The **Properties** button appears.
5. Click the **Properties** button. The **HP Font Installer** dialog box appears.
6. Type the name and path of the font metric file in the **Printer Font File Location** text box, or click **Browse** to locate the file on your computer. The font file names appear in the **Font(s) to be Added** window.
7. Select the fonts that you want to add, and then click **Add**. The fonts are installed and the file names appear in the **Installed Font(s)** window.
8. Click **OK** to close the **Font Installer** dialog box.

Removing external fonts

1. Click **Start**, select **Settings**, and then click Printers (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Windows Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home).
2. Right-click the name of the product, and then click **Properties**.
3. Click the **Device Settings** tab.
4. Click the **External Fonts** option. The **Properties** button appears.
5. Click the **Properties** button. The **HP Font Installer** dialog box appears.
6. The external fonts that are installed appear in the **Installed Fonts** window. Select the fonts that you want to remove, and then click **Remove**. The fonts are removed.
7. Click **OK** to close the **Font Installer** dialog box.

Postscript options

On the HP PS Emulation Unidriver **Device Settings** tab you will see some additional postscript configuration options.

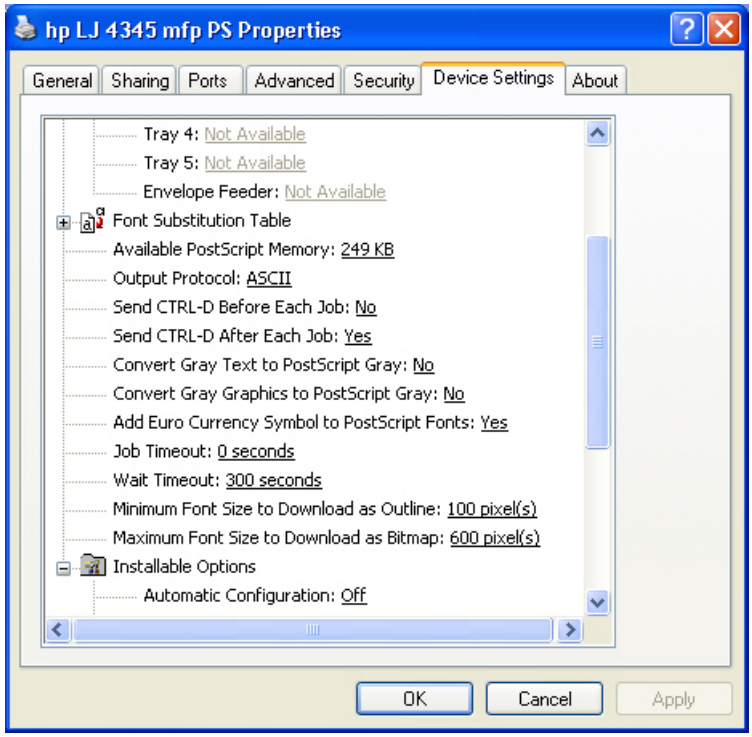

Figure 4-22 **Device Settings** tab for the HP PS Emulation Unidriver

The postscript configuration options are described in the following sections.

Available PostScript Memory

This control specifies the amount of available postscript memory and provides a spin box for changing this value. The available postscript memory is a subset of the product total physical

memory. It is usually best to set the postscript memory to match what is shown on the Configuration page. To print a Configuration page from the control panel, follow these steps:

1. Press MENU.
2. Touch **INFORMATION**.
3. Scroll to, and then touch **PRINT CONFIGURATION**. The configuration page and the EIO Jetdirect page automatically print.

Output Protocol

This control specifies the protocol that the product uses for print jobs. The following options are available:

- **ASCII** (default)
- **TBCP**
- **Binary**

When you click **ASCII**, data is sent in ASCII format (7-bit), which might take longer to print but can be sent through any I/O channel, such as a serial, parallel, or network port.

When you click **TBCP** (Tagged Binary Communications Protocol), all data except special control characters is sent in binary (8-bit) format. The binary formats can be sent over parallel or serial communications ports and are faster than sending data in ASCII format.

When you click **Binary**, all data except special control characters is sent in binary (8-bit) format. The binary formats can be sent over parallel or serial communications ports and are faster than sending data in ASCII format.

Send Ctrl-D Before Each Job

This control specifies whether the product will be reset at the beginning of every postscript document. The default setting is **No**. Ctrl-D resets the product to its default setting to ensure that previous print jobs do not affect the current print job. Ctrl-D might cause a print job to fail if the product is connected through a network. If your document fails to print when sent to a product connected through parallel or serial ports, change **No** to **Yes**.

Send Ctrl-D After Each Job

This control specifies whether the product will be reset at the end of every postscript document. The default setting is **Yes**. Ctrl-D resets the product to its default setting to ensure that future print jobs are not affected by the current print job. Ctrl-D might cause a print job to fail if the product is connected through a network. If your document fails to print when sent to a network printer, change **Yes** to **No**.

Convert Gray Text to PostScript Gray

This control specifies whether to convert the true gray (RGB value) in text to the gray provided by the postscript driver. It is set to **No** by default.

Convert Gray Graphics to PostScript Gray

This control specifies whether to convert the true gray (RGB value) in graphics to the gray provided by the postscript driver. It is set to **No** by default.

Add Euro Currency Symbol to PostScript Fonts

This control specifies whether to augment the device fonts with the Euro currency character. It is set to **Yes** by default.

Job Timeout

This control specifies how long the document can take to get from the computer to the product before the product stops trying to print the document. If you specify **0 seconds**, the product continues trying to print indefinitely. The default setting is **0 seconds**. You can use the spin box to change this value to a maximum of **32,767 seconds**.

Wait Timeout

This control specifies how long the product waits to get more postscript information from the computer. After the specified time passes, the product stops trying to print the document and prints an error message. If you are trying to print a very complicated document, you might want to increase this value. If you specify **0 seconds**, the product waits indefinitely. The default setting is **300 seconds**. You can use the spin box to change this value to a maximum of **32,767 seconds**.

Minimum Font Size to Download as Outline

This control specifies the minimum font size (in pixels) for which the driver downloads TrueType fonts as outline (Type 1) fonts. A font smaller than the minimum setting is downloaded as a bitmap (Type 3) font. Use this option to fine-tune the **Automatic** setting for the **TrueType Font Download** option on the **Advanced** tab in **Document Defaults**. The default setting is **100** pixels. You can use the spin box to change this value to a maximum of **32,767** pixels.

Maximum Font Size to Download as Outline

This control specifies the maximum font size (in pixels) for which the driver will download TrueType fonts as bitmap (Type 3) fonts. A font larger than the maximum setting will be downloaded as an outline (Type 1) font. Use this option to fine-tune the **Automatic** setting or override the **Send TrueType as Bitmap** setting for the **TrueType Font Download** option on the **Advanced** tab in **Document Defaults**. The default setting is **600** pixels. You can use the spin box to change this value to a maximum of **32,767** pixels.

Installable Options

This section provides information to configure the printing options that you can install for the HP LaserJet 4345mfp. The following controls are available:

- **Automatic Configuration**
- **Envelope Feeder**
- **Tray 3**
- **Tray 4**
- **Tray 5**
- **Duplex Unit (for 2-Sided Printing)**
- **Accessory Output Bin**
- **Postscript Passthrough** (PS Emulation Unidriver only)

- **Printer Hard Disk**
- **Job Storage**
- **Mopier Mode**
- **Printer Memory**

Automatic Configuration

Use the **Device Settings** tab to tell the driver about the hardware configuration of the product. If bidirectional communication is enabled in a supported environment, set up this tab by selecting the **Update Now** setting in the **Automatic Configuration** setting. The default setting is **Off**. After an automatic configuration, the setting returns to **Off** after the changes are made.

If your environment does not support bidirectional communication, the **Update Now** setting is unavailable, so you must manually configure the options on this tab.

Envelope Feeder

The two selections for this option are **Installed** and **Not Installed**. If your HP LaserJet 4345mfp is equipped with an optional envelope feeder accessory the **Installed** option should be selected.

Tray 3

This control specifies whether you have **Tray 3**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 3**, you must change this setting to **500-Sheet Tray**.

Tray 4

This control specifies whether you have **Tray 4**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 4**, you must change this setting to **500-Sheet Tray**.

Tray 5

This control specifies whether you have **Tray 5**, an additional 500-sheet tray, installed on your product. The default setting is **Not Installed**. In order to use **Tray 5**, you must change this setting to **500-Sheet Tray**.

Duplex Unit (for 2-Sided Printing)

The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and HP LaserJet 4345xm mfp models come with a duplex unit installed. This setting is enabled (**Installed**) by default.

NOTE The HP LaserJet 4345mfp printer supports smart duplexing. The product uses the smart duplexing feature to detect information on both sides of the print job pages and only runs the pages through the duplexing unit if there is printable information on the second side of the page.

Accessory Output Bin

The options for Accessory Output Bin are **Not Installed**, **HP 500-Sheet Stapler/Stacker**, **HP 3-Bin Mailbox - Mailbox Mode**, **HP 3-Bin Mailbox - Stacker Mode**, and **HP 3-Bin Mailbox - Function**

Separator. If your HP LaserJet 4345mfp is equipped with one of these accessories, select the appropriate option.

Postscript Passthrough

Postscript Passthrough is only available in the PS Emulation Unidriver. It is enabled by default, and must be enabled for most print jobs. **Postscript Passthrough** provides additional capabilities for some software programs when printing to a Postscript driver.

Options such as Watermarks, N-up, and booklet printing might not print correctly from some programs with Postscript Passthrough enabled, because such programs send Postscript information to the product that the driver cannot control. Other programs might print while using these options without problems.

Select **Disabled** and print your document again if you encounter problems.

NOTE In some cases, disabling **Postscript Passthrough** may cause unexpected program behavior.

Printer Hard Disk

When this option is enabled, the **Stored Job** option and the **Mopier Mode** are enabled in the print driver. Use the **Stored Job** option to store print jobs and then print them later from the control panel. The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job.

Job Storage

If your HP LaserJet 4345mfp is equipped with a hard disk drive, the **Job Storage** option should be enabled and all job storage options are available. If your HP LaserJet 4345mfp is *not* equipped with a hard disk drive but has a minimum of 48 MB of memory, limited job-storage options are available. When job storage is enabled, the product can store print jobs so that you can gain access to those print jobs later at the control panel.

Mopier Mode

The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job. Multiple-original printing (mopying) increases performance and reduces network traffic by transmitting the job to the printer once, and then storing it in the printer hard disk. The remainder of the copies are printed at the fastest speed. All documents that are printed in mopier mode can be created, controlled, managed, and finished from the computer, which eliminates the extra step of using a photocopier.

The HP LaserJet 4345mfp supports the transmit-once mopying feature when the product has an installed hard disk or a minimum total memory of 48 MB, and the **Mopier Mode:** setting on the **Device Settings** tab is **Enabled**.

When you use the HP PCL 6, PCL 5, or PS emulation unidriver, mopying is performed in one of two ways: either through the software or through the product hardware. When the mopier is enabled, mopying takes place through the product hardware by default. One copy of a multiple-page print job is transmitted once through the network to the product, together with a printer job language (PJL) command that directs the product to make the specified number of copies.

When you disable the mopier, you are not necessarily disabling mopying, which the driver can still perform through the software rather than through the product hardware (the mopying path that is disabled when you change the **Mopy Mode** setting to **Disabled**). However, a multiple-copy print job

that you send with the mopier disabled loses the advantage of transmitting the print job once, because the print job is sent through the network the same number of times as the number of copies selected.

Mopier mode and collation

Mopying and collating print jobs are independent but closely related functions. Mopying, the ability to send original print jobs to the product, is performed by the print driver. Collating can be controlled by either the print driver or the document software program. The mopying mode is selected by default in the driver, and can be disabled by changing the **Mopier Mode** setting on the **Device Settings** tab to **Disabled**.

You can control collation through the print driver by selecting or clearing the **Collated** check box on the **Advanced** tab. You can clear the check box, which is available only when the **Copy Count** option is set to more than 1 copy, to allow the software program to control collation.

To receive uncollated multiple copies of a print job, you must clear the **Collated** check box *and* make sure that the software program collation feature is not selected.

The following table shows the relation between mopier mode settings and collation settings in the software program and the driver. The first three columns show the settings; the last column, "Expected result,",shows how a three-page print job would appear.

Table 4-4 Driver Mopier mode and collation settings

Mopier mode	Application collation	Driver collation	Expected result
Disabled	Not selected	Not selected	3 copies uncollated
Disabled	Not selected	Selected	3 copies uncollated
Disabled	Selected	Not selected	3 copies collated
Disabled	Selected	Selected	3 copies collated
Enabled	Not selected	Not selected	3 copies uncollated
Enabled	Not selected	Selected	3 copies uncollated
Enabled	Selected	Not selected	3 copies collated
Enabled	Selected	Selected	3 copies collated

Printer Memory

This option matches the setting to the amount of memory that is installed in the product. The driver generates ranges of memory that can be selected, up to the maximum that the product can accept. The driver can use this information to manage how the print driver uses the product memory.

When a minimum total memory of 48 MB is installed, **Job Storage** options and the **Mopier Mode** are enabled in the print driver. The **Job Storage** options allows you to store print jobs, and then print them later from the control panel. The multiple-original print (mopy) function is an HP-designed feature that produces multiple, collated copies from a single print job.

About tab

NOTE To gain access to the printer driver Properties, click **Start** on your Window task bar, click **Settings**, and then click **Printers** (for Windows 2000) or **Printers and Faxes** (for Windows XP and Windows Server 2003). Right-click the printer name, and then click **Properties**.

The **About** tab provides detailed information about the driver. It contains an overall build number (in parentheses after the model name) together with specific information about each of the components. The information varies according to the HP LaserJet 4345mfp model number, driver, date, and versions. The **About** tab is shown in the following illustration.

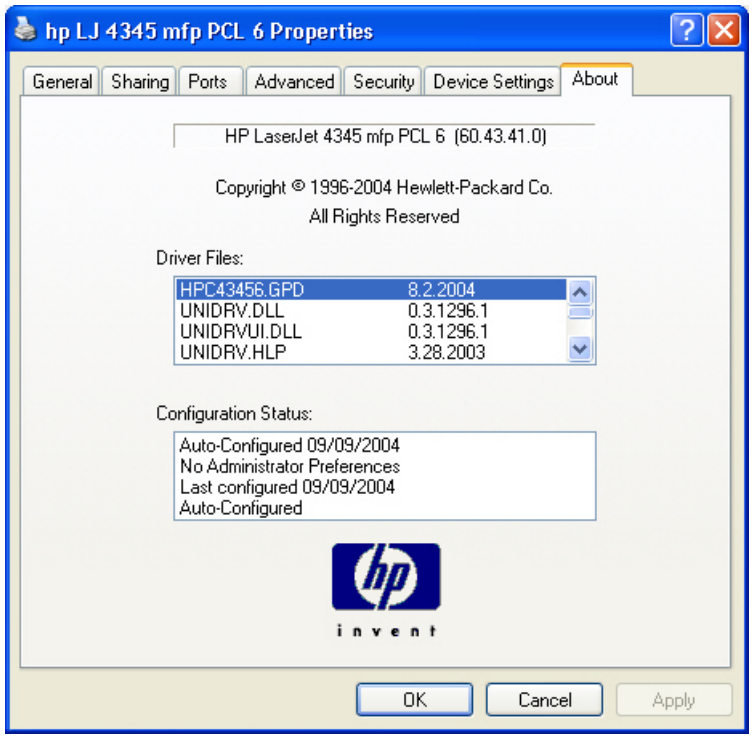

Figure 4-23 About tab

The **About** lists driver installation file names and their version numbers. The **About** tab also indicates whether the driver was autoconfigured, whether administrator preferences were set, the date the driver was last configured, and whether the configuration is default or user-defined.

5 Installing the Windows printing-system components

Introduction

This chapter provides information about these topics:

- Supported Windows operating systems
- Windows system requirements
- Font support
- Installation instructions

Supported Windows operating systems

The HP LaserJet 4345mfp printing-system software supports the following Windows operating systems:

- Windows 98
- Windows Me
- Windows NT 4.0 (parallel and networked only)

NOTE For the Windows NT 4.0 operating system, the print drivers can only be installed by using the Add Printer installation method.

- Windows 2000 (32-bit)
- Windows XP Home Edition (32-bit)
- Windows XP Professional (32-bit and 64-bit)
- Windows Server 2003 (32-bit and 64-bit)

If your computer is running a 64-bit Windows OS, you must install the corresponding 64-bit print driver. For instructions, see Installing print drivers by using the Add Printer feature.

NOTE The HP LaserJet 4345mfp has not been tested with and does not support the Windows 3.1*x* or Windows 95 operating systems.

Windows system requirements

The following are the system requirements for installing and using the HP LaserJet 4345mfp printing-system software on each of the supported operating systems:

- Pentium® or compatible processor
- Minimum 16-color/grayscale display with 640-by-480 pixel resolution (video graphics array [VGA])
- Same amount of RAM as the minimum requirements for the operating system
- 93 MB of available hard-disk space (on the same partition as the operating system) for full installation
- Onboard parallel port or network connection

Font support

The following sections list the fonts that are included with Microsoft Windows software, and the fonts that are available on the CD that came with the product.

This section contains information about the following topics:

- Basic fonts
- Default fonts

Basic fonts

Microsoft Windows software includes these basic fonts, which can be used with any HP printing product:

- Arial
- Courier New Italic
- Times New Roman Italic
- Arial Italic
- Courier New Bold
- Times New Roman Bold
- Arial Bold
- Courier New Bold Italic
- Times New Roman Bold Italic
- Arial Bold Italic
- Symbol
- Wingdings
- Courier New
- Times New Roman

Default fonts

The following default fonts are installed through a Typical Installation of the HP LaserJet 4345mfp printing-system software.

Table 5-1 Default fonts

File name	Font name
ALBR85W.TTF	Albertus Extra Bold
ALBR55W.TTF	Albertus Medium
OLVR55W.TTF	Antique Olive

Table 5-1 Default fonts (continued)

File name	Font name
OLVR75W.TTF	Antique Olive Bold
OLVR56W.TTF	Antique Olive Italic
CGOR45W.TTF	CG Omega
CGOR65W.TTF	CG Omega Bold
CGOR66W.TTF	CG Omega Bold Italic
CGOR46W.TTF	CG Omega Italic
CGTR45W.TTF	CG Times
CGTR65W.TTF	CG Times Bold
CGTR66W.TTF	CG Times Bold Italic
CGTR46W.TTF	CG Times Italic
CLAR67W.TTF	Clarendon Condensed Bold
CORONET.TTF	Coronet
CPSR45W.TTF	CourierPS
CPSR65W.TTF	CourierPS Bold
CPSR66W.TTF	CourierPS Bold Oblique
CPSR46W.TTF	CourierPS Oblique
GARR45W.TTF	Garamond
GARR65W.TTF	Garamond Bold
GARR46W.TTF	Garamond Italic
GARR66W.TTF	Garamond Kursiv Halbfett
HELR45W.TTF	Helvetica
HELR65W.TTF	Helvetica Bold
HELR66W.TTF	Helvetica Bold Oblique
HELR47W.TTF	Helvetica Narrow
HELR67W.TTF	Helvetica Narrow Bold
HELR68W.TTF	Helvetica Narrow Bold Oblique
HELR48W.TTF	Helvetica Narrow Oblique
HELR46W.TTF	Helvetica Oblique
AVGR45W.TTF	ITC Avant Garde Gothic Book
AVGR46W.TTF	ITC Avant Garde Gothic Book Oblique
AVGR65W.TTF	ITC Avant Garde Gothic Demi
AVGR66W.TTF	ITC Avant Garde Gothic Demi Oblique
BOKR75W.TTF	ITC Bookman Demi
BOKR76W.TTF	ITC Bookman Demi Italic

Table 5-1 Default fonts (continued)

File name	Font name
BOKR35W.TTF	ITC Bookman Light
BOKR36W.TTF	ITC Bookman Light Italic
CHANC___.TTF	ITC Zapf Chancery Medium Italic
DINGS___.TTF	ITC Zapf Dingbats
LETR45W.TTF	Letter Gothic
LETR65W.TTF	Letter Gothic Bold
LETR46W.TTF	Letter Gothic Italic
MARIGOLD.TTF	Marigold
NCSR75W.TTF	New Century Schoolbook Bold
NCSR76W.TTF	New Century Schoolbook Bold Italic
NCSR56W.TTF	New Century Schoolbook Italic
NCSR55W.TTF	New Century Schoolbook Roman
PALR65W.TTF	Palatino Bold
PALR66W.TTF	Palatino Bold Italic
PALR46W.TTF	Palatino Italic
PALR45W.TTF	Palatino Roman
SYMPS__.TTF	SymbolPS
TIMR65W.TTF	Times* Bold
TIMR66W.TTF	Times Bold Italic
TIMR46W.TTF	Times Italic
TIMR45W.TTF	Times Roman
UNVR65W.TTF	Univers Bold
UNVR66W.TTF	Univers Bold Italic
UNVR67W.TTF	Univers Condensed Bold
UNVR68W.TTF	Univers Condensed Bold Italic
UNVR57W.TTF	Univers Condensed Medium
UNVR58W.TTF	Univers Condensed Medium Italic
UNVR55W.TTF	Univers Medium
UNVR56W.TTF	Univers Medium Italic

Ninety-two additional PS emulation fonts are also available on the CD.

