IBM Network Color Printer

Administrator's Guide

> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under "Safety Notices" on page ix.

Second Edition (June 1996)

This edition applies to Release 2.0 of the *IBM Network Color Printer: Administrator's Guide*, S544-5364.

The following paragraph does not apply to any country where such provisions are inconsistent with local law.

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

Order publications through your IBM representative, your IBM Printing Systems Company printing specialist, or the IBM branch office serving your locality. Publications are not stocked at the address given below.

IBM and the IBM Printing Systems Company welcome your comments. A reader's comment form is provided at the back of this publication. Fax your comments to 1-303-924-5944, e-mail them to *print_pubs@vnet.ibm.com*, or mail them to:

IBM Corporation
Department 582, Building 004L
The IBM Printing Systems Company
Information Development
P.O. Box 1900
Boulder, CO 80301-9191, U.S.A.

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Table of Contents

Notices

References in this publication to IBM products, programs or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM licensed product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

Any performance data contained in this document was obtained in a controlled environment based on the use of specific data. The results that may be obtained in other operating environments may vary significantly. Users of this document should verify the applicable data in their specific environment. Therefore, such data does not constitute a performance guarantee or warranty.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Corporation, IBM Director of Licensing, 208 Harbor Drive, Stamford, Connecticut, United States, 06904.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

AIX®

AIX/6000®

IBM®

OS/2®

Personal System/2®

PS/2®

RISC System/6000®

WIN-OS/2

The following terms are trademarks or registered trademarks of other companies:

Acrobat®	Adobe Systems, Inc.
Acrobat Reader	Adobe Systems, Inc.
Adobe	Adobe Systems, Inc.
Adobe Illustrator	Adobe Systems, Inc.
Adobe logo	Adobe Systems, Inc.

Adobe Persuasion	Adobe Systems, Inc.
Adobe Photoshop	Adobe Systems, Inc.
Adobe Separator	Adobe Systems, Inc.
Adobe Type Manager	Adobe Systems, Inc.
Apple®	Apple Computer, Inc.
Apple LaserWriter	Apple Computer, Inc.
Apple logo	Apple Computer, Inc.
AppleTalk®	Apple Computer, Inc.
Agfa®	Agfa Division, Miles, Inc.
AXIS®	AXIS Communication, Inc.
CorelDRAW	Corel Corporation
EPS (Encapsulated PostScript)	Altsys Corporation
Ethernet	Xerox Corporation
EtherTalk®	Applice Computer, Inc.
Excel	Microsoft Corporation
Fiery	Electronics for Imaging, Inc.
Fiery Driven	Electronics for Imaging, Inc.
Fiery XJ	Electronics for Imaging, Inc.
Fiery logo	Electronics for Imaging, Inc.
IPX (Internetwork Packet Exchange)	Novell, Inc.
ITC Advant Garde Gothic®	International Typeface Corp.
ITC Bookman®	International Typeface Corp.
ITC Zapf Chancery®	International Typeface Corp.
ITC Zapf Dingbat®	International Typeface Corp.
Macintosh®	Apple Computer, Inc.
Macromedia Freehand	Altsys Corporation
Microsoft®	Microsoft Corporation
Microsoft PowerPoint	Microsoft Corporation
Microsoft Word	Microsoft Corporation
MS-DOS	Microsoft Corporation
NetWare®	Novell Inc.
Novell®	Novell Inc.
PageMaker	Adobe Systems, Inc.
PANTONE®	Pantone, Inc.
PostScript	Adobe Systems, Inc.
PowerBook	Apple Computer, Inc.
QuarkXPress®	Quark, Inc.
QuickDraw	Apple Computer, Inc.
TrueType	Apple Computer, Inc.
Univers®	Linotype AG and Subsidiaries
UNIX®	X/Open Company, Ltd.
Windows	Microsoft Corporation
WordPerfect	WordPerfect Corporation

Communications Statements for Class B Devices

Federal Communication Notices Commission (FCC) Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors (IBM partnumber 68X3949 or its equivalent for PC parallel) must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union (EU) Electromagnetic Conformity Statement:

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

EU Conformity Statement: This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22/European standard EN 55022. The limits for Class B equipment were derived for typical environments to provide reasonable protection against interference with licensed communication devices.