Table 5-2 Additional PS emulation fonts

File name	Font name
PS_12639.TTF	Albertus MT
PS_12640.TTF	Albertus MT Italic
PS_14530.TTF	Albertus MT Light
PS-11120.TTF	Antique Olive CompactPS
PS_11119.TTF	Antique Olive Roman
PS_11118.TTF	Antique Olive Roman Bold
PS_11846.TTF	Antique Olive Roman Italic
PS_24516.TTF	Apple Chancery Italic
PS_12704.TTF	Bodoni Poster
PS_14508.TTF	Bodoni PosterCompressed
PS_12581.TTF	BodoniPS
PS_12585.TTF	BodoniPS Bold
PS_12586.TTF	BodoniPS Bold Italic
PS_12582.TTF	BodoniPS Italic
PS_24517.TTF	Candid
PS_24518.TTF	Chicago
PS_14513.TTF	Clarendon Light
PS_10269.TTF	ClarendonPS
PS_12968.TTF	ClarendonPS Bold
PS_10369.TTF	Cooper Black
PS_10370.TTF	Cooper Black Italic
PS_14514.TTF	Copperplate32bc
PS_14515.TTF	Copperplate33bc
PS_10249.TTF	Coronet
PS_10267.TTF	Eurostile
PS_10268.TTF	Eurostile Bold
PS_14512.TTF	Eurostile Bold ExtendedTwo
PS_14511.TTF	Eurostile ExtendedTwo
PS_10267.TTF	Eurostile Medium
PS_24509.TTF	Geneva
PS_13872.TTF	GillSans
PS_13874.TTF	GillSans Bold
PS_13875.TTF	GillSans Bold Italic

Table 5-2 Additional PS emulation fonts (continued)

File name	Font name
PS_14053.TTF	GillSans Condensed
PS_14054.TTF	GillSans Condensed Bold
PS_14051.TTF	GillSans ExtraBold
PS_13873.TTF	GillSans Italic
PS_13870.TTF	GillSans Light
PS_13871.TTF	GillSans Light Italic
PS_12542.TTF	Goudy
PS_12544.TTF	Goudy Bold
PS_10695.TTF	Goudy Bold Italic
PS_12545.TTF	Goudy ExtraBold
PS_12543.TTF	Goudy Italic
PS_14526.TTF	Helvetica Condensed
PS_14528.TTF	Helvetica Condensed Bold
PS_14529.TTF	Helvetica Condensed Bold Italic
PS_14527.TTF	Helvetica Condensed Italic
PS_24519.TTF	Hoefler Text
PS_24521.TTF	Hoefler Text Black
PS_24522.TTF	Hoefler Text Black Italic
PS_24520.TTF	Hoefler Text Italic
PS_24523.TTF	Hoefler Text Ornaments
PS_14503.TTF	Joanna MT
PS_14505.TTF	Joanna MT Bold
PS_14506.TTF	Joanna MT Bold Italic
PS_14504.TTF	Joanna MT Italic
PS_13778.TTF	Letter Gothic Italic
PS_13777.TTF	Letter GothicPS
PS_13779.TTF	Letter GothicPS Bold
PS_13780.TTF	Letter GothicPS Bold Italic
PS_12675.TTF	Lubalin Graph
PS_12677.TTF	Lubalin Graph Bold
PS_12625.TTF	Lubalin Graph Bold Italic
PS_12623.TTF	Lubalin Graph Italic
PS_94073.TTF	Marigold
PS_14525.TTF	Mona Lisa Recut

Table 5-2 Additional PS emulation fonts (continued)

File name	Font name
PS_24524.TTF	Monaco
PS_24510.TTF	New York
PS_12506.TTF	Optima
PS_12510.TTF	Optima Bold
PS_12511.TTF	Optima Bold Italic
PS_12507.TTF	Optima Italic
PS_14072.TTF	Oxford Italic
PS_11546.TTF	Stempel Garamond Roman Italic
PS_11545.TTF	StempelGaramond Roman
PS_11547.TTF	StempelGaramond Roman Bold
PS_11548.TTF	StempelGaramond Roman Bold Italic
PS_14507.TTF	Taffy
PS_13501.TTF	Univers 45 Light
PS_14023.TTF	Univers 45 Light Bold
PS_14024.TTF	Univers 45 Light Bold Italic
PS_13502.TTF	Univers 45 Light Italic
PS_14030.TTF	Univers 47 Condensed Light Bold
PS_14040.TTF	Univers 47 Condensed Light Bold Italic
PS_14021.TTF	Univers 55
PS_14022.TTF	Univers 55 Italic
PS_14029.TTF	Univers 57 Condensed
PS_14039.TTF	Univers 57 Condensed Italic
PS_13548.TTF	Univers Extended Italic
PS_13547.TTF	Univers ExtendedPS
PS_14481.TTF	Univers ExtendedPS Bold Italic
PS_14480.TTF	Univers ExtendedPS Italic

Installation instructions

This section contains information about the following topics:

- General installation for Windows 98, Me, 2000, and XP operating systems
- Detailed Windows installation
- Setting a default printer

General installation for Windows 98, Me, 2000, and XP operating systems

General installation instructions are similar for the Windows 98, Windows Me, Windows 2000, and Windows XP operating systems.

NOTE For the Windows NT 4.0 operating system, the print drivers can only be installed by using the Add Printer installation method. For all Windows operating systems, the PCL 5 driver can only be installed by using the Add Printer installation method. For more information, see the Installing print drivers by using the Add Printer feature section in this chapter. The PCL 6, the PCL 5, and the PS emulation drivers are available on the printing-system software CD.

If the HP LaserJet 4345mfp is connected through a file or print server, the printing-system software must first be installed on the server before being installed on any client systems. If the HP LaserJet printing-system software is not first installed on the server, then bidirectional communication, some driver autoconfiguration methods, and the HP Toolbox are not available to the client systems.

For Windows NT 4.0, Windows 2000, and Windows XP, administrator rights on the system are necessary in order to install the software.

When the HP LaserJet 4345mfp printing-system installer runs, the HP LaserJet uninstaller is always added to the system.

Installing from the printing-system CD

Follow these instructions to install the HP LaserJet 4345mfp printing system from the CD that came with your product.

1. Close all programs that are open on your computer.
2. Insert the CD in the CD-ROM drive.

NOTE If your CD does not start automatically, click **Start**, click **Run**, and then browse to and double-click the SETUP.EXE file in the root directory of the CD.

3. Click **Install Printer** and follow the onscreen prompts.

Installing from a network or from downloaded files

Follow these instructions if you downloaded the files from the Web or if you are installing the printing-system files from a network. You might need to ask your network administrator for the location of the printing-system software file.

1. Browse to the location of the SETUP.EXE file.
2. Double-click the SETUP.EXE file.
3. Click **Install Printer** and continue to follow the instructions until the product is installed. For detailed installation instructions, see Detailed Windows installation.

Detailed Windows installation

This section provides information about the installation dialog box sequence for installing the HP LaserJet 4345mfp printing-system software in Microsoft Windows environments. You can choose to install the software by using either a Typical Installation, a Minimum Installation, or a Custom Installation.

Using the Back and Cancel buttons

Clicking the **Back** button on any installation dialog box returns you to the previous dialog box. The specific dialog box depends on your previous selections.

To exit the installation sequence without installing the product, click the **Cancel** button in any installation dialog box.

1. Clicking the **Cancel** button opens a dialog box, prompting you with this question: “Are you sure you want to cancel the installation?”
2. Clicking **Yes** opens a dialog box, stating that the setup was interrupted.
3. Clicking the **Finish** button opens the **Cancel** dialog box.
4. Clicking the **Finish** button closes the installation screens.

Other buttons appear on the installation dialog boxes:

- **Help**
- **Next**
- **Space**

The result of clicking these buttons is explained in context below.

Modifying a pre-existing installation

If an HP LaserJet 4345mfp has been installed previously on your system, the appearance of the main install screen changes on the CD Browser, and the **install printer** option changes to **modify installation**. A pre-existing installation also changes the sequence of installation screens that are presented, depending on selections made.

Typical Installation dialog box sequence

NOTE The dialog boxes shown in this chapter appear in the Windows XP Pro installation sequence. The order and appearance of dialog boxes can vary among operating systems.

The Typical Installation includes the following components:

- HP Toolbox
- HP LaserJet 4345mfp PCL 6 Driver
- Screen fonts
- HP LaserJet 4345mfp series Printing System Install Notes
- HP LaserJet 4345mfp User Guide

The following illustration represents an overall path through the installation process. It is intended as a reference only; selections and setups will vary.

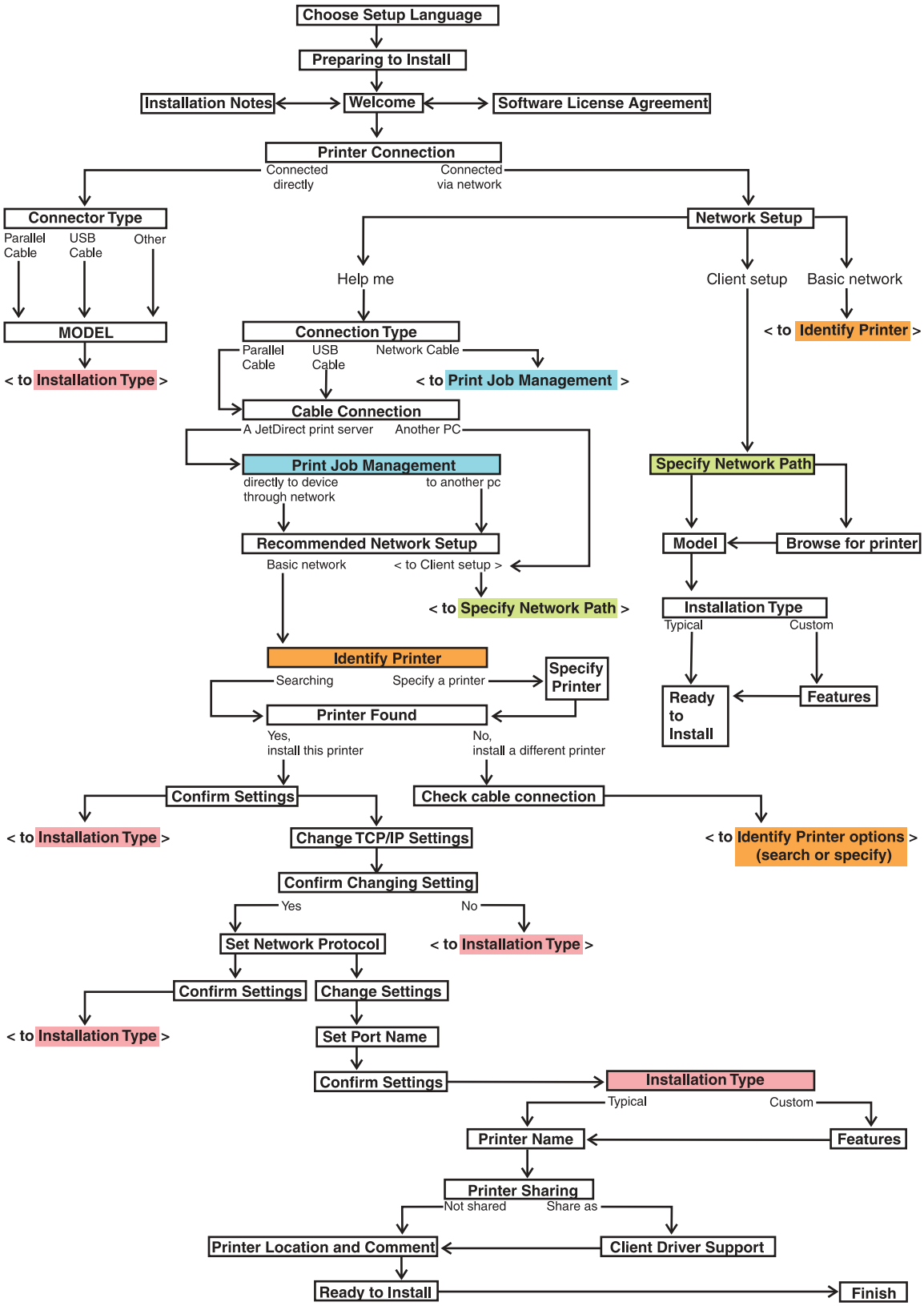

Figure 5-1 Installation path

NOTE The components of a typical installation might vary from product to product.

When you select the Install Printer option from the HP LaserJet 4345mfp software CD, the **Choose Setup Language** dialog box appears, as shown in the following illustration.

Figure 5-2 Choose Setup Language dialog box

NOTE The **Choose Setup Language** dialog box lists only the languages that are available on the HP LaserJet 4345mfp printing-system software CD.

The installer automatically detects the language that your computer system uses and presents this selection as the default.

You can select another language that is available on the CD by clicking the down arrow in the drop-down menu.

Clicking **OK** initiates the printing system setup, and the **Preparing to Install** dialog box appears.

NOTE While the **Preparing to Install** dialog box appears, the installer is decompressing files into the system TEMP directory. The elapsed time to complete this action depends upon the performance of your system.

Clicking **Cancel** at this point takes you to a **Setup Error** dialog box. Clicking the **Finish** button on this dialog box closes the installation screens. This sequence of screens differs from that seen when you click the **Cancel** button in subsequent dialog boxes, but the result is the same; the installation sequence is canceled.

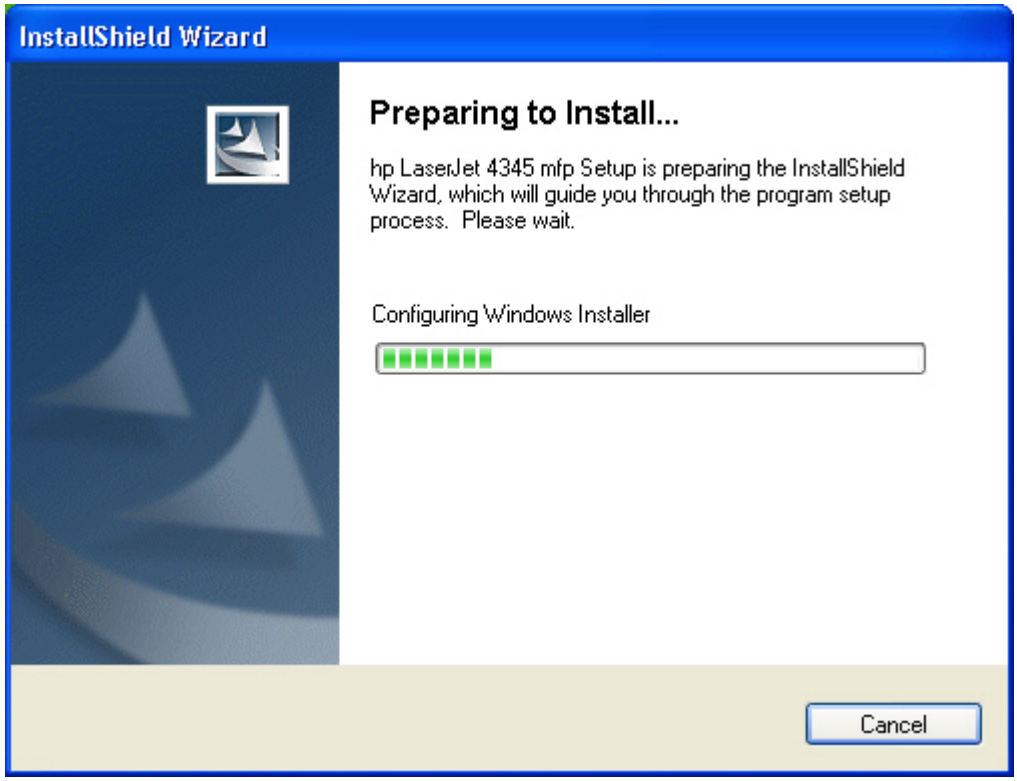

Figure 5-3 **Preparing to Install**l dialog box

Clicking **Cancel** takes you to the **Exit Setup** dialog box.

NOTE If your computer uses the Windows NT 4.0 operating system, you must use the Add Printer installation method to install the HP Traditional PCL 6 Driver, the HP Traditional PCL 5 Driver, and the HP Traditional PS Emulation Driver on the HP LaserJet 4345mfp. If you try using the regular install method in a Windows NT 4.0 operating environment, the following screen appears.

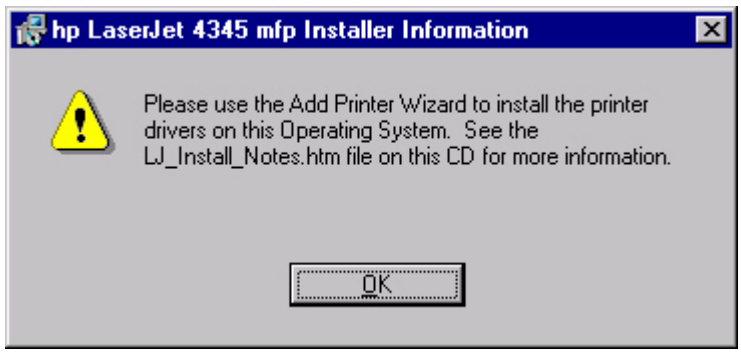

Figure 5-4 Use the Add Printer Wizard

For information about using the Add Printer installation method, see the Installing print drivers by using the Add Printer feature section.

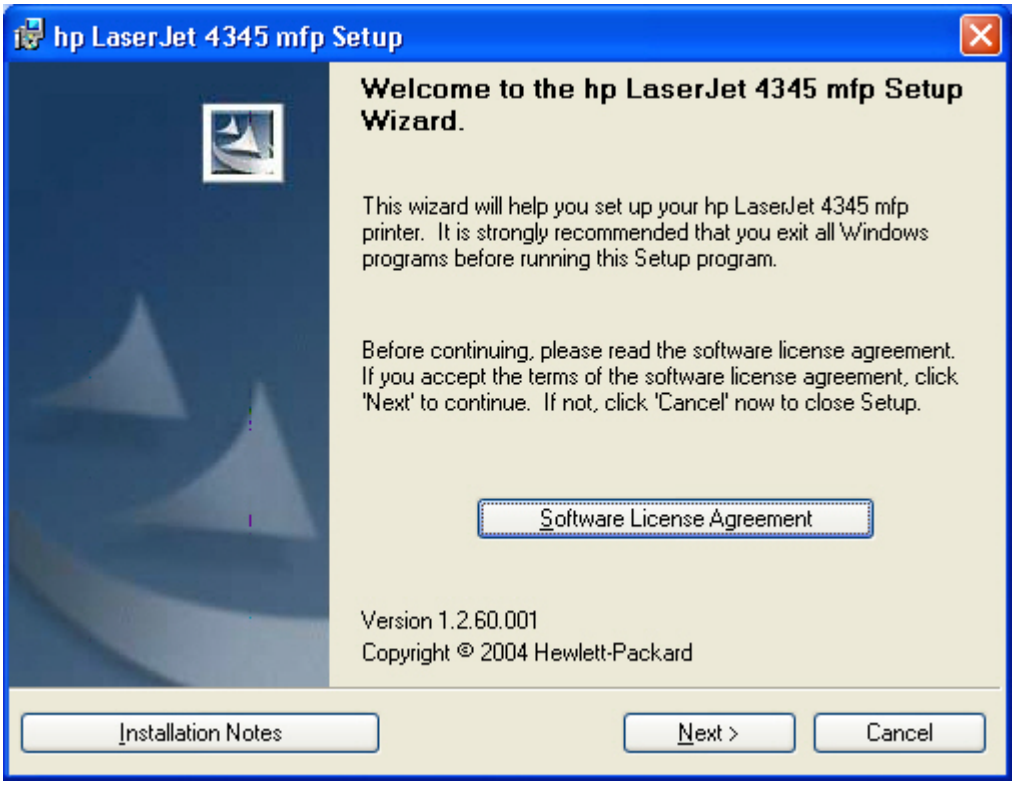

Figure 5-5 Welcome dialog box

Clicking **Software License Agreement** takes you to the **HP Software License Agreement** dialog box.

Clicking **Installation Notes** opens the file LJ4345_INSTALL_NOTE_ENWW.HTM

Clicking **Next** takes you to the **Printer Connection** dialog box.

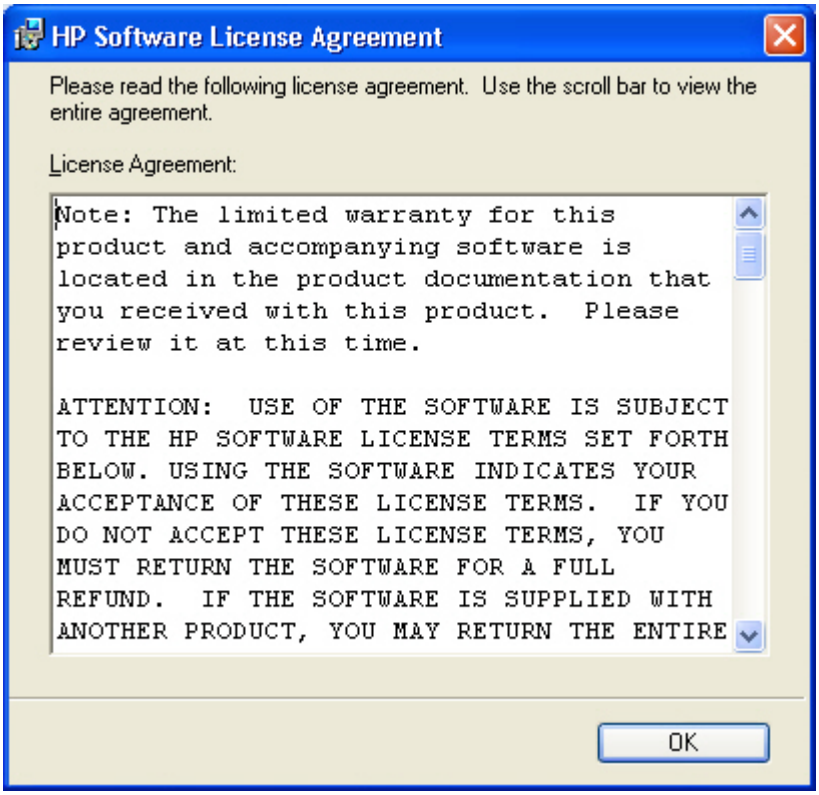

Figure 5-6 **HP Software License Agreement** dialog box

Clicking **OK** returns you to the **Welcome** dialog box.

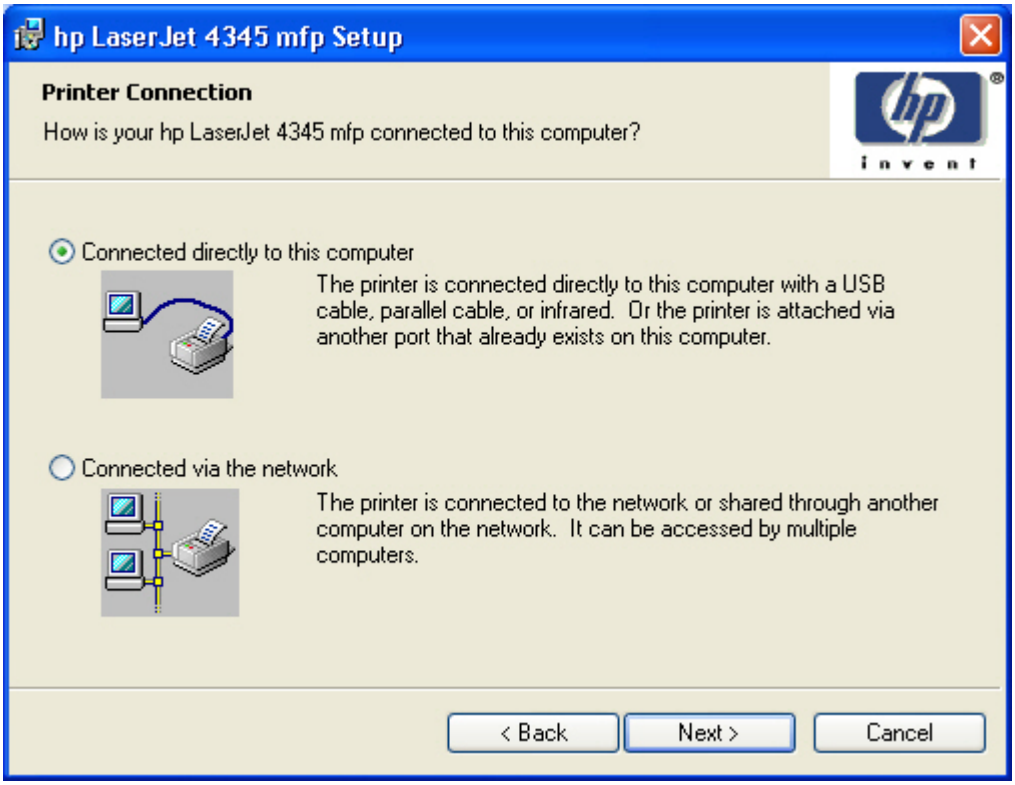

Figure 5-7 **Printer Connection** dialog box

NOTE The product does not support infrared connections.

If you select **Connected directly to this computer** (a direct connection that uses a parallel cable), clicking **Next** takes you to the **Connector Type** dialog box. This is the default option.

The **Connector Type** dialog box is shown in the following illustration.

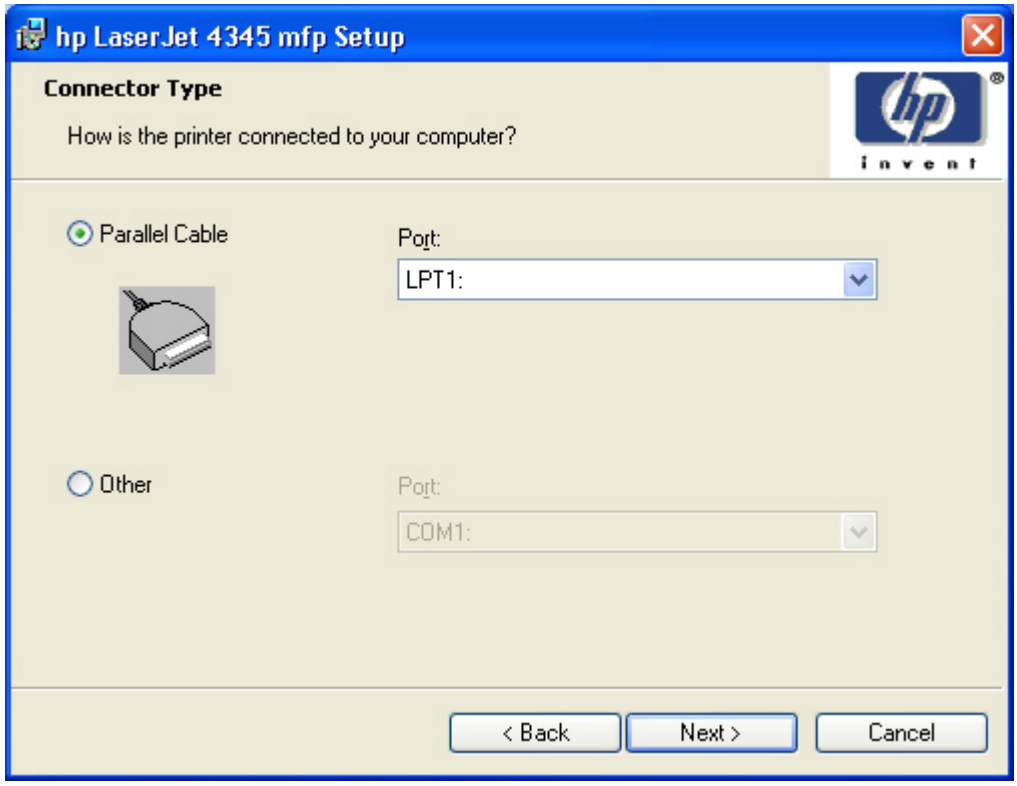

Figure 5-8 **Connector Type** dialog box

If you select **Parallel Cable** or **Other**, clicking **Next** takes you to the **Installation Type** dialog box. To continue with the default installation sequence, see Figure 5-19 Installation Type dialog box.

If you select **Connected via the network** in the **Printer Connection** dialog box, clicking **Next** takes you to the **Network Setup** dialog box.

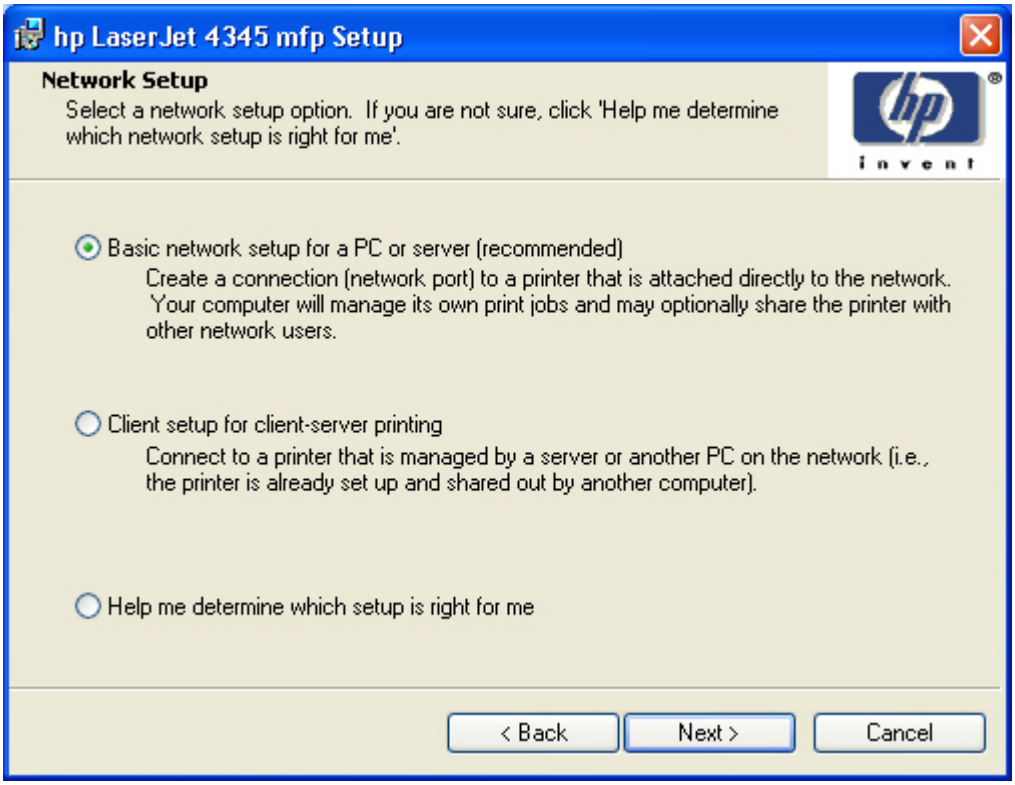

Figure 5-9 **Network Setup** dialog box

If you select **Basic network setup for a PC or server**, clicking **Next** takes you to the **Identify Printer** dialog box. This is the default selection.

If you select **Client setup for client-server printing**, clicking **Next** initiates a series of question dialog boxes that help you determine the best connection-type option to use. This series begins with the **Specify Network Path** dialog box.

If you select **Help me determine which setup is right for me**, clicking **Next** takes you to the **Connection Type** dialog box.

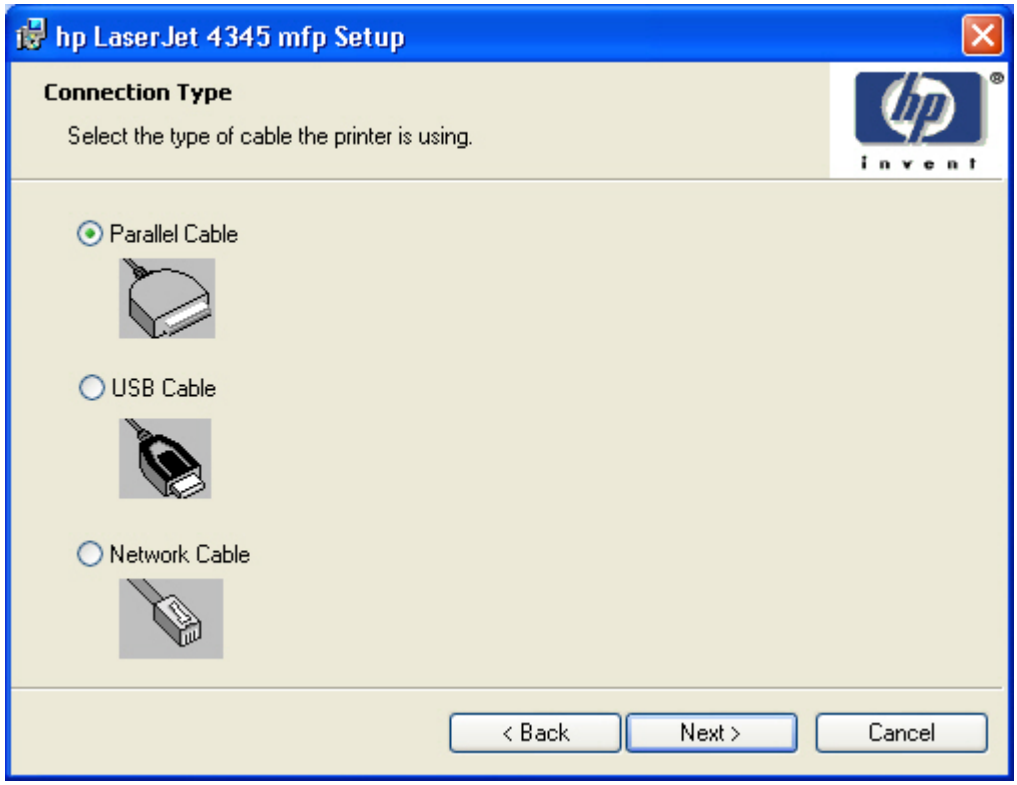

Figure 5-10 **Connection Type** dialog box

Clicking **Parallel Cable** and then clicking **Next** takes you to the **Cable Connection** dialog box.

Clicking **USB Cable** and then clicking **Next** takes you to the **Cable Connection** dialog box.

NOTE The HP LaserJet 4345mfp does **not** support a USB connection.

Clicking **Network Cable** and then clicking **Next** takes you to the **Print Job Management** dialog box.

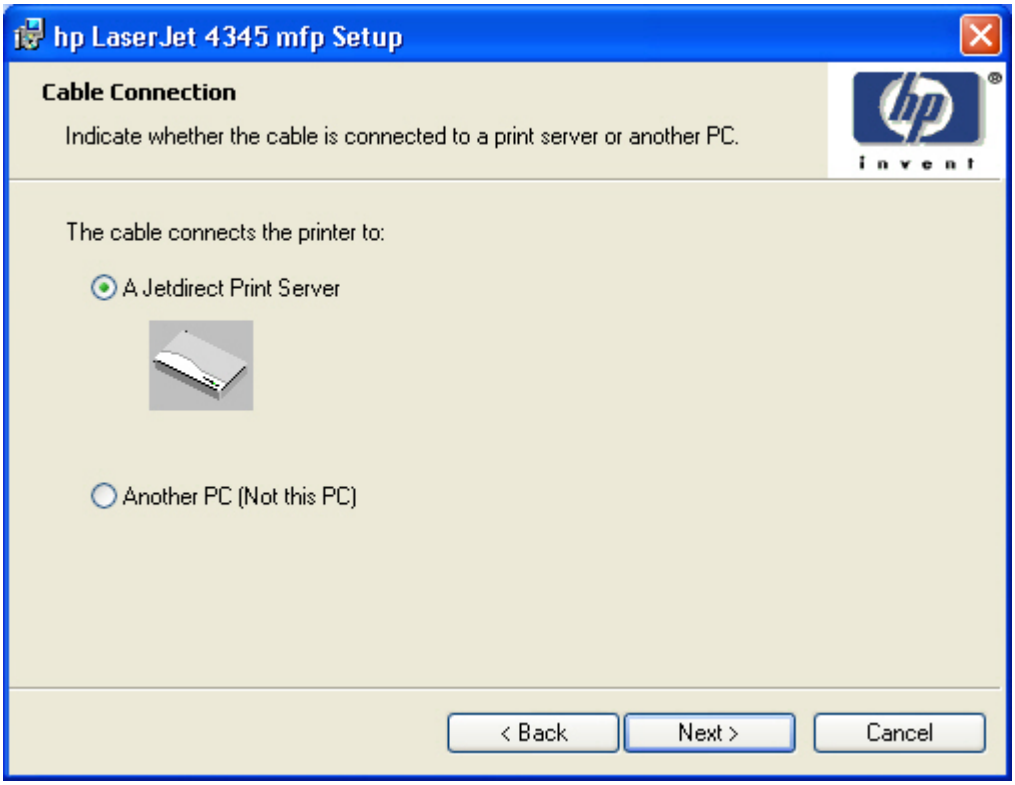

Figure 5-11 **Cable Connection** dialog box

Clicking **A Jetdirect Print Server** and then clicking **Next** takes you to the **Print Job Management** dialog box.

Clicking **Another PC (Not this PC)** and then clicking **Next** takes you to the **Recommended Network Setup** for client-server printing dialog box.

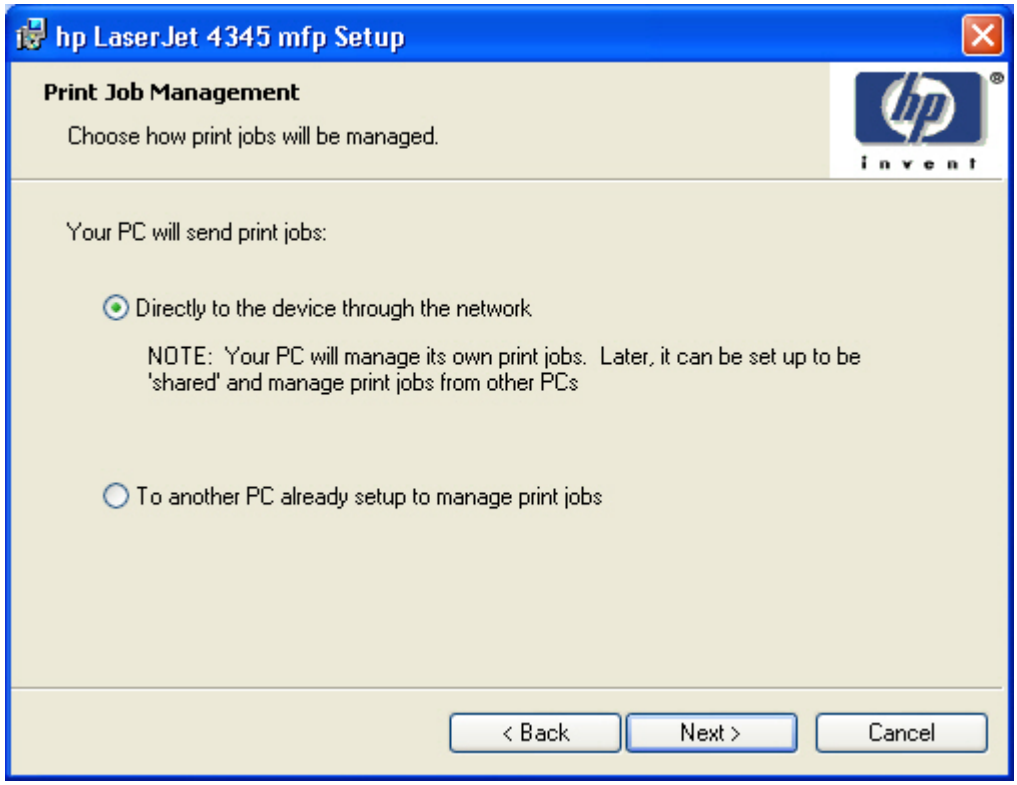

Figure 5-12 **Print Job Management** dialog box

Clicking either selection and then clicking **Next** takes you to the **Recommended Network Setup** dialog box.

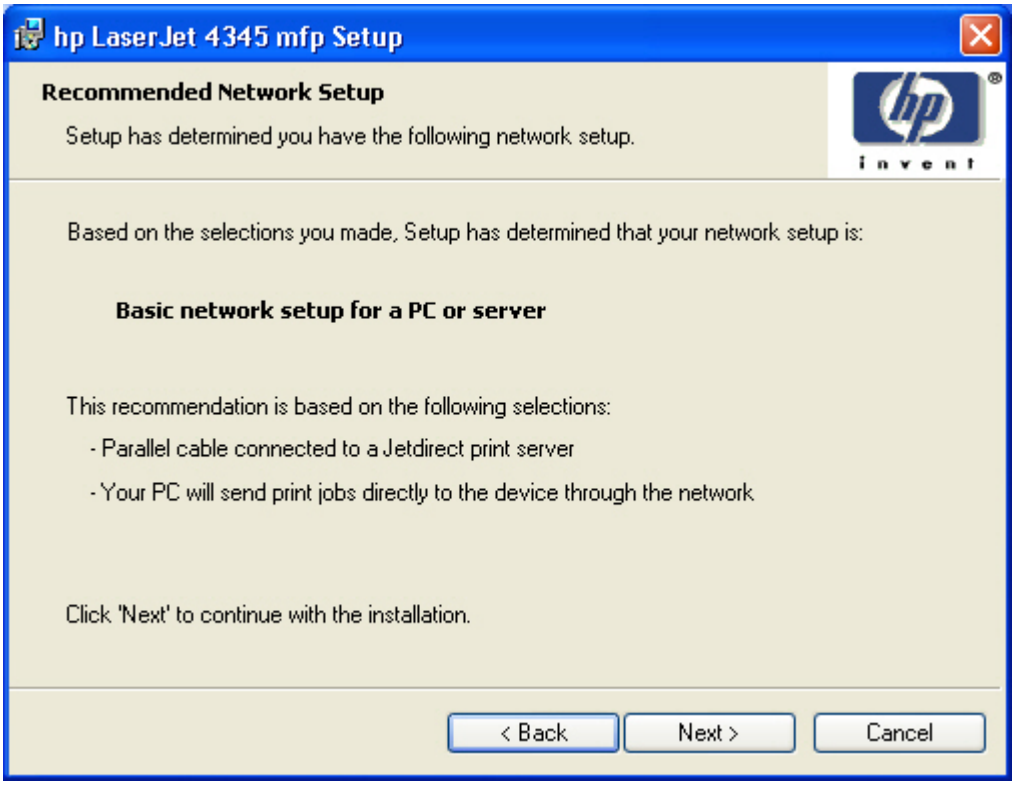

Figure 5-13 **Recommended Network Setup** dialog box

Clicking **Next** takes you to the **Identify Printer** dialog box.

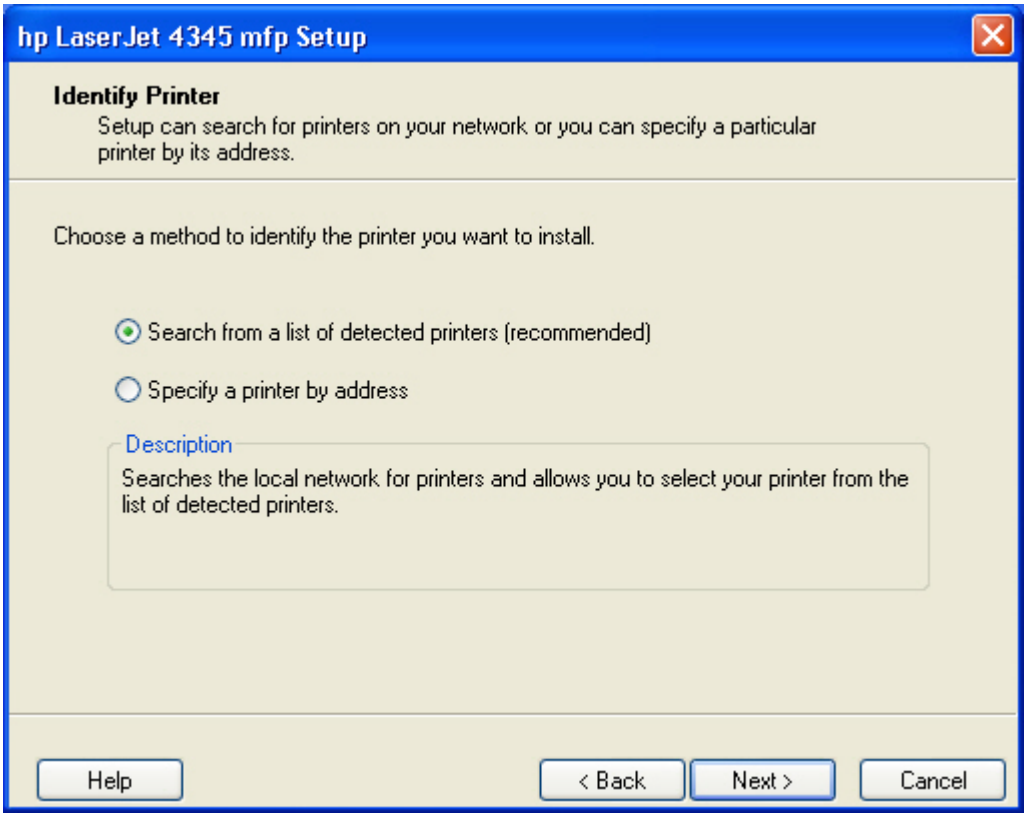

Figure 5-14 **Identify Printer** dialog box

Clicking **Search from a list of detected printers (recommended)**, and then clicking **Next** opens a screen that states that the installer is searching the network for available products to install.

If you are performing a network installation and no printer is found, the **Check Cable Connection** dialog box appears, advising you to make sure the cable is properly connected, and giving you the option of searching again or specifying a printer by address.

If a printer is found, the **Printer Found** dialog box appears, with a list of matching products that have been found on the network.

Clicking **Specify a printer by address** and then clicking **Next** takes you to the **Specify Printer** dialog box.

Clicking **Help** takes you to context-sensitive HTML help.

The **Specify Printer** dialog box is shown in the following illustration.

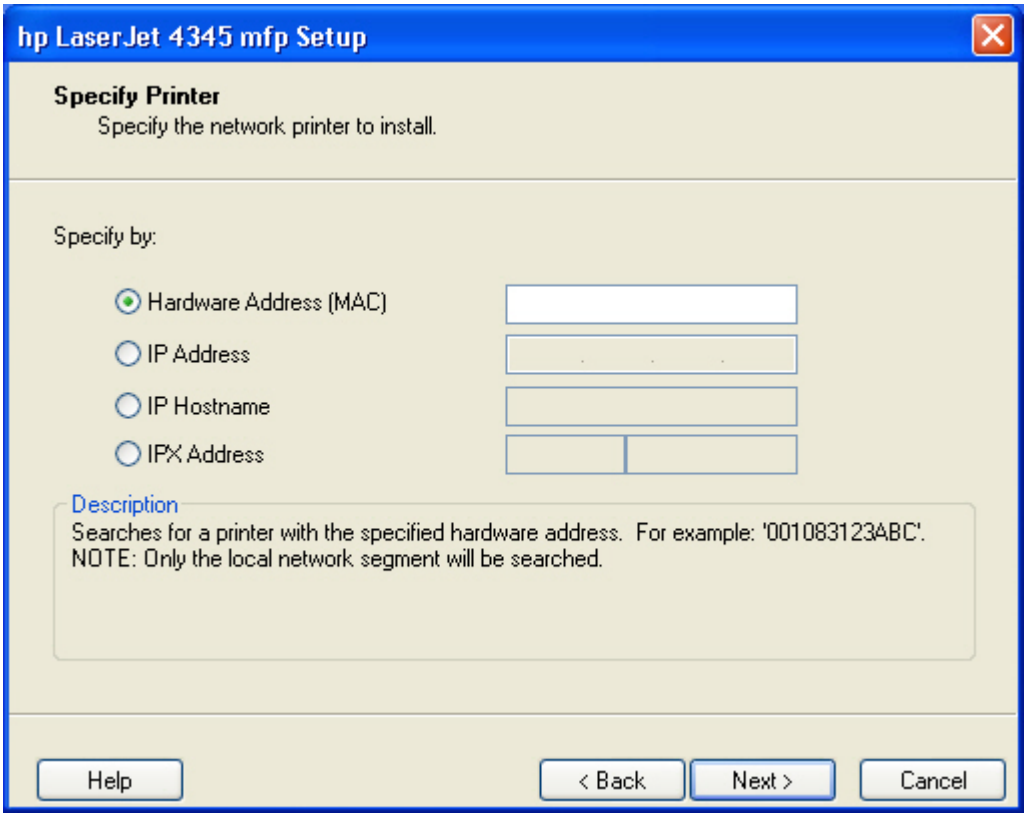

Figure 5-15 **Specify Printer** dialog box

You can specify a printer by selecting one of the following options and typing in the required information:

- **Hardware Address (MAC)**
- **IP Address**
- **IP Hostname**
- **IPX Address**

Clicking **Help** takes you to context-sensitive HTML help.

Clicking **Next** takes you to the **Printer Found** dialog box.

The **Printer Found** dialog box is shown in the following illustration.