German Conformity Statement: Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

Industry Canada Compliance Statement: This Class B digital apparatus meets the requirements of the Canadian Interference-causing equipment regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matèriel brouiller du Canada.

Japanese VCCI Class 2 ITE Statement.

この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI

Safety Notices

There are three levels of safety notices:

DANGER calls attention to a situation that is potentially or extremely hazardous to people.

CAUTION calls attention to a situation that is potentially hazardous to people.

Attention calls attention to the possibility of damage to a program, device, system, or data.   Attention notices are located throughout this publication, but are not listed here.

Translations of the safety notices used in this library are found in *IBM Network Color Printer: Safety Information*, G544-5352. This manual is shipped with the printer and is provided with the maintenance documentation.

Safety Precautions

Electrical Safety

This printer is inspected and listed by recognized national testing laboratories, such as Underwriters Laboratories, Inc. (UL) in the U.S.A. and Canadian Standards Association (CSA) in Canada. Listing of a product by a national testing laboratory indicates that the product is designed and manufactured in accordance with national requirements intended to minimize safety hazards. IBM equipment meets a very high standard of safety in design and manufacture. Remember, however, that this product operates under conditions of high electrical potentials and heat generation, both of which are functionally necessary.

Because the paper and toner used in the printer can burn, you should take normal precautions to prevent fire. These precautions include common-sense measures, such as keeping potentially combustible materials (for example, curtains and chemicals) away from the printer, providing adequate ventilation and cooling, limiting unattended operation, and having trained personnel available and assigned to the printer.

Laser Safety

This printer complies with the performance standards set the by U.S. Food and Drug Administration for a Class 1 Laser Product. This means that the printer belongs to a class of laser products that does not produce hazardous laser radiation in a customer access area. This classification was accomplished by providing the necessary protective housing and scanning safeguards to ensure that laser radiation is inaccessible or within Class 1 limits.

There are various tool-operated machine covers that should be moved, removed, or replaced only by trained service personnel. There are no operator controls or adjustments associated with the laser.

No operator maintenance is required to keep the product in compliance as a Class 1 Laser Product. No adjustments that affect laser operation or power are accessible to the operator.

Note: See *IBM Network Color Printer: Safety Information* for national language translations regarding laser safety.

Disposal of Materials

This printer may contain materials, either as components or supplies that are regulated by government agencies for disposal. Dispose of all such items in accordance with your governmental agencies' regulations.

⚠ **CAUTION:**

This printer may contain materials, either components or consumable supplies, that are regulated for disposal. Dispose of all items in accordance with local regulations.

Preface

This publication describes how to install printer drivers and end-user software and how to print using the IBM Network Color Printer.

Audience

This publication is intended for an administrator who configures network servers and the IBM Network Color Printer.

Organization and Contents of This Guide

This publication describes how to install the printer on TCP/IP, IPX (Novell), Windows NT and Macintosh networks. For general information on using your computer, your application software, or your network, see the manuals that accompany those products.

Chapter 1, "Introducing Your IBM Network Color Printer" introduces the IBM Network Color Printer, the different configuration versions supported, and the performance and functionality of each printer configuration version.

Chapter 2, "Configuring Your Novell Network" guides you through the steps for configuring a Novell NetWare network. This includes instructions for configuring the NetWare server and an overview of NetWare-specific printer configuration.

Chapter 3, "Configuring Your Windows NT Network" guides you through the steps for configuring a Windows NT network. This includes instructions for configuring the NT server and an overview of NT-specific printer configuration.

Chapter 4, "Configuring Your Macintosh Network" guides you through the steps for using a Macintosh computer to share the *Customer CD-ROM* with other Macintosh users on the network.

Chapter 5, "Configuring Your AIX Network" guides you through the steps for configuring an AIX network. This includes general guidelines for configuring the AIX server and an overview of TCP/IP-specific printer configuration.

Chapter 6, "Configuring the IBM Network Color Printer" guides you through the steps for configuring the printer. This includes the specific implications of each printer setting for each client and server operating system that will communicate with the printer. This also includes information on the other printer settings, such as those for the job log and the Printed queue.