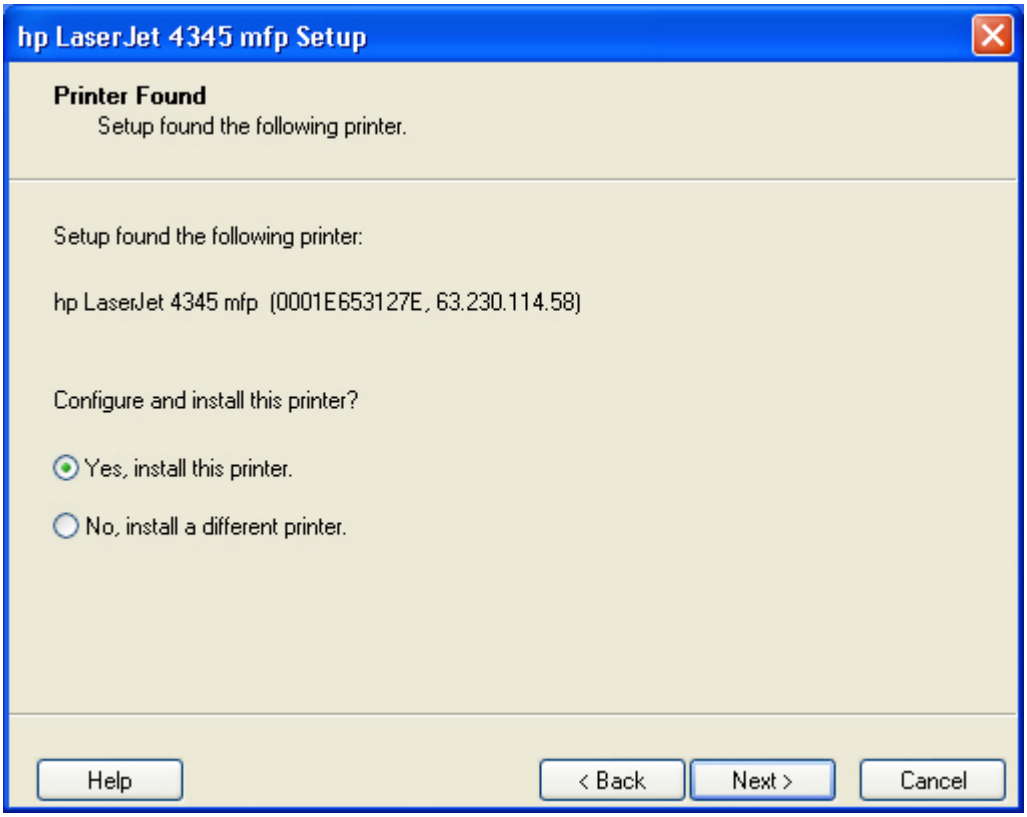

Figure 5-16 **Printer Found** dialog box

Clicking **Help** takes you to context-sensitive HTML help.

Selecting **Yes, install this printer** and clicking **Next** takes you to the **Confirm Settings** dialog box.

Clicking **No, install a different printer** takes you to the **Check Cable Connection** dialog box, advising you to make sure the cable is properly connected, and giving you the option of searching again for a network printer or specifying a printer by address.

The **Confirm Settings** dialog box is show in the following illustration.

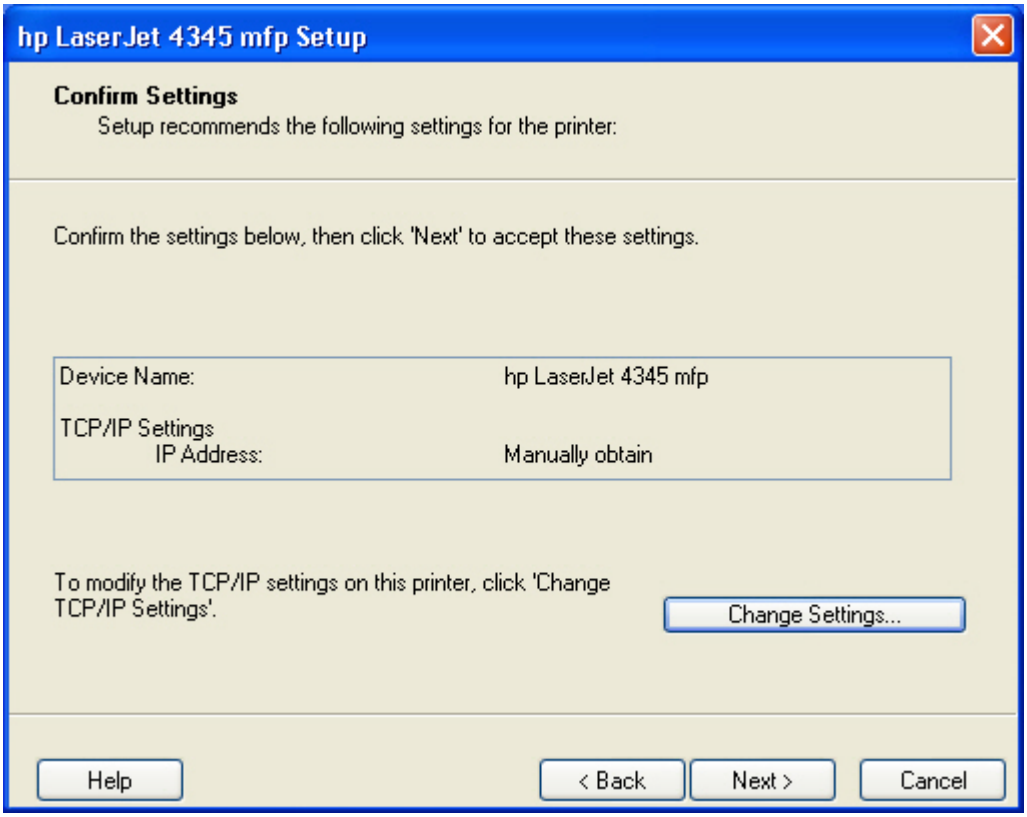

Figure 5-17 **Confirm Settings** dialog box

Clicking the **Change TCP/IP Settings** button takes you to the **Confirm Changing Setings** dialog box. Selecting **Yes**, and then clicking **Next** takes you to the **Set Network Protocol** dialog box.

Clicking **Help** takes you to context-sensitive HTML help.

Clicking **Next** takes you to the **Installation Type** dialog box.

Clicking **Cancel** takes you to the **Exit Setup** dialog box.

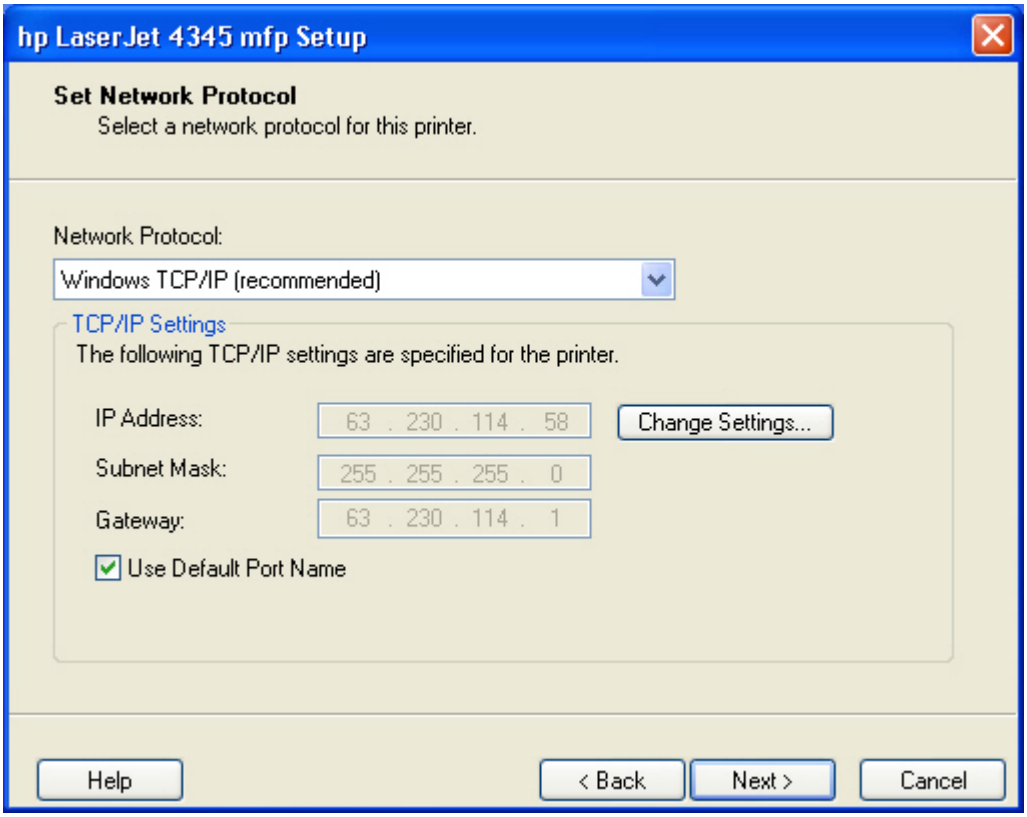

Figure 5-18 **Set Network Protocol** dialog box

Clicking **Change Settings...** takes you to the **Change Settings** dialog box, where you can type a different IP Address, Subnet Mask, and Gateway address. Clicking **OK** returns you to the **Set Network Protocol** dialog box.

Clicking **Next** takes you to the **Model** dialog box or the **Network Configuration Complete** dialog box, depending on your previous selections.

The **Installation Type** dialog box is shown in the following illustration.

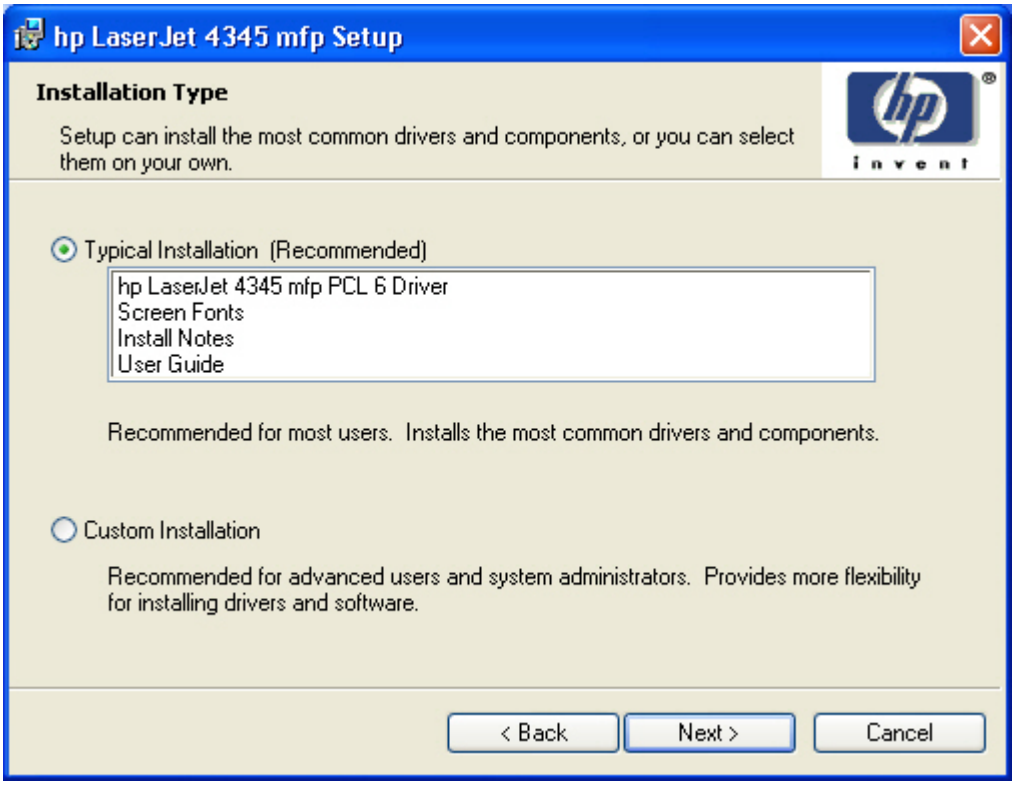

Figure 5-19 **Installation Type** dialog box

NOTE The components of a Typical Installation might vary from product to product.

Clicking **Typical Installation (Recommended)** and then clicking **Next** takes you to the **Printer Name** dialog box.

Clicking **Minimum Installation** and then clicking **Next** takes you to the **Printer Name** dialog box.

NOTE The Minimum Installation option installs only those components necessary for basic printing. The Minimum Installation option will become available after product release.

Clicking **Custom Installation** and then clicking **Next**, opens the **Features** dialog box.

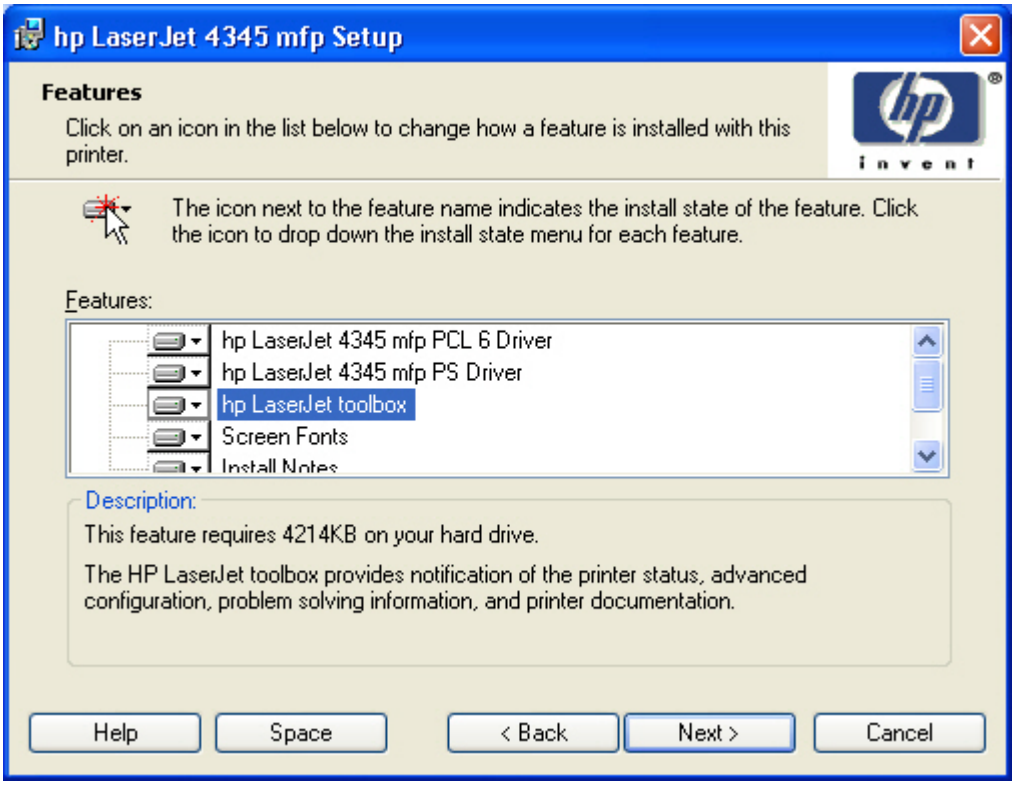

Figure 5-20 **Features** dialog box

NOTE When you do not share the printer, additional driver support is not available. If you share the printer on Windows NT 4.0, Windows 2000, Windows XP, or Windows Server 2003 operating systems by selecting **Share as**, you must type a name. You can also provide additional print driver support for other operating systems.

A red X in the icon indicates that the feature is not installed. The installed icon appears when you select an installation state for that feature.

Clicking the **Space** button opens the **Disk Space Requirements** dialog box, which shows the amount of available space on your hard drive and advises you if there is not enough space for the features you have selected.

Clicking **Next** opens the **Printer Name** dialog box.

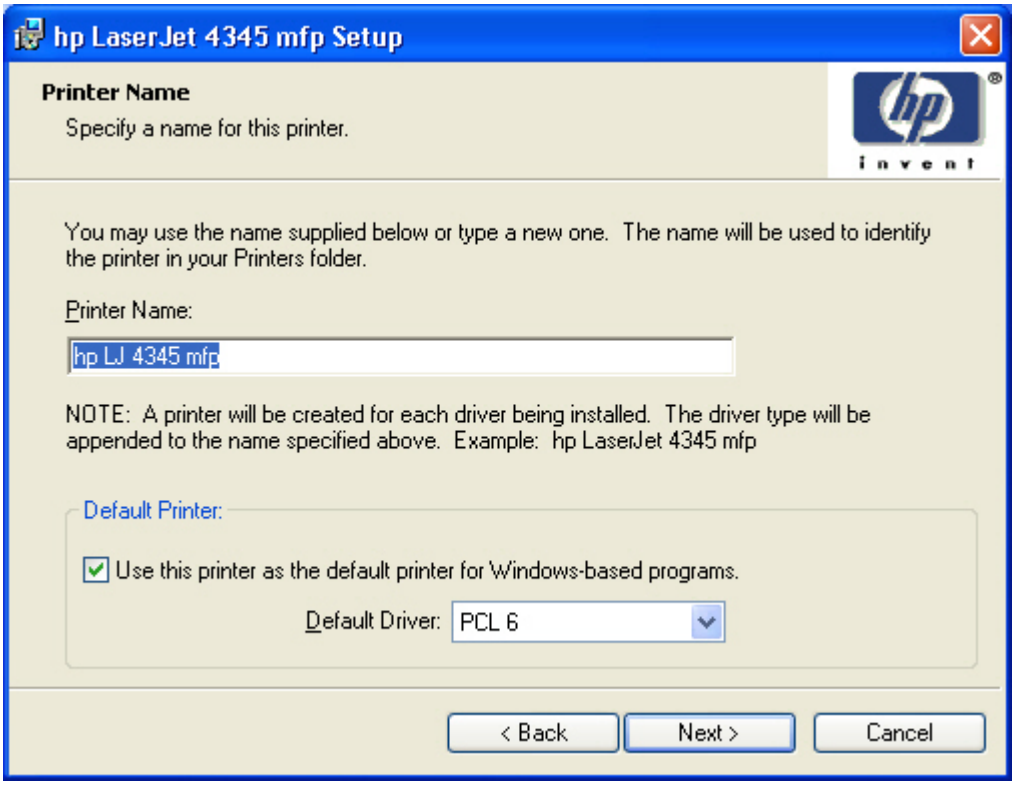

Figure 5-21 **Printer Name** dialog box

Selecting the **Use this printer as the default printer for Windows-based programs** check box sets the HP LaserJet 4345mfp as your default printer.

Clicking **Next** takes you to the **Printer Sharing** dialog box.

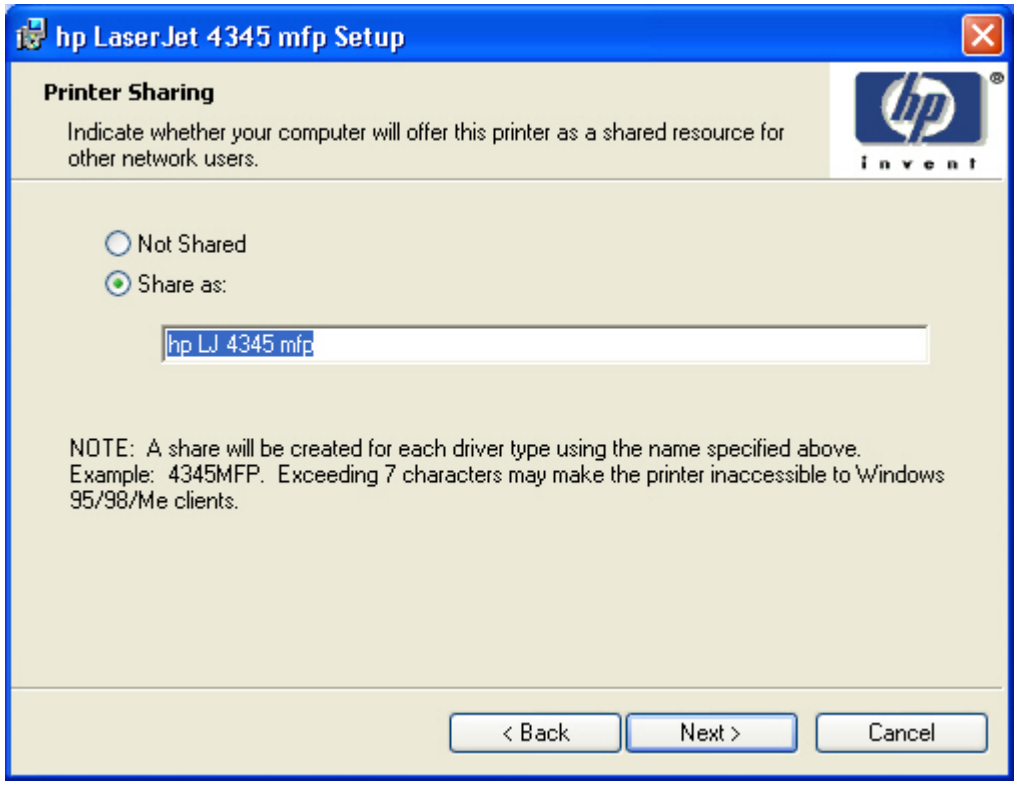

Figure 5-22 **Printer Sharing** dialog box

NOTE The **Printer Sharing** dialog box does not appear if your computer is running Windows 98 or Windows Me.

Clicking **Not shared** and then clicking **Next** takes you to the **Printer Location and Comment** dialog box or the **Installation Type** dialog box.

Clicking **Share as:** causes the text box to become active. Typing the share name and then clicking **Next** takes you to the **Client Driver Support** dialog box.

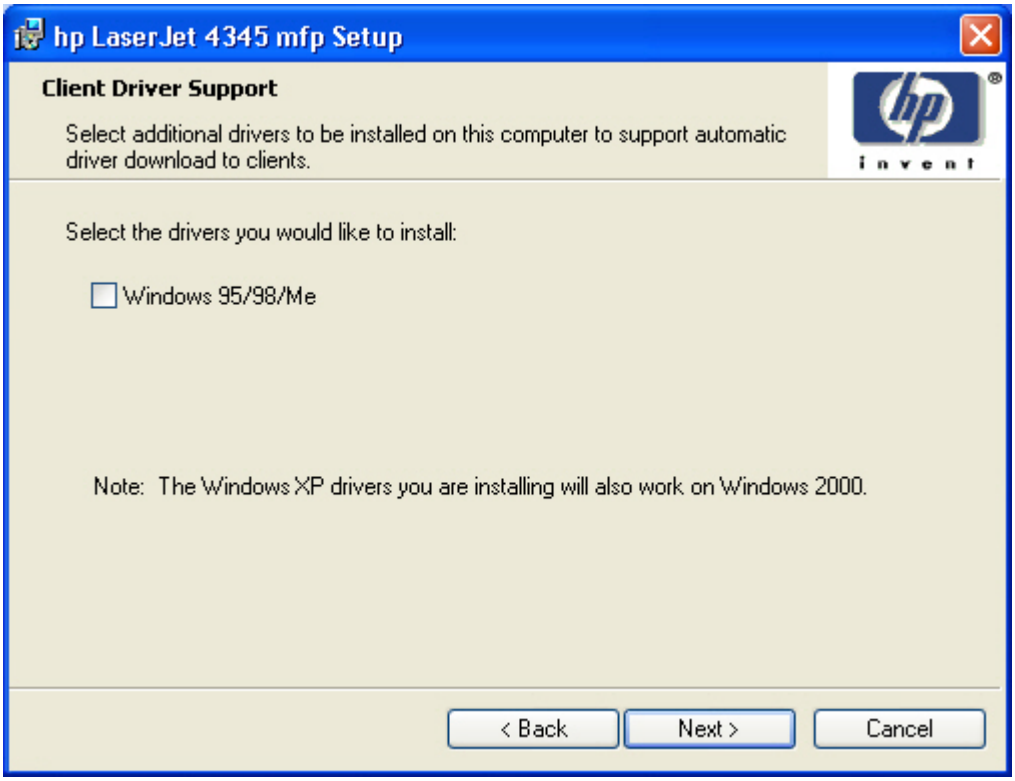

Figure 5-23 **Client Driver Support** dialog box

The **Client Driver Support** dialog box does not appear if the computer is running Windows 98 or Windows Me.

Clicking **Next** takes you to the **Printer Location and Comment** dialog box.

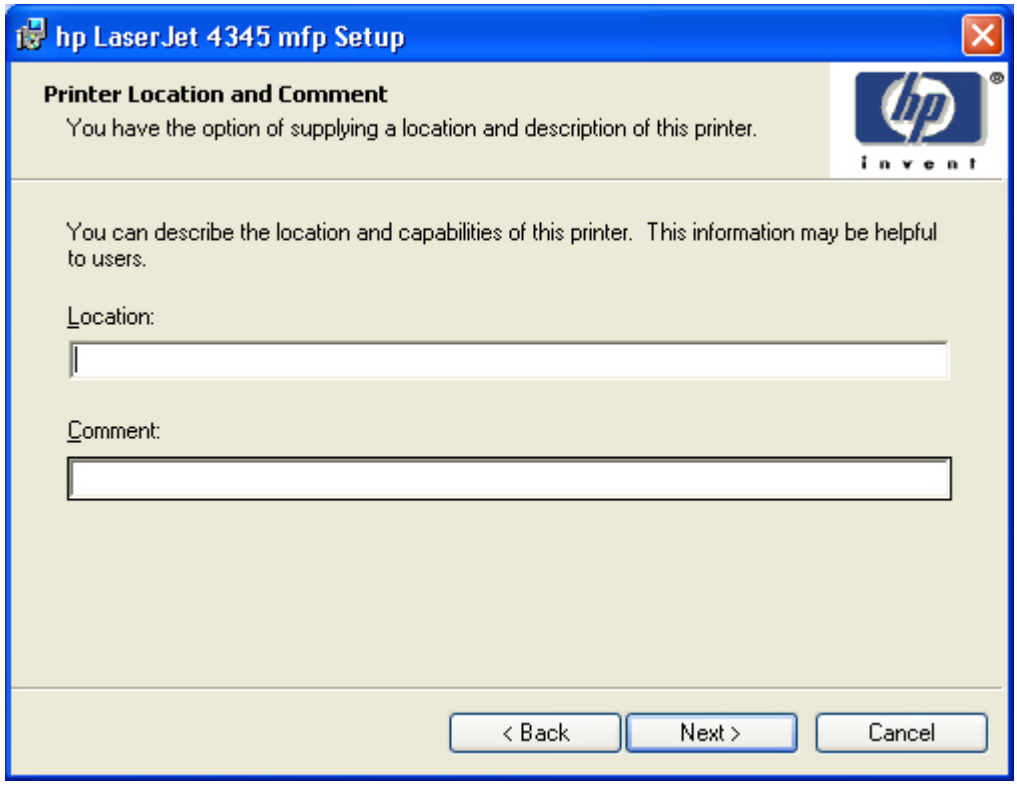

Figure 5-24 Printer Location and Comment dialog box

In the **Location** text box, you can type the physical location of the printer. In the **Comment** text box, you can type any additional information that might be helpful to users.

Clicking **Next** takes you to the **Ready to Install** dialog box.

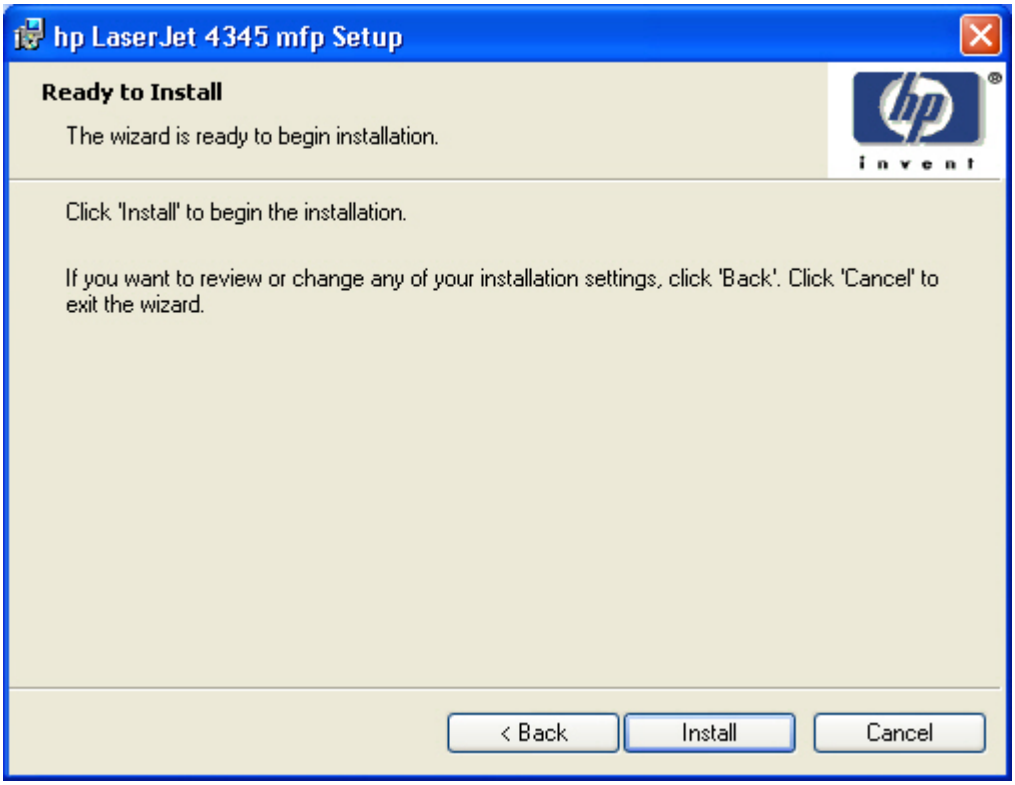

Figure 5-25 **Ready to Install** dialog box

Clicking **Install** starts the installation process.

When installation is complete, the **Finish** dialog box appears, as shown in the following illustration.

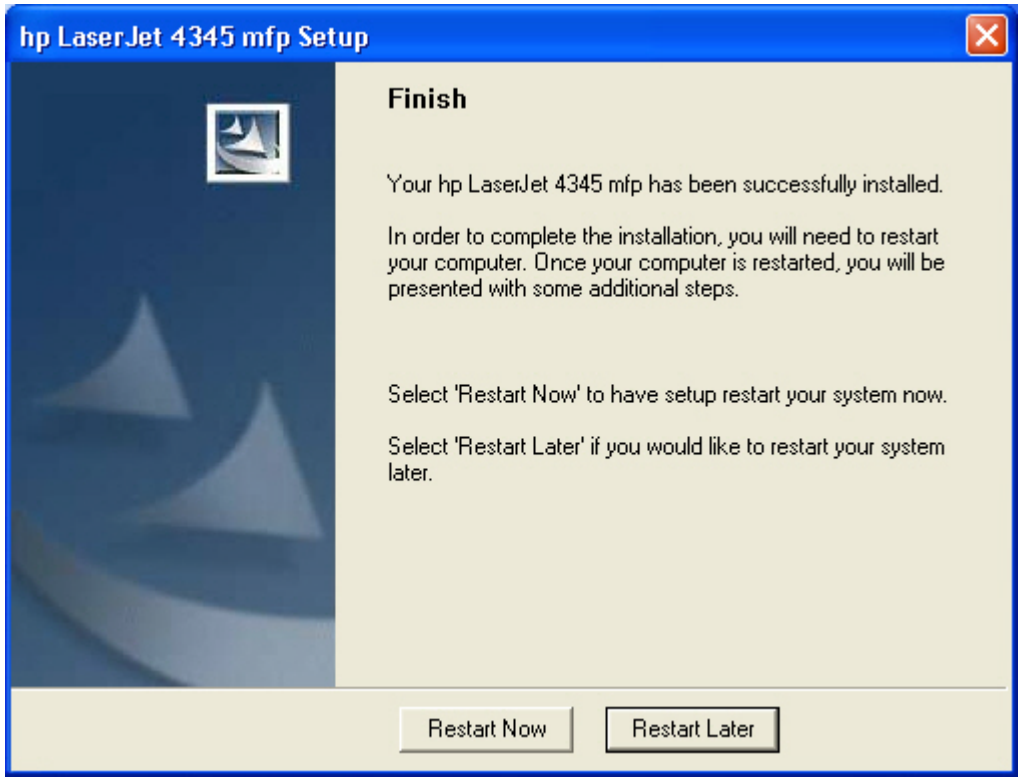

Figure 5-26 **Finish** dialog box

Clicking **Restart Now** turns your machine off and then on again, and installation is complete. If you click **Restart Later**, installation is complete only after you power down and restart your machine.

NOTE Depending on the type of installation and chosen options, you will or will *not* be presented with some additional steps once your computer is restarted.

Custom Installation

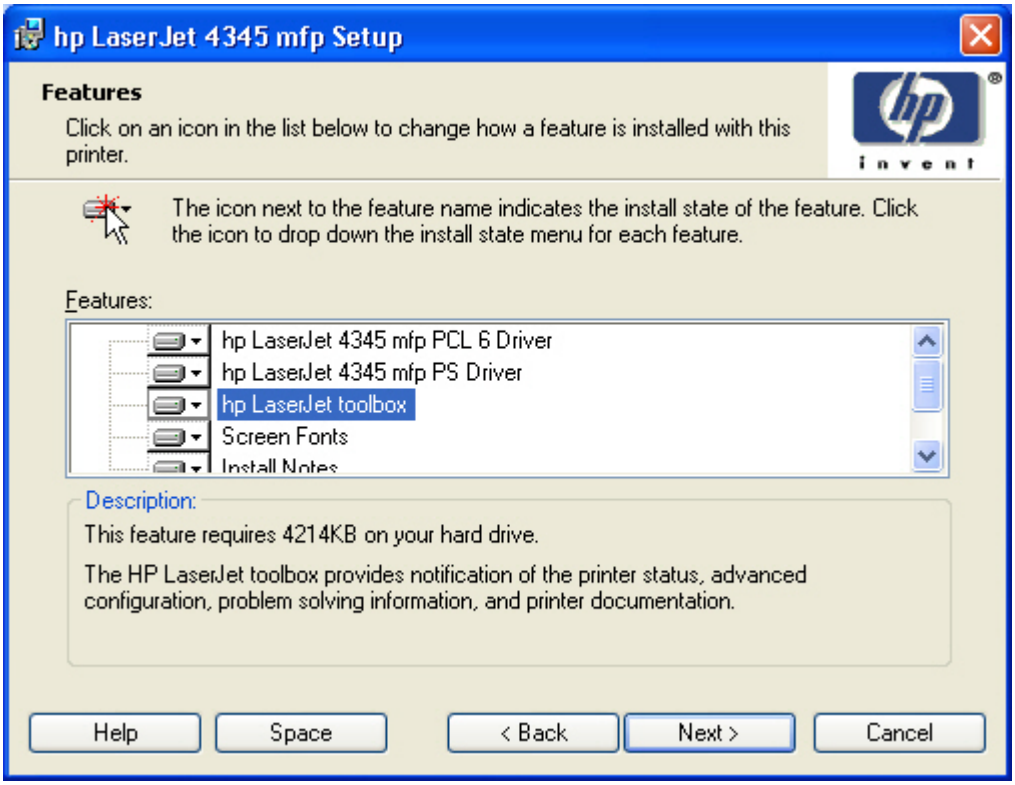

Figure 5-27 **Features** dialog box, Custom Installation

NOTE The features available in a Custom Installation might vary from product to product.

Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003 computers running a terminal server do not support the HP Toolbox option.

The appearance of the **Features** dialog box might vary, depending on the product and the connection type.

Clicking **Next** takes you to the **Printer Name** dialog box.

If you selected **Custom Installation** in the **Installation Type** dialog box, the following options are available in the **Features** dialog box:

- **hp LaserJet 4345 mfp PCL 6 Driver** (for direct-connect and network installations)
- **hp LaserJet 4345mfp PS Driver** (for direct-connect and network installations)
- **hp LaserJet toolbox** (for network installations)
- **Screen Fonts**
- **Install Notes**
- **User Guide**

Installing print drivers by using the Add Printer feature

Use the following steps to install the print drivers by using the Add Printer feature of Windows:

1. Insert the CD in the CD-ROM drive.
2. Go to the **Add a printer** feature in Windows.

   In Windows XP, click **Start** on the desktop, and then click **Printers and Faxes**. The **Printers and Faxes** window appears. Click **Add a printer**. The **Add a printer** wizard screen appears.

   In Windows NT, Windows 9x, and Windows 2000, click **Start** on the desktop, click **Settings**, click **Printers and Faxes** and then click **Add a printer**. The **Add a printer** wizard screen appears.
3. Use the **Add a printer** wizard to find and connect to the printer. The print drivers are loaded as a part of this process.

If your computer is running a 64-bit Windows operating system, you must install the corresponding 64-bit print driver. The 64-bit print drivers are included on the software CD-ROM. Use the following steps to install a print driver by using the Add Printer feature.

1. Insert the CD in the CD-ROM drive.
2. Click **Start** on the desktop, click **Settings**, click **Printers and Faxes** and then click **Add a printer**. The **Add a printer** wizard screen appears.
3. Use the **Add a printer** wizard to find and connect to the product. The print drivers are loaded as a part of this process.
4. Select the **Have disk** option and navigate to one of the the following files on the software CD:

   To install the PCL 6 driver for the HP LaserJet 4345mfp, select \<language>\Drivers\(your operating system)\PCL6\hpc4345c.inf

   To install the PCL 5 driver for the HP LaserJet 4345mfp, select \<language>\Drivers\(your operating system)\PCL6\hpc4345c.inf

   To install the PS driver for the HP LaserJet 4345mfp, select \<language>\Drivers\(your operating system)\PS\hpc4345c.inf
5. Complete the wizard steps. The print driver will be installed as part of the wizard process.

Installer Customization Wizard for Windows

Administrators can use the **Installer Customization Wizard** option to customize the HP LaserJet 4345mfp installer by pre-setting the installation options in a response file. To start the utility, click **installer customization wizard** on the main menu of the software CD browser. Using this option, administrators can create a silent (unattended) installer that is customized with any of the following selections:

- Language
- Operating system
- Print drivers
- Components

NOTE For detailed information about the Installer Customization Wizard, see the *HP Device Installer Customization Wizard*. This document (CUSTOMIZATIONDOC.RTF) is available on the printing-system software CD at the root of the **<language>** folder.

Running the installer customization wizard

Running the Installer Customization Wizard produces one installation package and a response file (RESPONSE.INI) for a single system installation. The installation package might work for multiple systems that have the same response information, or the RESPONSE.INI file can be edited for system configuration differences directly in the RESPONSE.INI file. The Installer *HP Device Installer Customization Wizard*, available on the printing-system software CD at the root of the **<language>** folder, provides the exact text for replacing entries in the RESPONSE.INI file.

To run the installer customization wizard

1. Insert the HP LaserJet 4345mfp software CD in the CD-ROM drive.
2. In the CD browser main screen, click **installer customization wizard**.
3. Choose the setup language that you wish to use. The installer automatically detects the language that your computer system uses and presents this selection as the default. Click **OK** to continue.

   You can select another language that is available on the CD by clicking the down arrow in the drop-down menu.

The Installer Customization Wizard starts automatically. To complete the installation, follow the instructions in the dialog boxes, as described in the following section.

Dialogs

The Installer Customization Wizard runs from the CD. It can be launched from the CD browser, depending on product-specific instantiation. It runs separately from MSI with its own interface.

The **Choose Setup Language** dialog box, the **InstallShield Wizard** dialog box, and the **Preparing to Install** dialog box appear the same as they appear in the standard installer. After these dialog boxes, the **Installer Customization Wizard Welcome** dialog box appears.

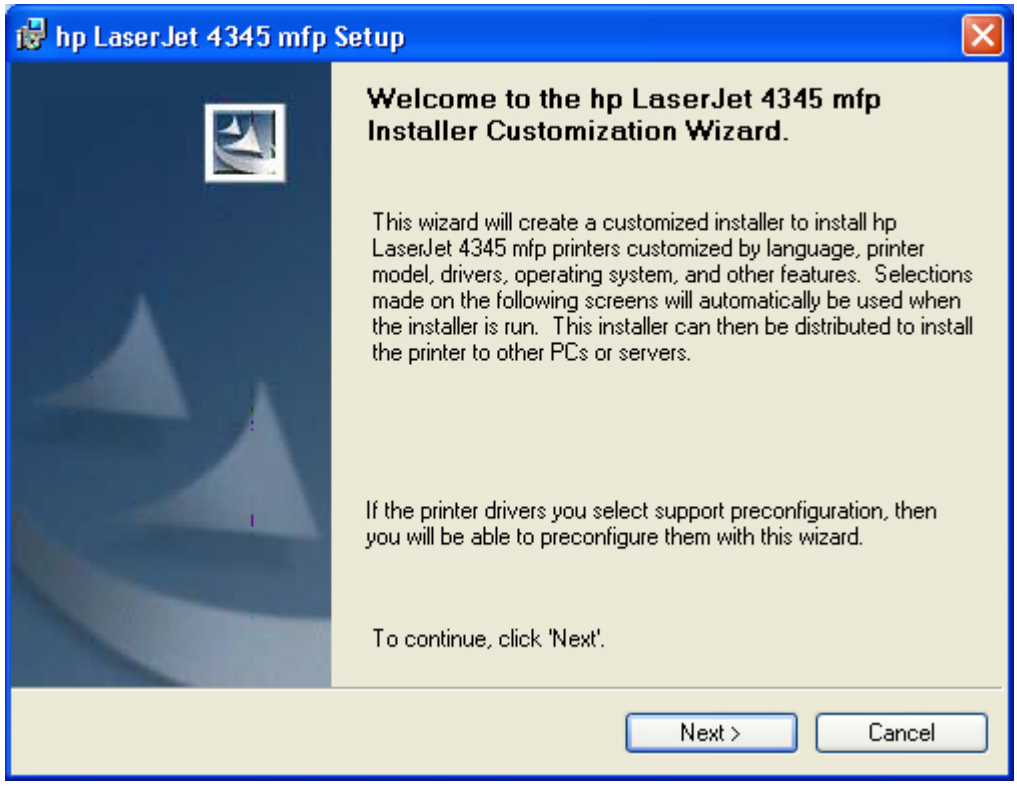

Figure 5-28 **Installer Customization Wizard Welcome** dialog box

Clicking **Next** takes you to the **Language** dialog box.

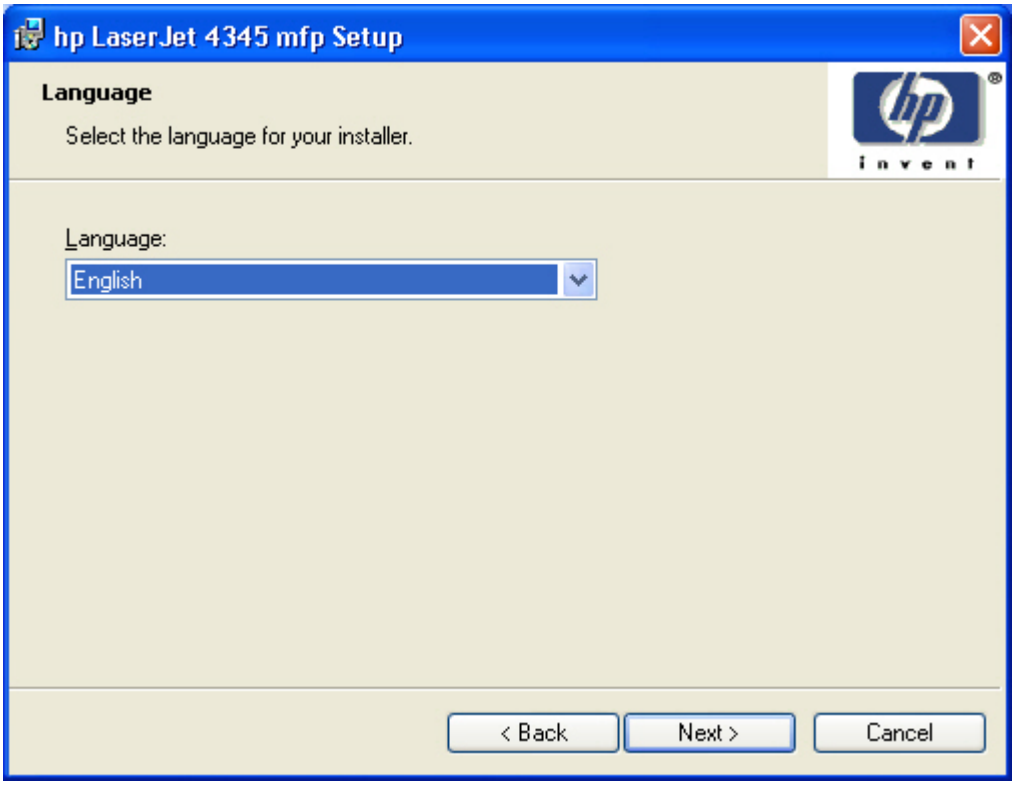

Figure 5-29 **Language** dialog box

NOTE The customized installer limits all system installations of the product to the language that is selected in the **Language** dialog box. The maintenance mode on systems where installation has been completed by using the customized installer does not provide options for changing the language. To change the language on a system that used an Installer Customization Wizard installation, the customized installation must be uninstalled, and a new product must be installed to restore the option to install other languages.

The language that you selected is installed on users' computers regardless of the language of the text in the dialog boxes (as specified in the **Choose a language** dialog box earlier). The **Language** dialog box defaults to the language that was selected in the **Choose a language** dialog box, but any language (that is available on the CD) can be chosen for the customized installer. The language choice is recorded in the response file.

Clicking **Next** takes you to the **Printer Port** dialog box.

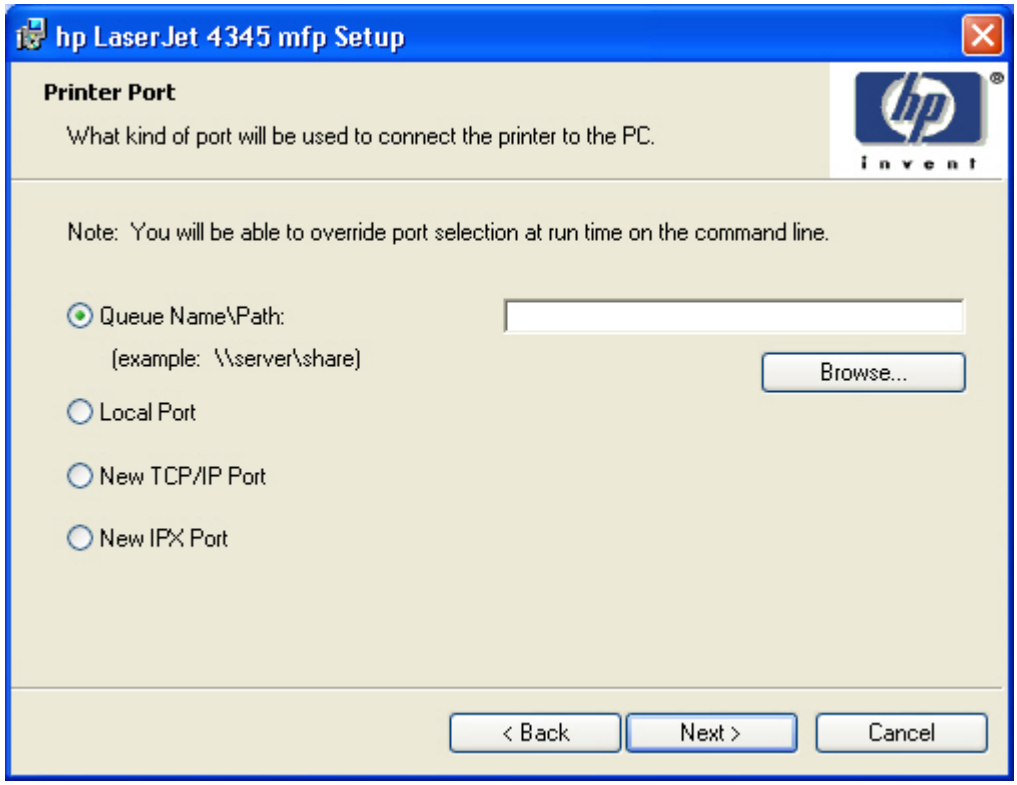

Figure 5-30 **Printer Port** dialog box

Clicking **Queue Name\Path** makes a text field available for a Queue entry. Click the **Browse** button to navigate to a printer to record the path.