Appendix A, "Assembling a Software Package for Your Customers" provides instructions for putting together software packages of Network Color Printer driver files and PPD files for customers who regularly bring print jobs to your business.

Appendix B, "Upgrading the Printer System Software" contains instructions for upgrading your IBM Network Color Printer microcode. Instructions are included for upgrading over a network, over a parallel attachment, or physically at the printer.

This publication also contains a glossary, a list of abbreviations, and an index.

Related Publications

The following publications are included with this printer:

- *IBM Network Color Printer: Installation and Relocation Guide*, G544-5362
- *IBM Network Color Printer: Operator's Guide*, S544-5361
- *IBM Network Color Printer: User's Guide*, S544-5363
- *IBM Network Color Printer: Administrator's Guide*, S544-5364
- *IBM Network Color Printer: Safety Information*, G544-5352

Note: The above publications are available in Adobe Acrobat Reader format on the CD-ROM shipped with this printer. You can view these publications or print them using Adobe Acrobat Reader. Instructions for installing Acrobat reader and the documentation are in the *User's Guide* and in the README file.

If you wish to purchase additional copies of the publications, please contact your dealer representative or your IBM Marketing Representative.

Chapter 1. Introducing Your IBM Network Color Printer

Congratulations on purchasing your new IBM Network Color Printer.   The Network Color Printer is a color laser printer with a number of advanced features. It can produce single-sided monochrome prints at a rate of up to 12 pages per minute (ppm) and full-color prints at a rate of 3 ppm. The printer has a cyan-magenta-yellow-black (CMYK) full-color laser engine that prints 16 gray levels per color. It prints PostScript jobs in Windows, Macintosh, and UNIX environments.

The IBM Network Color Printer comes in three memory configurations:

- The 16-megabyte (MB) configuration provides advanced network connectivity and high quality color laser printing. This is the default configuration.

- The 32-MB configuration provides on-printer queueing and spooling, expanded network connectivity, and faster printing.

- The 48-MB configuration provides all of the functionality described above, as well as increased printing speed and higher print quality on especially complex color print jobs.

Each of the three printer configurations provides a high level of print quality. However, these configuration options allow you to balance cost, performance, and printer features in a way that is right for your organization.

The 16-MB Printer Configuration

The 16-MB configuration provides high quality color printing at a very competitive price and is a good choice for home office and other small-scale business applications.

Performance

The 16-MB configuration is best suited for print jobs where the color areas are predominantly presentation graphics and color text. These types of jobs will print at 3 ppm with the highest quality. As applications include more images, they may print at less than 3 ppm. They will still print with very high quality.

Features

The 16-MB configuration offers several features for high-quality printing:

Network Connectivity: The 16-MB configuration provides network connectivity. It can receive jobs at the same time from TCP/IP users, Novell NetWare servers, Windows NT servers and workstations, and Macintosh and other AppleTalk users.

Rendering Styles: The 16-MB configuration enables you to choose between four rendering styles. They are:

- **Photographic style** - used for bitmap images
- **Presentation style** - used for presentations
- **Monitor style** - used to emulate monitor screen appearance
- **Solid Color style** - used for spot-color graphics, such as logos

The 32- and 48-MB Printer Configurations

The 32- and 48-MB configurations provide high-speed, high-quality color printing. They provide sophisticated print server functionality, including on-printer queueing, spooling, and job storage. They also provide easy-to-use client software for managing stored jobs. Both configurations are capable of handling a heavy load of graphics-intensive jobs.

Queueing, Spooling, Job Storage, and Security

In the 32- and 48-MB configurations, the Network Color Printer behaves like a print server in that it provides server-like job storage and management functionality. It provides this functionality through the Print queue, Printed queue, Hold queue, and Direct queue. Each queue can be enabled and configured according to your system needs.

The Print Queue

The Print queue is a job storage, queueing, and spooling area. When you submit a job to the print queue, the printer receives the job and stores it on the printer's hard disk. This frees your workstation, PC, or Macintosh to do other things rather than remaining busy with the job.

Jobs in the Print queue print in the order in which the printer receives them. When jobs are in the Print queue, you can use the Spooler utility to move them to the Hold queue or to discard them. After printing, jobs in the Print queue move automatically to the Printed queue if it is enabled at the printer.