Clicking **Local Port** and then clicking **Next** takes you to the **Connector Type** dialog box, which is similar to the **Connection Type** dialog box that appears during a standard installation. However, the **Connector Type** dialog box includes all types of local ports regardless of local support. It also includes all custom network ports that are available on the local system. To use any custom network port for the customized installer, the port must be created identically on the system where the port will be used.

Clicking **New TCP/IP Port** or **New IPX Port** and then clicking **Next** takes you to the **Specify Printer** dialog box.

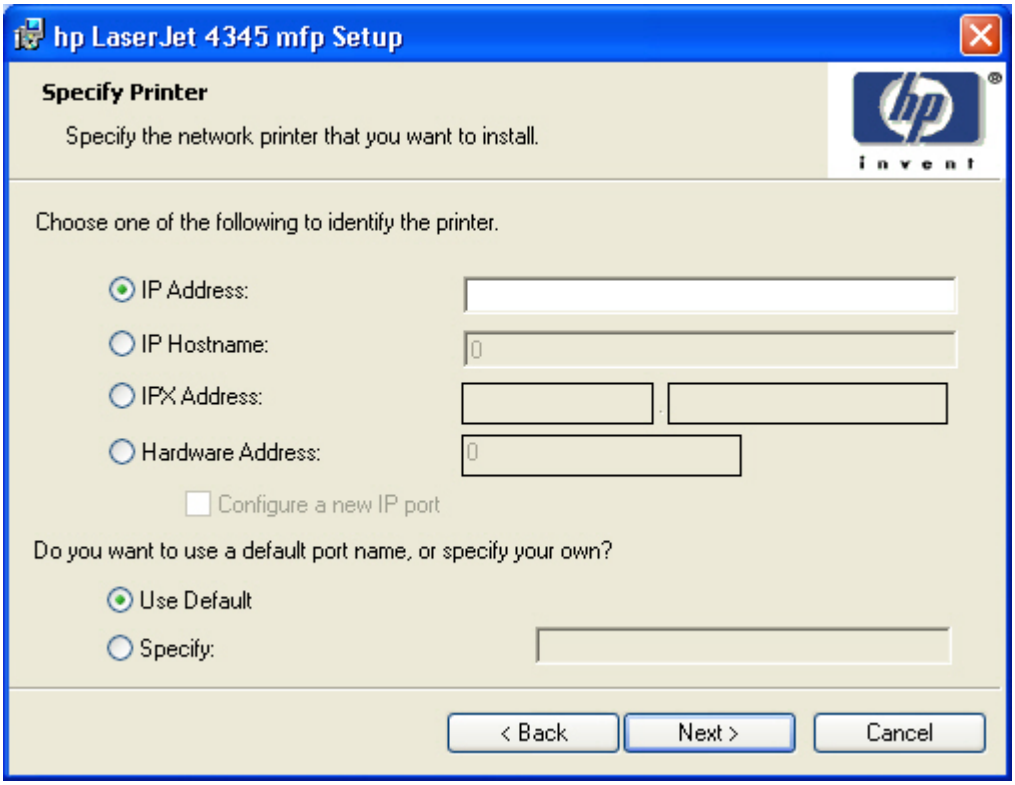

Figure 5-31 **Specify Printer** dialog box

Clicking **IP Address:** makes a field available for typing the IP address for the product. You can only use numerals in this field. If this option is selected, at least one digit must be typed in the IP Address field to prevent an error message from appearing, asking for a valid IP address.

Clicking **IP Hostname:** makes a field available for typing the IP hostname for the printer. You can use any characters in this field, but an error message appears if spaces are included in the field. If this option is selected, at least one character must be typed in the IP Hostname field to prevent an error message from appearing, asking for a valid IP hostname.

Clicking **IPX Address:** makes a field available for typing the IPX address of the printer.

Clicking **Hardware Address:** makes a field available for typing the hardware address of the printer. It accepts any characters but limits the entry to 13 characters.

The **Hardware Address:** option also creates an option to configure a new port. If you type a hardware address and click **Next** in the **Specify Printer** dialog box with **Configure a new IP port** selected, the **IP Settings** dialog box opens and you can set up the new port.

Clicking any of the options and then clicking **Next** takes you to the **IP Settings** dialog box.

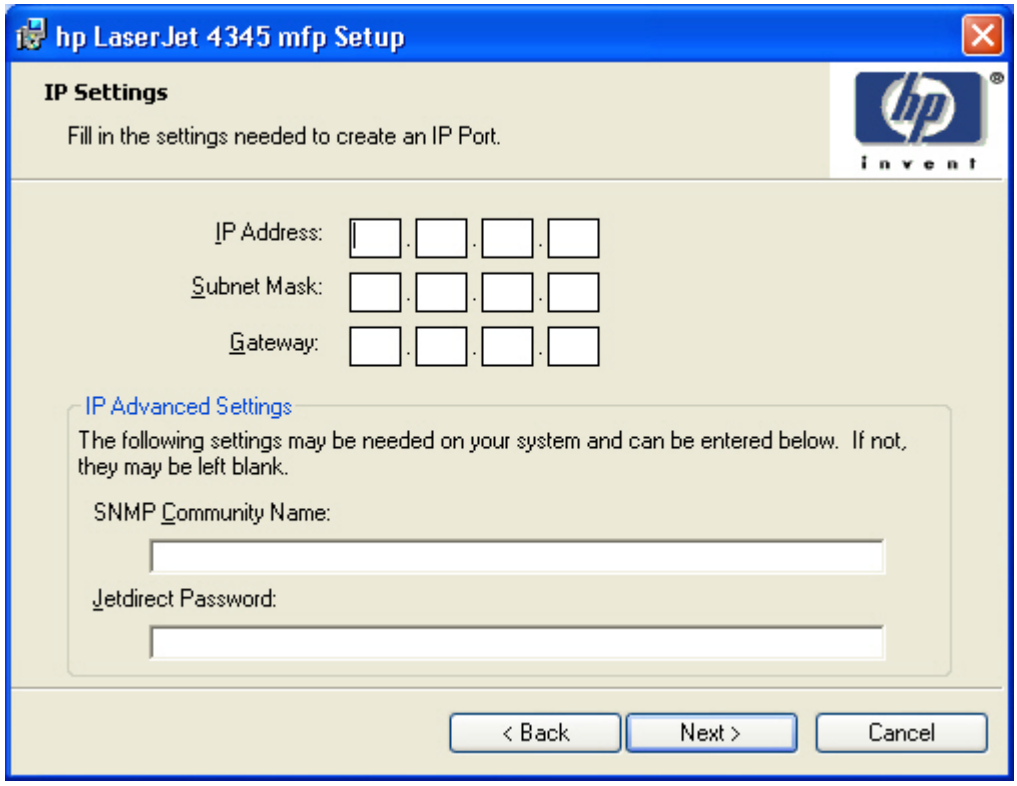

Figure 5-32 **IP Settings** dialog box

NOTE The Installer Customization Wizard does not validate that the product or any of the product identification entries actually exists on the network, because the customized installer can be used on a separate network.

Typing the appropriate information and then clicking **Next** takes you to the **New IPX Port** dialog box.

The **New IPX Port** selection in the **Printer Port** dialog box behaves the same way that the **New TCP/IP Port** selection behaves: the **Specify Printer** dialog box opens with the same options, each with the same results.

Clicking **Next** takes you to the **Features** dialog box.

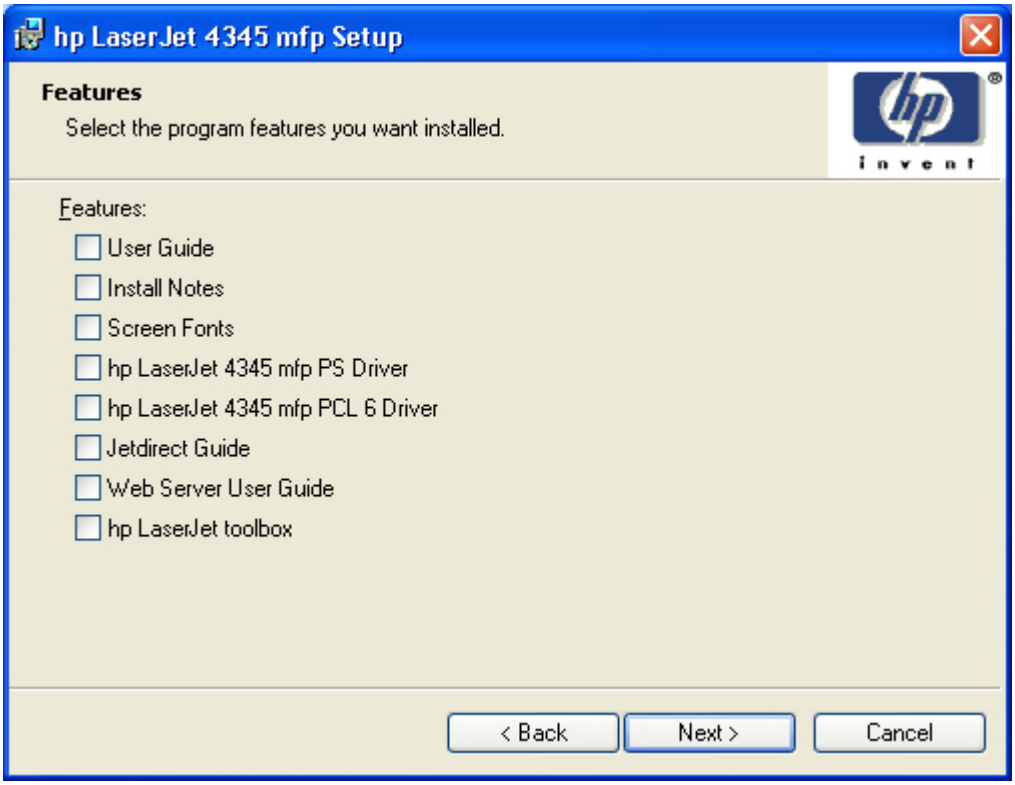

Figure 5-33 **Features** dialog box

Any combination of features can be selected for the installer, and none depends on any other feature selection. It is possible to create a custom installer that installs features without including a print driver.

Clicking **Next** takes you to the **Driver Configuration** dialog box.

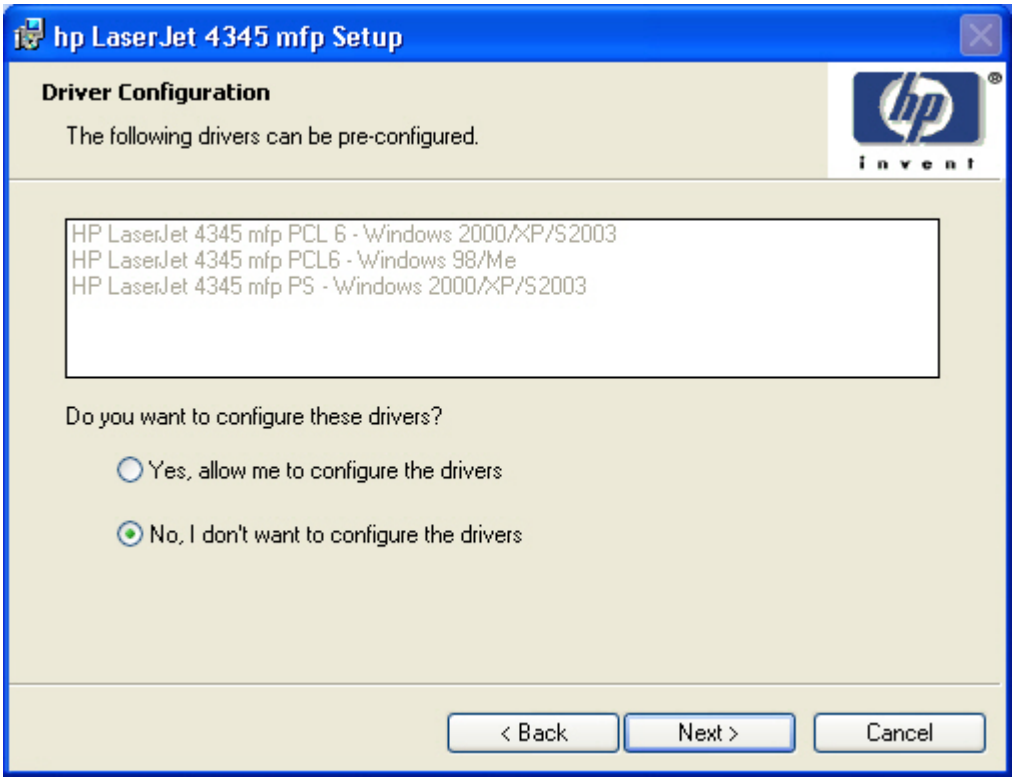

Figure 5-34 **Driver Configuration** preconfigure dialog box

It is possible to supply a preconfigured driver in the customized installer if the driver supports it. You can use the preconfigured driver to place default settings on the printer that is installed. If a driver that supports this feature is selected in the **Features** dialog box, the **Driver Configuration** dialog box appears.

Clicking **Yes** and then clicking **Next** opens a list of all printing preferences and device options for the product.

Clicking **No** and then clicking **Next** takes you to the **Printer Name** dialog box.

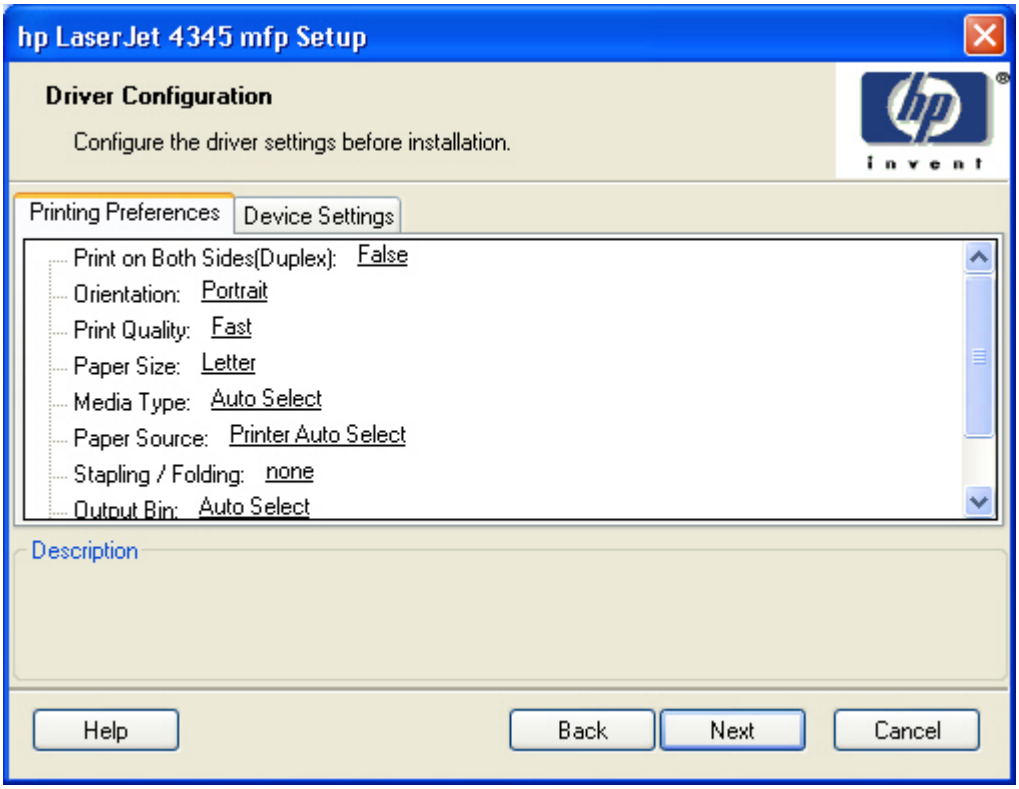

Figure 5-35 Driver Configuration dialog box

Any setting in this dialog box, including those on the **Device Settings** tab, can be preset before the printer is installed (subject to the normal driver constraints).

Clicking **Next** opens either the **Preconfigure Printer** dialog box for another driver that supports preconfiguration (if any), or the **Printer Name** dialog box.

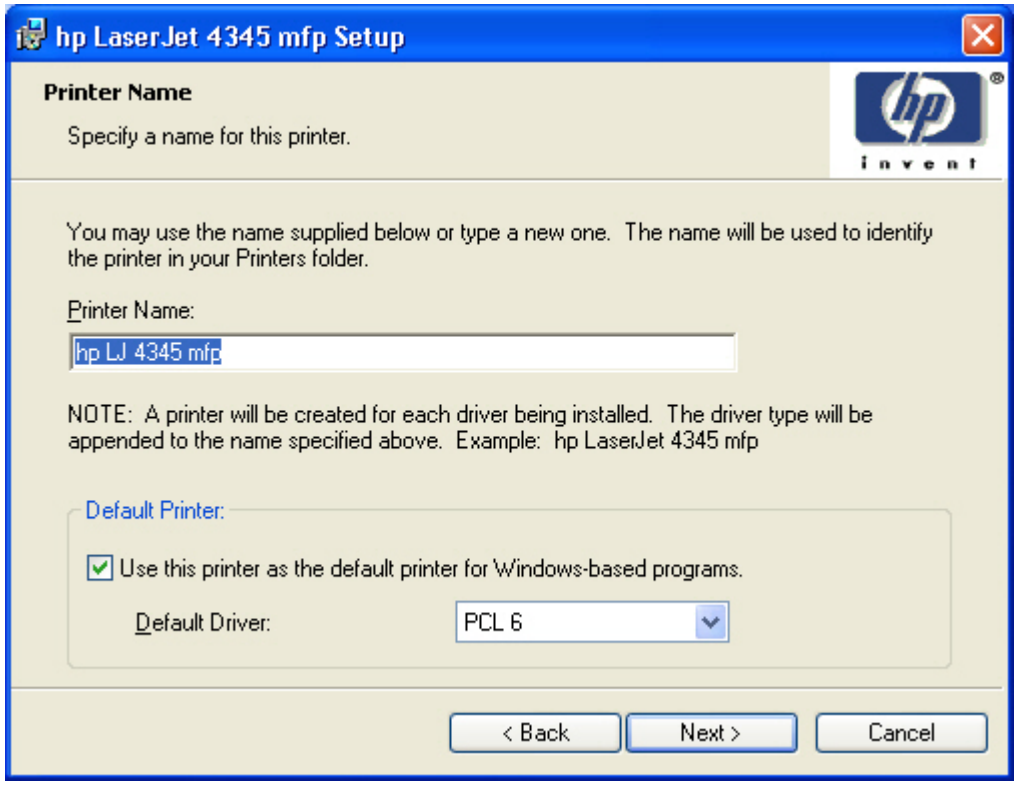

Figure 5-36 Printer Name dialog box

The **Default Printer:** drop-down menu lists only those drivers that are selected in the **Features** dialog box.

The Use this printer as the default printer for Windows-based programs check box is selected by default. Clear this box if you do not want to use the HP LaserJet 4345mfp as the default printer.

Clicking **Next** opens the **Printer Sharing** dialog box.

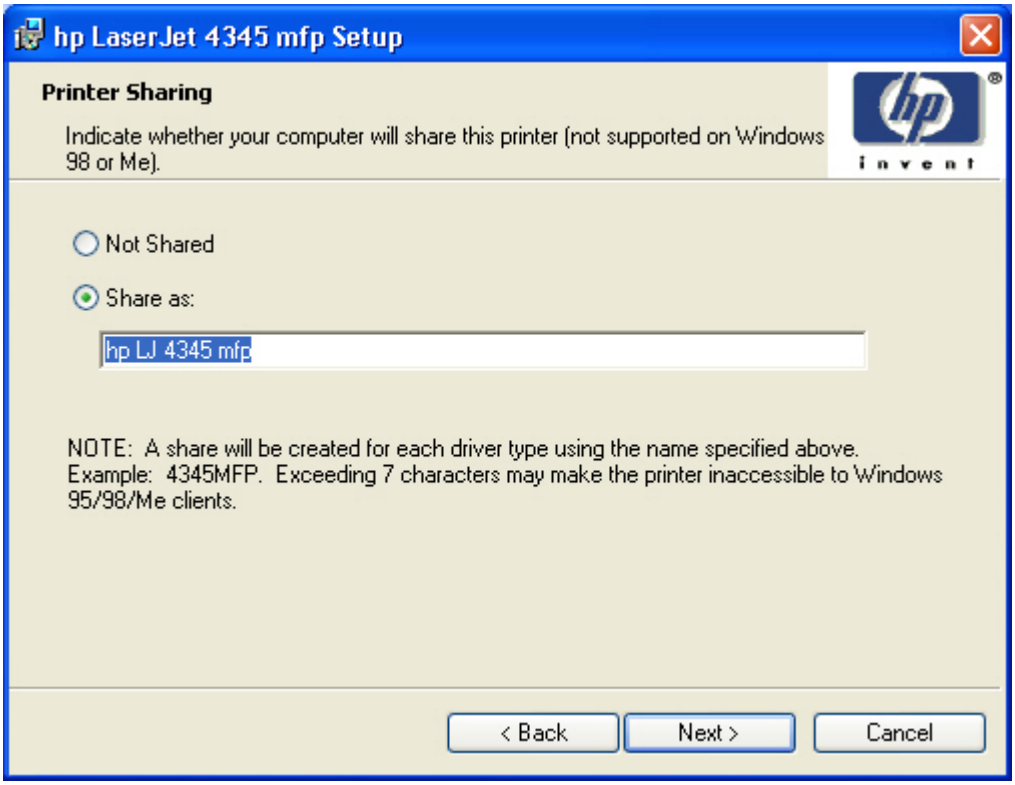

Figure 5-37 **Printer Sharing** dialog box

Clicking **Share as:** opens a field for naming the product as it will appear on the network.

Clicking **Next** with **Not Shared** selected takes you to the **Printer Location and Comment** dialog box.

Clicking **Share as:** and then clicking **Next** takes you to the **Client Driver Support** dialog box.

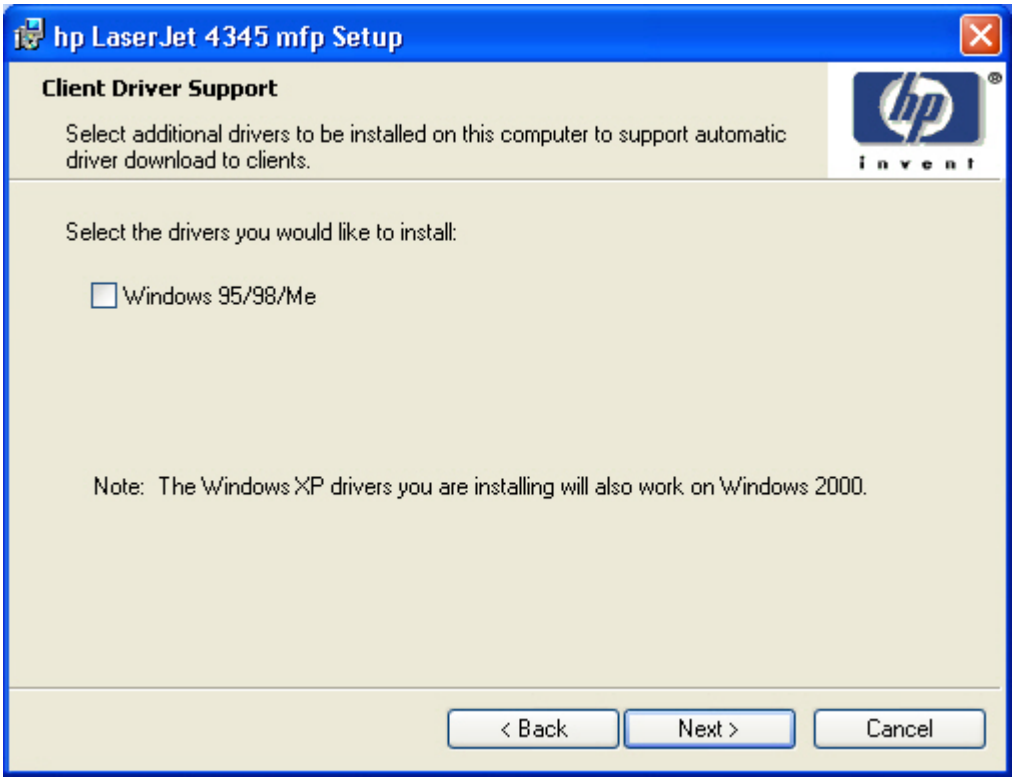

Figure 5-38 Client Driver Support dialog box

NOTE This dialog box provides options for selecting OS-specific drivers to add to the installation to provide for Point and Print driver vending on the system. Any or all optional drivers can be selected.

Clicking **Next** takes you to the **Printer Location and Comment** dialog box.

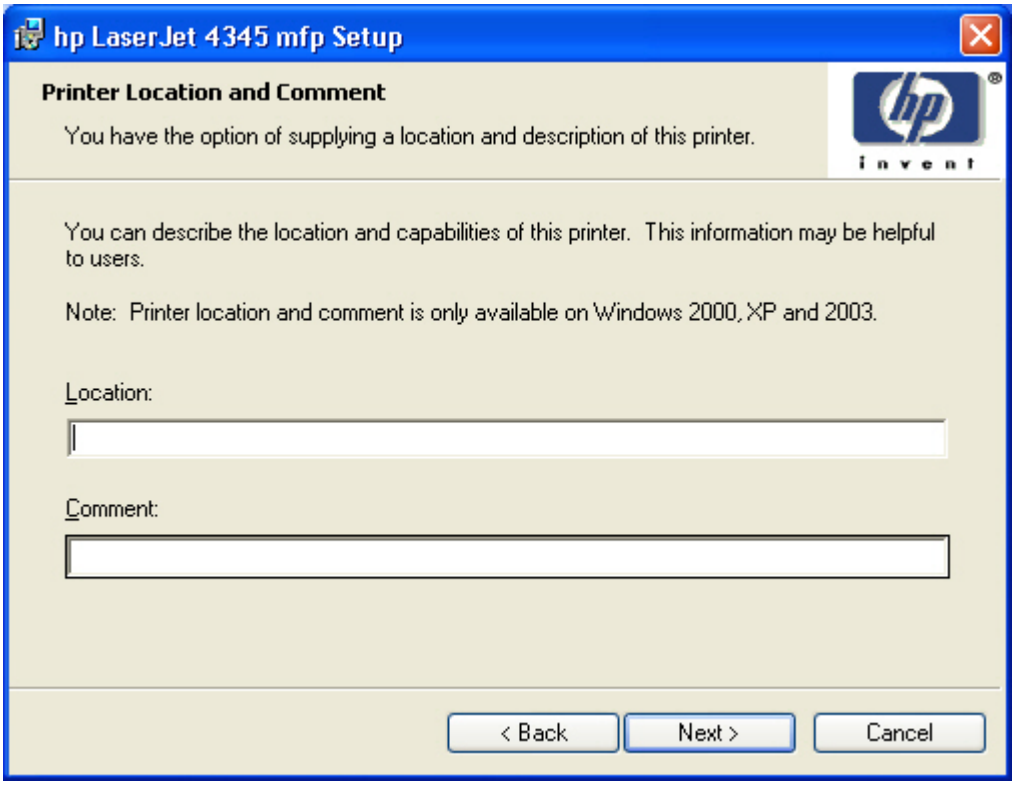

Figure 5-39 **Printer Location and Comment** support dialog box

Use the **Location:** text field to type a description of the physical location of the printer. The field is limited to 241 characters.

Use the **Comment:** text field to type any other helpful text such as capabilities about the printer. The field is limited to 241 characters.

Clicking **Next** takes you to the **Custom Installer Location** dialog box.

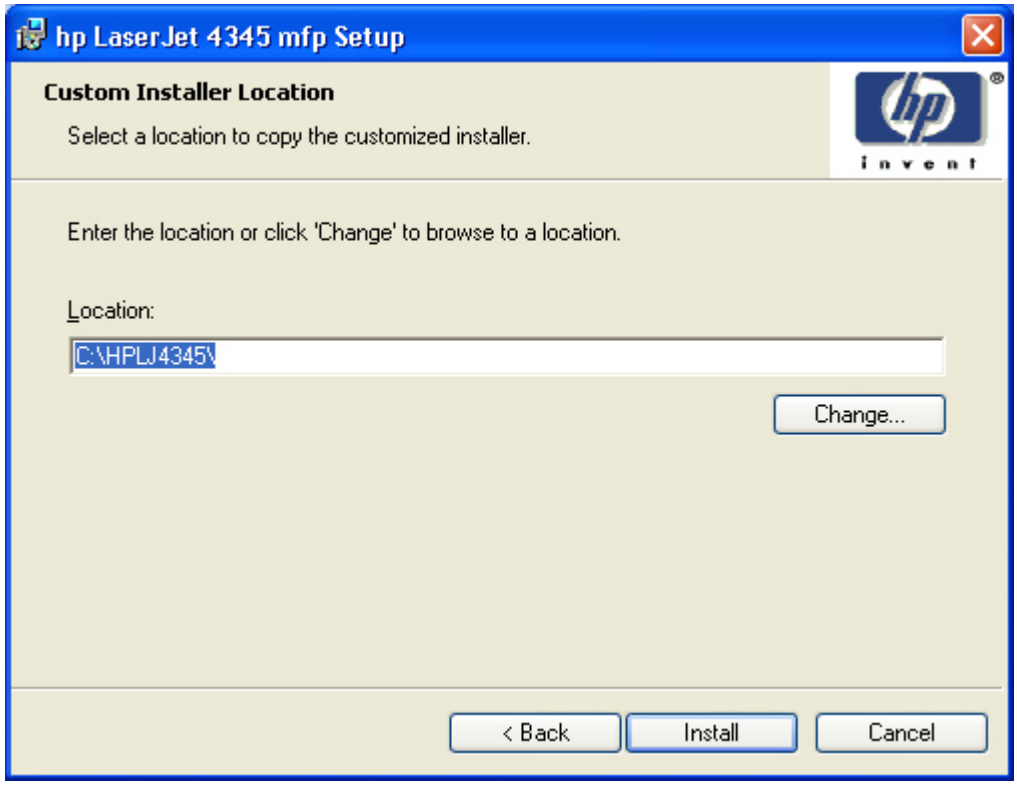

Figure 5-40 **Custom Installer Location** dialog box

NOTE The location for the installer package defaults to the drive that the system user opened last.

Clicking **Change** opens the **Change Current Destination Folder** dialog box to navigate to the drive that you want.

Clicking **Install** after you have specified a location (or browsed to a location) starts the file copy process and takes you to the **Installing** dialog box.

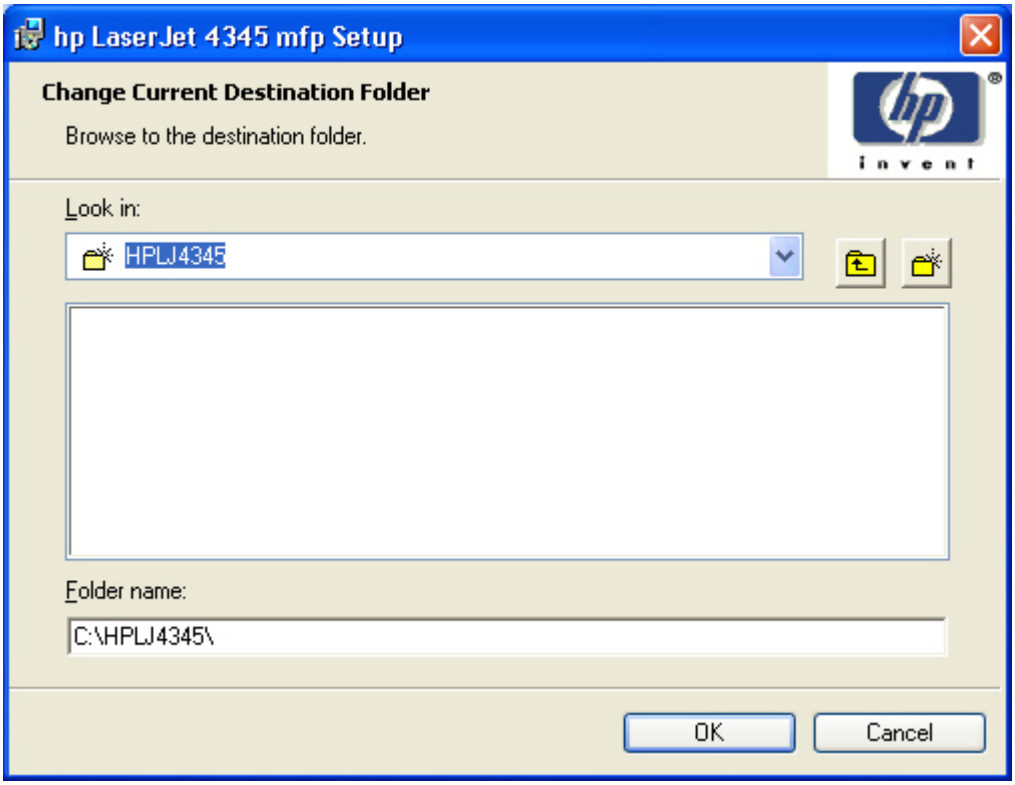

Figure 5-41 **Change Current Destination Folder** dialog box

NOTE Several files, including system files, are placed at the root of the directory that appears in the **Folder Name** field. These files collectively occupy approximately 37 MB on the directory. Be sure that enough space is available on the directory before continuing.

After you select a location, click **OK** to return to the **Custom Installer Location** dialog box. The location appears in the **Folder name** field.

Click the **New Folder** button to create a new folder.

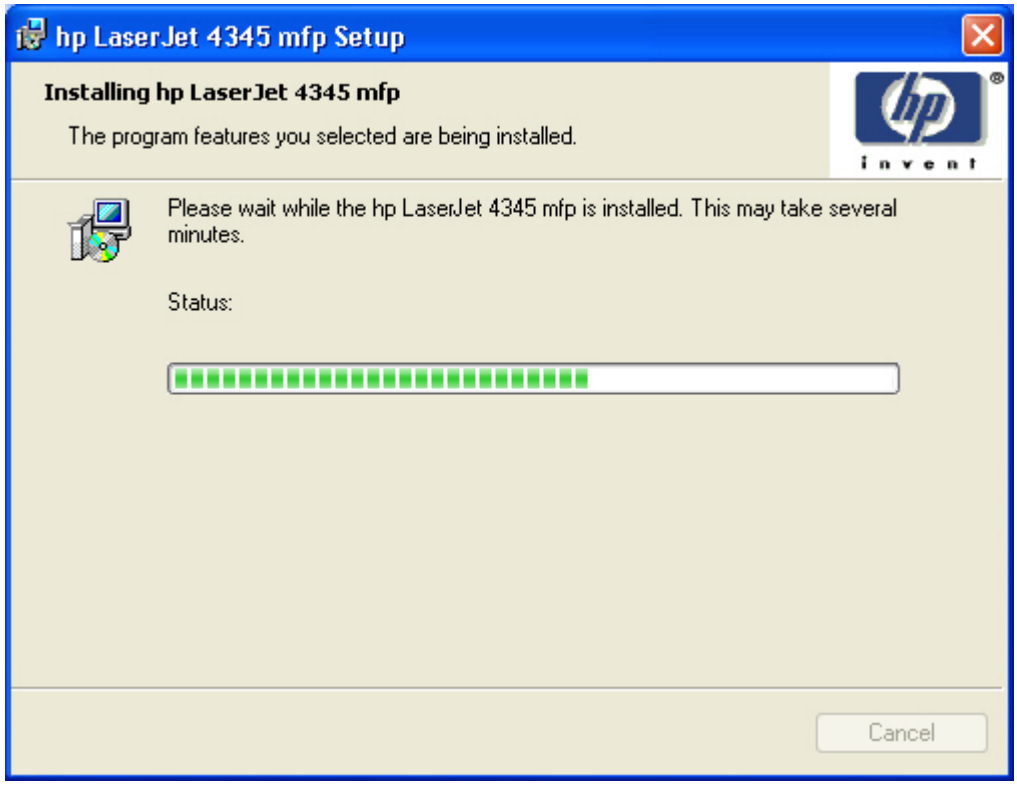

Figure 5-42 **Installing** dialog box

This dialog box remains on the screen until the status bar reaches the end.

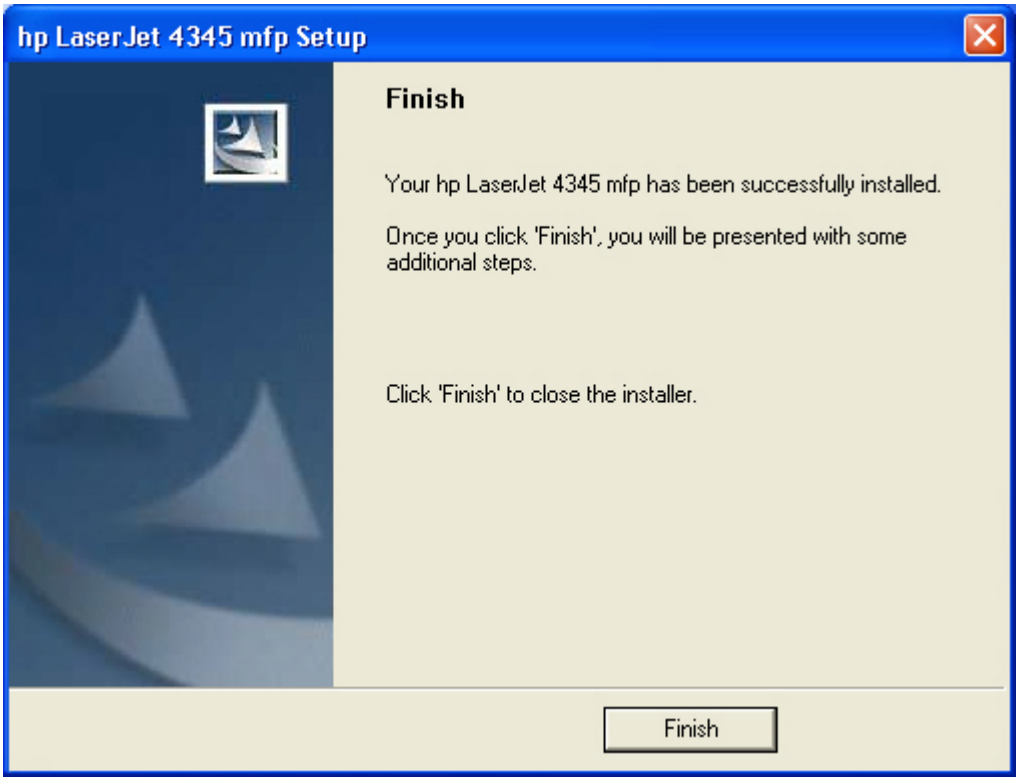

Figure 5-43 **Finish** dialog box

Clicking **Finish** closes the **Finish** dialog box and exits the Installer Customization Wizard.

NOTE Depending on the type of installation and options that you select, you either will or will *not* be presented with some additional steps when you click **Finish**.

Distribution

The installation package is now ready for distribution. It is the same as the package on the CD, except that it is limited to one language, and it contains the features and options that you selected. The installation package is run silently so that it requires no user interaction. This installation method is useful when you want to use the default selections that the installer provides or when you want to run the installation without being prompted.

You can perform the silent installation in two ways:

- customized silent installer
- command-line silent installer

The response file can be renamed, but it must be in the root directory of the installer package. The name cannot contain spaces; spaces prevent the SETUP.EXE file from passing to the installer package.

End users cannot customize the command-line silent installer. The silent installer installs only the printing-system components that are included in the typical installation. For more information, see the *HP Device Installer Customization Wizard*. This document (CustomizationDoc.rtf) is available on the printing-system software CD at the root of the **<language>** folder.

Point and Print installation for Windows 98, Me, NT 4.0, 2000, XP, and 2003

The following information helps you install a print driver by using the Microsoft Point and Print function when you cannot see the product on the network.

Point and Print is a Microsoft term that describes a two-step driver installation process. The first step is to install a shared driver on a network print server. The second step is to "point" to the print server from a network client so that the client can use the print driver.

This section outlines the procedures for installing print drivers by using Point and Print. If these procedures are not successful, contact Microsoft.

Hewlett-Packard provides drivers that are compatible with the Point and Print feature, but this is a function of the Microsoft operating systems, not of HP print drivers. Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003 drivers from HP are supported only on Intel® *X*86 processor types. Any other processor types must use Windows NT 4.0 drivers from Microsoft.

To install the print driver on a Windows NT 4.0, Windows 2000, Windows XP, Windows Server 2003 server, you must have administrator privileges. To completely install the Windows NT 4.0 print driver on the Windows NT 4.0 server (or the Windows 2000 print driver on the Windows 2000 server), you must have administrator privileges on the server. The Windows NT 4.0 Printer .INF file (or the Windows 2000 Printer .INF file) must contain the same product name as the Windows 98 or Windows Me printer .INF file.

Point and Print installation of a postscript driver is supported only with a Microsoft Windows 98 or Windows Me PS driver version 4.0 or later.

In a homogenous operating system environment (one in which all of the clients and servers running the same operating system), the same print driver version that is vended from the server to the clients in a Point and Print environment also runs and controls the print queue configuration on the server.

However, in a mixed operating system environment (one in which servers and clients might run on different operating systems), conflicts can occur when client computers run a version of the print driver that is different from the one on the print server.

With Windows NT 4.0, print drivers are run in *kernel* mode. A kernel mode process runs in a specially privileged part of the operating system that gives the process access to all of the system resources. Consequently, a misbehaving driver can cause serious system stability problems, including operating system crashes.

In an effort to increase operating system stability, Microsoft determined that, starting with Windows 2000 and continuing with all future operating systems, print drivers would run as*user*-mode processes. User-mode drivers execute in a protected part of the operating system just like all of the normal end-user processes and software programs. A user-mode print driver that misbehaves is capable of crashing only the process in which it is running, and cannot crash the whole operating system. Because access to critical system resources is restricted, overall operating system stability is increased.

Setting a default printer

This section applies to the Windows 98, Windows Me, Windows NT 4.0, Windows 2000, Windows XP, and Windows Server 2003 operating systems.

1. In Windows 98, Windows Me, Windows NT 4.0, and Windows 2000 OSs, click **Start**, click **Settings**, and then click **Printers**. In Windows XP and Windows Server 2003, click **Start**, click **Control Panel**, click **Printers and Faxes** (Windows XP Professional) or **Printers and other hardware devices** (Windows XP Home).
2. Right-click the product that you want to set as the default printer.
3. Click **Set As Default**. A check mark appears next to the menu option.

6 Installation for Macintosh, Linux, UNIX, and OS/2 operating systems

Introduction

This chapter provides system requirements and procedures for installing and removing the HP LaserJet 4345mfp printing-system software for supported operating systems other than Windows. It also provides information about font support and system modifications. The following operating systems are supported:

- Macintosh
- Linux
- UNIX
- OS/2

This chapter contains the following sections:

- System requirements
- Macintosh Installation

System requirements

The following are system requirements for installing and using the HP LaserJet 4345mfp printing-system software on each of these supported operating systems.

This section contains information about the following topics:

- Macintosh
- Linux
- UNIX
- OS/2

Macintosh

- PowerPC processor
- Macintosh OS 9.*x* or later or Mac OS X (V10.1 or later)
- 256 MB RAM
- 110 MB available disk space

Linux

For information about Linux support for the HP LaserJet 4345mfp, see the following HP Linux Web site:

- www.hp.com/go/linux.

UNIX

For information about UNIX support for the HP LaserJet 4345mfp, see the following Web site:

- www.hp.com/go/jetdirectunix_software

OS/2

For information about OS/2support for the HP LaserJet 4345mfp, see the following Web site:

- www.ibm.com

Macintosh Installation

The following sections contain information about using the HP LaserJet 4345mfp printing software for the Macintosh OS.

This section contains information about the following topics:

- Macintosh component descriptions
- Installing the Macintosh printing system
- Uninstalling the Macintosh printing system
- In-box disk layout
- Folders and files added through installation of the HP LaserJet 4345mfp software (Mac OS)
- Mac OS Classic installation
- Mac OS X installation

Macintosh component descriptions

The product includes the following software for Macintosh computers:

- PPDs for Mac OS 9.*x* and Mac OS X (V10.1 and later)
- PDEs for Mac OS X only (V10.1 and later)

HP LaserJet PPDs

In Mac OS 9.*x*, postscript printer definition (PPD) files for the HP LaserJet 4345mfp are installed to the **Printer Descriptions** folder, which is in the **Extensions** folder within the **System** folder. In Mac OS X, the PPDs are installed in **Library/Printers/PPDs/Contents/Resources:<lang>.lproj** where **<lang>** is the appropriate localized folder.

PPDs, in combination with the driver, provide access to the product features and allow the computer to communicate with the product. An installation program for the PPDs is provided on the printing-software CD.

For Mac OS 9.*x*, the Apple LaserWriter 8 driver must be installed to use the PPD file. Use the Apple LaserWriter 8 driver that came with your Macintosh. For Mac OS X, use **Print Center** or **Printer Setup Utility** to print.

PDEs

Printer Dialog Extensions (PDEs) are code plug-ins (for Mac OS X only, V10.1 and later) that provide access to product features, such as number of copies, duplexing, and quality settings.

HP Toolbox

The HP Toolbox is a series of Web pages and supporting Windows-based and Macintosh-based software programs (for Mac OS X only, V10.2 and later). The HP Toolbox provides links to product status information and enables you to receive alerts for product events.

For more information about the HP Toolbox, see the HP Toolbox section of this guide.

HP Embedded Web Server

Macintosh OS 9.*x* operating systems support the HP Embedded Web Server (HP EWS). Use the HP LaserJet Utility to control features that are not available in the driver. Use the HP EWS to perform the following tasks:

- Name the product, assign it to a zone on the network, and change product settings.
- Set a password for the product.
- From the computer, lock out functions on the control panel to prevent unauthorized access (see the printing software help).

Install notes

This text file contains important information about product features, instructions for installing the printing-system software, and technical assistance.

Online help

This HTML-based help system replaces the Apple Guide help system that was provided with Mac OS 9.*x* HP products. The help system is in English only, and can be viewed through a browser or in the Macintosh OS Help Center.

Screen fonts

These screen fonts are available only for Macintosh computers and Macintosh-compatible computers (Mac OS classic only). Because the screen fonts match your printing fonts, you can see onscreen how your printed page looks.

Font support

To ensure that you can use all of the installed fonts with the HP LaserJet 4345mfp, the Macintosh printing system includes the standard 35 screen fonts in 11 families:

- Avant Garde
- Helvetica Narrow
- Times
- Bookman
- New Century Schoolbook
- Zapf Chancery
- Courier
- Palatino
- Zapf Dingbats
- Helvetica
- Symbol

The Macintosh printing system also includes the HP 45 XPS font families:

- Clarendon Condensed Bold
- Symbol
- Albertus Medium
- Coronet
- Times New Roman
- Antique Olive
- Courier
- Univers
- Arial
- Garamond
- Univers Condensed
- CG Omega
- Letter Gothic
- Wingdings
- CG Times
- Marigold

The following bitmap screen fonts reside on the HP LaserJet 4345mfp:

- ITC Avant Garde Gothic Book
- Helvetica
- Palatino
- ITC Avant Garde Gothic Book Oblique
- Helvetica Bold
- Palatino Bold
- ITC Avant Garde Gothic Demi
- Helvetica Bold Oblique
- Palatino Bold Italic
- ITC Avant Garde Gothic Demi Oblique
- Helvetica Oblique
- Palatino Italic
- ITC Bookman Demi

- Helvetica Narrow
- Symbol
- ITC Bookman Demi Italic
- Helvetica Narrow Bold
- Times Bold
- ITC Bookman Light
- Helvetica Narrow Bold Oblique
- Times Bold Italic
- ITC Bookman Light Italic
- Helvetica Narrow Oblique
- Times Italic
- Courier
- New Century Schoolbook Bold
- Times Roman
- Courier Bold
- New Century Schoolbook Bold Italic
- ITC Zapf Chancery Medium Italic
- Courier Bold Oblique
- New Century Schoolbook Italic
- ITC Zapf Dingbats
- Courier Oblique
- New Century Schoolbook Roman

The following fonts reside on the HP LaserJet 4345mfp, but can be used by Macintosh platforms only if you install additional screen fonts. You can either use these screen fonts directly from the HP LaserJet 4345mfp software CD or obtain them from the following Web site: www.hp.com/support/lj4345mfp.