The Printed Queue

When a job from the Print queue finishes printing, the job moves into the Printed queue for temporary storage. (If the Printed queue is not enabled at the printer, jobs that have been printed are discarded from the printer's hard disk.) After a job is in the Printed queue, you can use the Spooler utility to move it into the Print queue or Hold queue or to discard it from the printer's hard disk.

The size of the Printed queue is determined by a setting configured at the printer that limits the number of jobs kept from 1 to 99. (The default is 10). Configuring the Printed queue sets the maximum number of jobs that the Printed queue can keep at any one time. When the Printed queue is full, the oldest job is discarded.

The Hold Queue

The Hold queue is a job storage area. When you submit a job to the Hold queue, the printer receives the job and stores the job on the printer's hard disk. Jobs in the Hold queue do not print or clear from the printer until someone uses the Spooler utility to move them to the Print queue or to discard them from the printer's hard disk.

The Direct Queue

The Direct queue provides a direct connection to the Network Color Printer, bypassing the printer's hard disk. When you submit a job to the Direct queue, the printer accepts the job when it is ready to print the job. The Direct queue does not store jobs on the printer's hard disk and so does not provide job spooling. This provides a measure of security for sensitive documents, such as personnel or payroll documents.

Jobs submitted to the Direct queue stay on the submitting server, workstation, PC, or Macintosh and keep it busy spooling the job until the printer is between Print queue jobs. Then the printer pauses the Print queue to process one Direct queue job.

Note: Printing to the Direct queue can take a long time if the job the printer is currently processing takes a long time or if many jobs are going to the Direct queue.

Performance

The 32-MB printer configuration is best suited for print jobs with medium-to-large sized color image areas. Medium image areas cover less than one-fourth of a page; large image areas cover one-fourth to one-half of a page.

With the 32-MB printer configuration, most print jobs with medium-sized image areas will print at 3 ppm. Some print jobs with large image areas may print at less than 3 ppm, but all will print with the highest quality.

The 48-MB printer configuration is best for print jobs with large-sized to full-page sized image areas. With the 48-MB configuration, most print jobs will print at 3 ppm, and all will print with the highest quality.

The IBM Network Color Printer Utilities

Three utilities are provided with the IBM Network Color Printer. This section provides an overview of each one.

IBM Color Downloader

The IBM Color Downloader utility provides the ability to print PostScript and Encapsulated PostScript (EPS) files directly to your Network Color Printer without your having to use the application with which the files were created. If you have the printer administrator password, the Downloader utility also allows you to download PostScript fonts to the printer's hard disk and to delete PostScript fonts from the hard disk. Only fonts that are not part of the permanently installed set can be deleted.

The Downloader utility is supported for all three of the Network Color Printer configurations. It runs on the Windows NT, Windows 95, and Macintosh operating systems. It is shipped with the printer on diskettes and on the *Customer CD-ROM*.

IBM Color Spooler

The IBM Color Spooler utility is designed for managing print jobs on the printer's hard disk. It enables you to look at the order of print jobs in the Print queue, change job-option settings, delete jobs, and move jobs between the printer queues (except the Direct queue). Using the Spooler utility you can also access the Job Log. This is a record of the jobs that have been printed. Using the Spooler utility you can view the Job Log, print it, and save it to a file.

The Spooler utility is supported for the 32- and 48-MB Network Color Printer configurations. It runs on the Windows NT, Windows 95, and Macintosh operating systems. It is shipped with the printer on diskettes and on the *Customer CD-ROM*.

IBM Color Calibrator

The IBM Color Calibrator utility provides a function for calibrating your IBM Network Color Printer. This enables you to keep your printer's colors at a consistent performance level across time.

The Calibrator utility is supported for all thee of the Network Color Printer configurations. It runs on the Macintosh operating system only. It is shipped with the printer on diskettes and on the *Customer CD-ROM*.

Chapter 2. Configuring Your Novell Network

This chapter explains how to integrate the the IBM Network Color Printer into your Novell NetWare network environment. Read this chapter if your network uses a NetWare server to provide print services to workstations, PCs, and Macintoshes on a network.

If your NetWare server does not provide print services, go straight to "Configuring the IBM Network Color Printer" on page 6–1 to configure the printer, and then see the *IBM Network Color Printer: User's Guide* for instructions on configuring the end-user computers.

System Requirements

This section discusses the requirements for integrating the IBM Network Color Printer into your Novell NetWare network. To make this integration successfully, you must have one of the following configurations:

• An Ethernet network and a Novell NetWare file server using a frame type of Ethernet_802.2, Ethernet_802.3, or Ethernet II.

The printer has built-in Ethernet support, so if this is your network environment, continue to "Overview of Novell Network Configuration (Ethernet)" on page 2–3.

• A token-ring network and a Novell NetWare server that provides print services to users of the network. If this is your network environment, you need a mechanism for attaching the printer to your token-ring network through the printer's parallel port. There are two methods for accomplishing this: using a protocol adapter and directly attaching your NetWare Server to the Printer Parallel Port.

Using a Protocol Adapter

Protocol adapters are available from retail sources of PCs and network equipment. To use a protocol adapter, follow these steps:

1. Attach the protocol adapter to the printer's parallel port and to your token-ring network.

Notes:.

1. With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.

2. Performance using a network protocol adapter may not match performance using the Ethernet attachment.

2. See "Configuring the IBM Network Color Printer" on page 6–1 and use the information there to enable the printer's parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice.

3. Configure the protocol adapter. For instructions, see the documentation that came with the adapter. After the protocol adapter is configured and attached, it becomes visible as a token-ring-attached

printer on the network.

4. See the documentation that came with NetWare for instructions on creating a print server and Print queue with which to provide print services to a token-ring-attached network printer.

5. Have each end user install the PostScript Level 2 Printer Driver on his or her client PC, workstation, or Macintosh. Instructions are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities; however, users on a token-ring network should not do so, because the utilities are not supported over the parallel port.

You have completed the protocol adapter attachment procedure. The remainder of this section does not apply to you, so skip to "Configuring the IBM Network Color Printer" on page 6–1.

Directly Attach Your NetWare Server to the Printer Parallel Port

To do so, follow these steps:

1. Use a parallel cable to attach the printer to the server. To assure FCC compliance, use IBM part number 68x3949. Other parallel cables, although they may work, may not comply with FCC regulations.

   Note: With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.

2. See "Configuring the IBM Network Color Printer" on page 6–1 and use the information there to enable the printer's parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice, because it allows you to redirect the job to a different printer at any time until the job is printed.

3. See the documentation that came with NetWare for instructions on creating a print server and print queue with which to provide print services to a parallel-attached printer.

4. Have each end user install the PostScript Level 2 Printer Driver on his or her client PC, workstation, or Macintosh. Instructions are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities; however, users on a token-ring network should not do so, because the parallel port does not support the utilities.

You have completed the steps for parallel attachment. The rest of the information in this chapter does not apply to you. Skip to "Configuring the IBM Network Color Printer" on page 6–1.

Overview of Novell Network Configuration (Ethernet)

Configuring a Novell network includes configuring the Novell server to work with the printer, configuring the printer to work with the Novell server, and configuring the client PCs, workstations, and Macintoshes to use the printer.

General Configuration Tasks

The general configuration tasks you will perform to make the printer an effective part of your network printing environment are as follows:

1. Configure the server first, setting the bindery context if necessary and creating print servers and print queues to support the printer.

   For instructions on configuring the server, see "Configuring Your Novell NetWare Server" on page 2–3.

2. After you have configured the server, configure the printer. When you configure the printer, enable the Internetwork Packet Exchange (IPX) communication protocol. Then connect the printer to the print server that you created on the NetWare server.

   For instructions on configuring the printer, see "Configuring the IBM Network Color Printer" on page 6–1.

3. After you have configured the server and the printer, have your end users install the printer driver and color reference pages. If some end users will submit jobs directly to the printer rather than through the NetWare server, those end users will also want to install the Downloader and Spooler utilities. The Downloader provides batch printing capabilities, and the Spooler allows users to manage their jobs that are stored in the Print, Hold, or Printed queues.

The IBM Network Color Printer diskettes and *Customer CD-ROM* contain the print drivers, printer description files, and utilities. For instructions on installing software from the *Customer CD-ROM* or diskettes, see the *User's Guide*.