- Albertus Extra Bold
- CG Times Italic
- Marigold
- Albertus Medium
- Clarendon Condensed Bold
- Symbol

- Antique Olive
- Coronet
- Times New Roman
- Antique Olive Bold
- Courier
- Times New Roman Bold
- Antique Olive Italic
- Courier Bold
- Times New Roman Bold Italic
- Arial Courier Bold Oblique
- Times New Roman Italic
- Arial Bold
- Courier Italic
- Univers Bold
- Arial Bold Italic
- Garamond Antiqua
- Univers Bold Italic
- Arial Italic
- Garamond Halbfett
- Univers Condensed Bold Italic
- CG Omega
- Garamond Kursiv
- Univers Condensed Medium
- CG Omega Bold
- Garamond Kursiv Halbfett
- Univers Condensed Medium Italic
- CG Omega Bold Italic
- Letter Gothic
- Univers Medium
- CG Omega Italic
- Letter Gothic Bold

- Univers Medium Italic
- CG Times
- Letter Gothic Italic
- Univers Italic
- CG Times Bold
- CG Times Bold Italic
- Wingdings
- CG Times Bold Italic

Installing the Macintosh printing system

On a Macintosh-compatible computer, the installation procedures are the same for a network administrator, a network client, and a single user. Install the software on any computer that has access rights to the product.

NOTE If the computer is connected to the product by a LocalTalk (printer port) or EtherTalk connection, you must configure the AppleTalk (or network) control panel for the correct connection to communicate with the product. You must set up the HP LaserJet 4345mfp, connect it to the computer or network, and turn it on before the software is installed. Macintosh OS systems do not support parallel connections. You can use a cross-over Ethernet cable for a direct connection to a computer running the Macintosh OS. In the following instructions, "XXXX" represents the HP LaserJet 4345mfp.

The Macintosh partition contains an installer program for each language. Find the appropriate language for the operating system that is being used, and then use the installer program for that language.

To install the HP LaserJet printing-system software for the Macintosh OS

1. Insert the CD that came with the Macintosh printing-system software into the CD-ROM drive.

   NOTE If the CD screen does not open automatically, double-click the **CD-ROM** icon on the desktop to open the CD-ROM window.

2. Open the **HP LaserJet Installers** folder. Find the **Installer** icon for the appropriate language. Double-click the **Installer** icon to launch the Installer. In the opening dialog, click **Continue**.

   NOTE The **Continue** button appears only after you type the "Admin" password in the **Authenticate** dialog box (OS X, V10.1 and later only).

3. The main **Installer** dialog box appears. Click **Install** and then follow the onscreen instructions to complete the software installation.

NOTE If you are installing the printing-system software on a Macintosh OS X system, please be patient. The installer must perform an initial search of the computer for up to 1 minute. During this time the installer might appear to be stalled.

4 When software installation is complete, click **Quit**. Select one of the following options to finish setting up your product:

- Set up a AppleTalk networked printer with Mac OS 9.*x*
- Set up a printer with Mac OS X

To set up an AppleTalk networked Printer with Mac OS 9.*x*

1 Open the **Chooser** from within the **Apple Menu**.

2 Click **LaserWriter 8** on the left side of the **Chooser** dialog box.

3 Click the appropriate **Zone** to select it, if required.

4 Click your product name from the list that appears on the right side of the **Chooser** dialog box, and then click **Create**.

To set up a Printer with Mac OS X

1 In the **Applications** folder, open the **Utilities** folder, and then run the **Print Center** (Mac OS X V10.1 and 10.2) or the **Printer Setup Utility** (Mac OS X V10.3).

2 Click **Add** (in Mac OS X V10.2) or **Add Printer** (in Mac OS X V10.1).

3 From the top pop-up menu, select the appropriate connection type for your product.

4 Select or type in any other information as indicated for the type of connection for your product. For example, if you are using an AppleTalk connection, select your product zone; or if you are using IP Printing, type in an IP address.

NOTE If the automatic selection fails, or if you want to manually select a PPD file, click the **Printer Model** pop-up menu, select **HP**, and then click **LaserJet 4345.**

5 Click **Add**.

6 To configure installable options in Mac OS X V10.2 and later, such as a duplexing unit or optional trays, click the appropriate product icon in the **Print Center Printer List** window. Select **Show Info** from the **Printers** menu, and then select the appropriate options from the **Installable Options** popup menu.

7 Configure the options, and then click **Apply Changes**.

To set up an IP/LPR networked Printer with Mac OS 9.*x*

1 Run the Apple Desktop Printer utility.

2 Click **Printer (LPR)**, and then click **OK**.

3 Click **Change** in the LPR Printer Selection area.

4 Click the appropriate IP address and Queue, and then click **OK**.

5 Click **Change** and scroll through the list of products.

6 Click **HP LaserJet 4345mfp**, and then click **Select**.

7 Click **Create**.

Uninstalling the Macintosh printing system

To uninstall the Macintosh Printing System, drag the PPDs and the unwanted component(s) to **Trash**. See the tables in the following sections for a list of new folders and files that are added when the HP LaserJet 4345mfp printing-system software is installed in Macintosh OSs.

In-box disk layout

The Macintosh Printing System consists of two files: the HP LaserJet Installer - Integrated installer program and a Toolbox installer program.

Folders and files added through installation of the HP LaserJet 4345mfp software (Mac OS)

The tables in the following sections detail the changes to your system as new folders and files are added when the HP LaserJet 4345mfp printing-system software is installed on Macintosh OS systems.

NOTE This listing does not include temporary directories and files that are created and then deleted during the installation process.

In the following listing, "MACINTOSH HD" indicates the drive on which the software was installed.

Mac OS Classic installation

This section provides information about the various installation dialog box sequences for the Mac OS Classic.

Main Install dialog box sequence

This subsection provides information about the Macintosh installation dialog box sequence for the Easy Install (the typical installation option).

Figure 6-1 HP LaserJet for Macintosh installer splash screen dialog box

Click **Continue** to open the **HP LaserJet Installer** dialog box.

Figure 6-2 **HP LaserJet Installer** dialog box (easy install)

If you want to install the files in a location other than the default "Macintosh HD," click **Install Location:** to specify a location.

You can also select the **Custom installation** option from the drop-down menu at the upper left. **Easy Install** is the default.

Click **Read Me** to open the Installer readme file.

Click **Install** to start the installation on the selected disk.

Click **Quit** to quit the Installer without making changes to the system.

NOTE A **Read Me...** button appears on each Macintosh installation screen.

Figure 6-3 **HP LaserJet Installer** dialog box (custom install)

If you want to install the files in a location other than the default "Macintosh HD," click **Install Location:** to specify a location.

Select which of the available components to install by using the check boxes in the list.

Click **Read Me** to open the Installer readme file.

Click **Install** to start the installation on the selected disk.

Click **Quit** to quit the Installer without making any changes to the system.

Figure 6-4 **Installing** dialog box

This dialog box shows installation progress. No action is required unless you want to stop the installation. Click **Stop** to interrupt the installation file copy process.

Figure 6-5 Installation was successful dialog box

Click **Quit** to exit the Installer. The Printer Setup Assistant opens.

Click **Continue** to return to the HP LaserJet Installer.

HP LaserJet Screen Fonts Installer dialog box sequence

This subsection provides information about the installation dialog box sequence for the HP Screen Font Installer.

Figure 6-6 **HP LaserJet Screen Fonts** splash screen dialog box

Click **Continue** to open the **HP LaserJet Screen Fonts** dialog box.

Figure 6-7 **HP LaserJet Screen Fonts** installer dialog box

Click **Install** to start the installation.

Click **Quit** to quit the Installer without making changes to the system.

When you click **Install**, an installation progress bar dialog box appears briefly . Click **Stop** to interrupt the installation file copy process.

Figure 6-8 Installation was successful dialog box

Click **Quit** to exit the Installer.

Click **Continue** to return to the HP LaserJet Screen Fonts installer.

Mac OS X installation

This subsection provides information about the various installation dialog box sequences for the Mac OS X operating system.

Main Install dialog box sequence

This subsection provides information about the Macintosh installation dialog-box sequence for the Easy Install (the typical installation option).

Figure 6-9 **HP LaserJet for Macintosh** installer splash screen dialog box

Click **Continue** to open the **HP LaserJet Installer** dialog box.

Figure 6-10 **HP LaserJet Installer** dialog box (easy install)

If you want to install the files in a location other than the default "Mac," click the **Install Location** drop-down menu to specify a location.

You can also select a **Custom installation** option from the drop-down menu at upper left.

Click **Read Me** to open the Installer readme file.

Click **Install** to start the installation on the selected disk.

Click **Quit** to quit the Installer without making changes to the system.

Figure 6-11 **HP LaserJet Installer** dialog box (custom install)

Select the install location by using the **Install Location** drop-down menu (if the desired location is different from "Mac").

Select which of the available components to install by using the check boxes in the list.

Click **Read Me** to open the Installer readme file.

Click **Install** to start the installation on the selected disk.

Click **Quit** to quit the Installer without making any changes to the system.

Figure 6-12 Installing dialog box

This dialog box shows installation progress. No action is required unless you want to stop the installation. Click **Stop** to interrupt the installation file copy process.

7 Engineering detail

Introduction

This chapter presents engineering detail for the following topics:

- Media attributes
- HP Toolbox
- Configuring accessory output bins through HP Web Jetadmin

Media attributes

This section contains information about the following topics:

- Media sources and destinations
- Tray configurations
- Media-source commands
- Media types and sizes

Media sources and destinations

The following table indicates the standard and optional media sources and destinations for the HP LaserJet 4345mfp:

Table 7-1 HP LaserJet 4345mfp paper sources and destinations

Media sources	multipurpose tray (tray 1)	Standard
	500-sheet tray (tray 2)	Standard
	500-sheet tray (tray 3)	Optional
	500-sheet tray (tray 4)	Optional (tray 3 must be installed before tray 4 can be installed)
	500-sheet tray (tray 5)	Optional (trays 3 and 4 must be installed before tray 5 can be installed)
	75-sheet envelope feeder	Optional
Media destinations	main output bin	Standard
	500-sheet stacker	Optional
	500-sheet stapler/stacker	Optional (standard on the HP LaserJet 4250dtnsl and HP LaserJet 4350dtnsl models)
	HP 3-bin Mailbox	Optional

Tray configurations

All models of the HP LaserJet 4345mfp come with a 100-sheet standard multipurpose tray (tray 1) and a 500-sheet tray (tray 2). The HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and HP LaserJet 4345xm mfp models come with an additional 500-sheet tray (tray 3).

The following table indicates the possible tray configurations for the HP LaserJet 4345mfp:

Table 7-2 Media tray configurations for the HP LaserJet 4345mfp

Product	Tray number	Tray type	Standard/optional
HP LaserJet 4345mfp	Tray 1	multipurpose tray	Standard
	Tray 2	500-sheet tray	Standard
	Tray 3	500-sheet tray	Optional

Table 7-2 Media tray configurations for the HP LaserJet 4345mfp (continued)

Product	Tray number	Tray type	Standard/optional
	Tray 4	500-sheet tray	Optional
	Tray 5	500-sheet tray	Optional
HP LaserJet 4345x mfp	Tray 1	multipurpose tray	Standard
	Tray 2	500-sheet tray	Standard
	Tray 3	500-sheet tray	Standard
	Tray 4	500-sheet tray	Optional
	Tray 5	500-sheet tray	Optional
HP LaserJet 4345xs mfp	Tray 1	multipurpose tray	Standard
	Tray 2	500-sheet tray	Standard
	Tray 3	500-sheet tray	Standard
	Tray 4	500-sheet tray	Optional
	Tray 5	500-sheet tray	Optional
HP LaserJet 4345xm mfp	Tray 1	multipurpose tray	Standard
	Tray 2	500-sheet tray	Standard
	Tray 3	500-sheet tray	Standard
	Tray 4	500-sheet tray	Optional
	Tray 5	500-sheet tray	Optional

NOTE A duplexing unit is standard on the HP LaserJet 4345x mfp, HP LaserJet 4345xs mfp, and the HP LaserJet 4345xm mfp models.

Media-source commands

The PCL 6 escape sequence for media source is ubyte # MediaSource or ubyte_array "string" MediaSource. See the following table for values of #. For example, "ubyte 4 MediaSource" is the command for tray 2.

The PCL 5 escape sequence for media source is Esc&l#H (the "l" is a lowercase "L" rather than the numeral "1"). See the following table for values of #. For example, Esc&l8H is the command for tray 4.

Table 7-3 Paper-source commands

Paper source	PCL 6 ubyte # MediaSource or ubyte_array "string" MediaSource[1]	PCL 5 Esc&l#H	Postscript /MediaPosition # or null
Tray 1	3	4	3
Tray 2 (500-sheet)	4	1	0
Tray 3 (500-sheet)	5	5	1

Table 7-3 Paper-source commands (continued)

Paper source	PCL 6 ubyte # MediaSource or ubyte_array "string" MediaSource[1]	PCL 5 Esc&l#H	Postscript /MediaPosition # or null
Tray 4 (500-sheet)	7	8	4
Tray 5 (500-sheet)	TRAY5	9	38
Auto Select	1	7	null
Manual feed in tray 1	2	2	3
Envelope feeder	6	6	2

[1] For the string value, you must use include the quotation marks around the variable. For example, ubyte_array "TRAY5" MediaSource is the PCL 6 command for Tray 5.

[2] Tray 5 is optional for the HP LaserJet 4345mfp.

Media types and sizes

The tables in this section provide information about media features, media attributes, and media-handling constraints for the HP LaserJet 4345mfp.

Driver features and attributes

The following table lists the features and attributes of various media listed under the **Size Is:** drop-down menu on the **Paper** tab. The drop-down list order can vary, depending on the product and operating system. The list contains all of the following sizes, and might contain sizes from other drivers.

Table 7-4 Supported features and attributes by driver

Paper sizes[1]	Width	Height	PCL 6 [2]
Letter	216 mm (8.5 inches)	279 mm (11.0 inches)	"LETTER"
16K[3]	197 mm (7.75 inches)	273 mm (10.75 inches)	"ROC16K"
8.5 x 13	216 mm (8.5 inches)	330 mm (12.99 inches)	"8.5x13"
8K	273 mm (10.75 inches)	394 mm (15.50 inches)	"ROC8K"
A3	297 mm (11.69 inches)	420 mm (16.54 inches)	"A3"
A4	210 mm (8.27 inches)	297 mm (11.69 inches)	"A4"
A5	148 mm	210 mm	"A5"

Table 7-4 Supported features and attributes by driver (continued)

Paper sizes[1]	Width	Height	PCL 6 [2]
	(5.83 inches)	(8.27 inches)	
B4 (JIS)	257 mm	364 mm	"JIS B4"
	(10.12 inches)	(14.33 inches)	
B5 (JIS)	182 mm	257 mm	"JIS B5"
	(7.17 inches)	(10.12 inches)	
Double Japan Postcard Rotated	148 mm	200 mm	
	(5.83 inches)	(7.87 inches)	
Envelope #10	105 mm	241 mm	"COM10"
	(4.12 inches)	(9.5 inches)	
Envelope B5	176 mm	250 mm	"B5 ENV"
	(6.93 inches)	(9.84 inches)	
Envelope C5	162 mm	229 mm	"C5"
	(6.38 inches)	(9.02 inches)	
Envelope DL	110 mm	220 mm	"DL"
	(4.33 inches)	(8.66 inches)	
Envelope Monarch	98 mm	190 mm	"MONARCH"
	(3.87 inches)	(7.5 inches)	
Executive	184 mm	267 mm	"EXEC"
	(7.25 inches)	(10.5 inches)	
Executive (JIS)	216 mm	330 mm	"JISEXEC"
	(8.5 inches)	(12.99 inches)	
Legal	216 mm	356 mm	"LEGAL"
	(8.5 inches)	(14.0 inches)	
Statement	140 mm	216 mm	"STATEMENT"
	(5.5 inches)	(8.5 inches)	
Custom (leading edge)	Minimum:	Minimum:	[4]
(other edge)	76.2 mm	127 mm	
	(3.0 inches)	(5.0 inches)	
	Maximum:	Maximum:	
	215 mm	355.6 mm	
	(8.5 inches)	(14.0 inches)	

[1] For all media sizes, the PCL 6 margins are 100,100.
[2] The PCL 6 command for media size is ubyte array(String)MediaSize. The values in this column are the values for "String."
[3] In Windows NT 4.0, this media size is treated as a custom size.
[4] For custom sizes, the HP Traditional PCL 6 Driver specifies actual dimensions, for example, for 8 x 9 inch custom size, "real32_8.000000 9.000000 CustomMediaSize."

Table 7-5 Supported input media types

Input media types (postscript string)	Tray 1	Tray 2, 3, 4 and 5 (500-sheet)	Duplexing unit	Face Up (Left bin, HP Stapler/ Stacker, and HP 3-bin Mailbox)	Face Down (Left bin, HP Stapler/ Stacker, and HP 3-bin Mailbox)	Envelope feeder	HP Stacker or HP Stacker/ Stapler	Staple
Plain	Y	Y	Y	Y	Y	Y	Y	Y
Preprinted	Y	Y	Y	Y	Y	Y	Y	Y
Letterhead	Y	Y	Y	Y	Y	Y	Y	Y
Transparency	Y	Y	N	Y	Y	N	Y	N
Prepunched	Y	Y	Y	Y	Y	Y	Y	Y
Labels	Y	Y	N	Y	Y	Y	Y	N
Bond	Y	Y	Y	Y	Y	Y	Y	Y
Recycled	Y	Y	Y	Y	Y	Y	Y	Y
Color	Y	Y	Y	Y	Y	Y		
Cardstock[1]	Y	Y	Y	Y	Y	Y	N	N
Envelope	Y	N	N	Y	N	Y	N	N
Rough	Y	Y	Y	Y	Y	Y	Y	Y

[1] Tray 1 accepts cardstock between 164 g/m^2 (45 lb.) and 200 g/m^2 (53 lb.).

PCL 6 custom media sizes

The following table shows custom media sizes that are available for the HP LaserJet 4345mfp:

Table 7-6 PCL 6 custom media sizes

Tray	Dimensions	Minimum	Maximum
Tray 1 (multipurpose)	Width	76.2 mm (3 inches)	215.9 mm (8.5 inches)
	Height	127.0 mm (5 inches)	355.6 mm (14 inches)
Tray 2 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 3 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 4 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Tray 5 (500-sheet)	Width	148.0 mm (5.83 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Duplexing unit	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported

Table 7-6 PCL 6 custom media sizes (continued)

Tray	Dimensions	Minimum	Maximum
Envelope feeder	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported
HP 3-Bin Mailbox	Width	120.0 mm (4.72 inches)	215.9 mm (8.5 inches)
	Height	210.0 mm (8.27 inches)	355.6 mm (14 inches)
Stacker, Stapler/Stacker	Width	Custom sizes not supported	Custom sizes not supported
	Height	Custom sizes not supported	Custom sizes not supported

Paper type commands

The PCL 5 escape sequence for paper type is "Esc&n#Wdpapertype", where "n#" is the number of characters in the paper type plus 1. For example, in the sequence "Esc&n6WdPlain", "Plain" has 5 letters plus 1, for a total of 6.

In order for the command to work correctly, at least one of the trays in the product must be configured at the control panel for the paper type that is used in the command.

NOTE Some paper type options that are listed in the following table might not be defined in the print driver.

Table 7-7 Paper-type commands

Esc&	n#	Wd	Paper type
Esc&	6	Wd	Plain
Esc&	11	Wd	Preprinted
Esc&	11	Wd	Letterhead
Esc&	13	Wd	Transparency[1]
Esc&	11	Wd	Prepunched
Esc&	7	Wd	Labels
Esc&	5	Wd	Bond
Esc&	9	Wd	Recycled
Esc&	6	Wd	Color
Esc&	11	Wd	Cardstock[2]
Esc&	9	Wd	Envelope
Esc&	6	Wd	Rough

1 You must spell out the word "Transparency" in the string, although it is abbreviated as TRNSPRNCY on the control panel.

2 The correct command for cardstock is "Esc&n11WdCard Stock", with a space between the "d" and the "S", and with an uppercase "S".

HP Toolbox

This section presents engineering detail for the following topics:

- Enabling or disabling HP Toolbox support
- Uninstalling HP Toolbox through the Windows Start Menu
- Uninstalling HP Toolbox through the Windows Add/Remove Programs Control Panel applet
- Manually uninstalling HP Toolbox in Macintosh Operating Systems

Enabling or disabling HP Toolbox support

The registry entry HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run, with the value HP Status controls the HP Toolbox. This entry runs HPSTATUS.EXE every time that the system is started. When you close the HP Toolbox by right-clicking the **Toolbox** tray icon and selecting **Exit**, you are prompted to restart the HP Toolbox on startup. If you select **No, don't start automatically**, this entry is removed.

To start status manually, select the **Start|Run** menu, and type HPSTATUS.

Uninstalling HP Toolbox through the Windows Start Menu

NOTE The following procedure will become available after product release.

To uninstall the HP Toolbox through the Windows Start Menu, follow these steps:

1. Select **Start**.
2. Select **Programs**.
3. Select HP LaserJet 4345mfp, and then select **Uninstall hp LaserJet toolbox**.
4. Follow the online instructions to uninstall HP Toolbox.

Uninstalling HP Toolbox through the Windows Add/Remove Programs Control Panel applet

NOTE The following procedure will become available after product release.

To uninstall the HP Toolbox through theWindows Add/Remove Programs Control Panel applet, follow these steps:

1. Select **Start**.
2. Select **Programs**.
3. Select HP LaserJet 4345mfp, and then select **Uninstall hp LaserJet toolbox**.
4. Follow the online instructions to uninstall HP Toolbox.

Manually uninstalling HP Toolbox in Macintosh Operating Systems

HP Toolbox must be uninstalled manually in a Macintosh OS. To uninstall HP Toolbox manually, follow these instructions:

1. Delete the following program:

   Library/Startup Items/hp ToolboxStartup

   NOTE HP Toolbox cannot be uninstalled when it is in use. Because HP Toolbox runs at startup time, either quit the program before deleting it, or move it into the trash bin and restart the computer.

2. Delete the following file:

   Applications/Utilities/hp toolbox.webloc 3

3. Navigate to the Library/Printers/hp/Utilities/folder, and delete all files that have "Toolbox" in the name.

Configuring accessory output bins through HP Web Jetadmin

To configure the **HP 3-Bin Mailbox-Mailbox Mode** output bins, follow these steps:

NOTE To configure the **HP 3-Bin Mailbox-Mailbox Mode** output bins, you must be running the latest version of HP Web Jetadmin. The HP LaserJet 4345mfp printing-system software CD provides the following link to download the latest version of the HP Web Jetadmin software: www.hp.com/go/webjetadmin.

1. Start HP Web Jetadmin.
2. Type the TCP/IP address or IP host name of the product in the **Quick Device Find** field, and then click **Go**. The product Status window opens.
3. Configure the **HP 3-Bin Mailbox-Mailbox Mode** output bins by typing the desired name for each of the three mailbox bins.
4. Use the **Update Now** feature to update the print driver with the three mailbox bin names.

The mailbox bin names now appear in the **Output Bin Options** group box, and you can send print jobs to the mailbox output bins by name.

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