Configuring Your Novell NetWare Server

A Novell NetWare server is typically a dedicated PC that is configured to control client access to shared resources. In addition to other services, NetWare servers use the IPX communication protocol to provide spooling, queue management, and print services to clients. These clients can include Windows, AIX, and Macintosh clients, among others.

This section discusses how to:
- Check the frame type that your NetWare file server uses
- Set the bindery context if you run NetWare 4.x
- Create a print server and print queues to connect to the printer.

Checking the Frame Type

The frame type is the format of the communications packet that the NetWare file server uses. When the file server loads its network drivers, a setup file specifies the frame type. The printer supports frame types of Ethernet_802.2, Ethernet_802.3, and Ethernet II. To configure the printer, you will need to know the frame type that your server uses. For instructions on how to find out what frame type your NetWare server uses, see the documentation that came with NetWare.

Setting the Bindery Context

The printer supports NetWare versions 3.11 and 3.12 and version 4.x in bindery emulation mode. If your NetWare server is 4.x, set the bindery context (see the procedure below). If your NetWare server is 3.1.x, see "To create print servers and print queues" on page 2–6.

The procedure below provides an overview of the steps used to set the bindery context. Complete instructions are in the Novell NetWare documentation.

Note: If your server is using NetWare 3.11 or 3.12, skip this section and see "To create print servers and print queues" on page 2–6.

To set the NetWare 4.x Bindery Context:

1. Determine the Directory Services path to the container in which you will create the print servers and print queues for the printer. The container defines the bindery context for your network structure.

2. Enter these commands:
   ```
   Load install
   Maintenance/Selective Install
   NCF File Options
   Edit AUTOEXEC.NCF
   ```

3. In the AUTOEXEC.NCF file, add this line:
   ```
   set bindery context = your bindery context
   ```
   where *your bindery context* is the correct bindery context for your server.

4. Activate the new bindery context using one of these two methods:

   • If you can reboot the NetWare server, do so. It loads the set command automatically.

   • If you do not wish to reboot the NetWare server, type the set command at the server's prompt. Use the same command you entered in the AUTOEXEC.NCF file.

You are ready to set up the new print server and new print queue. See the following section, "Creating a Print Server and Print Queues" for details.

Creating a Print Server and Print Queues

You can create up to three print servers on the Novell NetWare file server. These will provide print services to the printer.

Note: When you connect the IBM Network Color Printer to a NetWare server, the connection is between a single printer queue and one NetWare print server. You cannot connect an individual printer queue to an individual NetWare queue. After you have defined a connection between one of the printer queues and one of the NetWare print servers, the printer queue requests jobs from all of the queues on that print server.

You may want to create a single print server with multiple queues, each of which manages its jobs in a different way. Then:

- A user submits a print job to a given NetWare queue based on the characteristics of the job.

- The NetWare queue configuration determines when the queue makes the job available for printing.

- The printer queue polls all the queues on the connected print server for jobs. As the queues on the print server make jobs available, the printer queue handles the jobs differently, depending on whether it is the Print or Direct queue. For instance:

  – The Print queue receives jobs and stores them on the printer's hard disk. When a job reaches the head of the Print queue, the queue spools the job to the printer.

  – The Direct queue waits until the job that is currently printing finishes and then prints its job. The Direct queue does not store and spool jobs.

    Note: If you connect the NetWare print server to the Direct queue and the Direct poll interval is set for frequent polling, Direct jobs can monopolize the printer. If this becomes a problem, increase the interval at which the Direct queue polls the NetWare server for jobs. This allows jobs in the Print queue time to print. The poll interval is one of the configuration items in the printer's Network Setup menu. Instructions on configuring this and other printer options are located in "Configuring the IBM Network Color Printer" on page 6–1.

  – IBM does not recommend connecting the Hold queue to a print server, because once a job is in the Hold queue, you must use the Spooler utility to move it.

The NetWare print servers that you create can be distributed among the internal printer queues in any way you choose. For example, you might have one NetWare print server go to the Print queue and two to the Direct queue, or have all three go to the Direct queue. For the sake of simplicity, you may want to start with just one print server and queue connected to the Direct or Print queue. You can then add more queues to this print server as you need them. If necessary, you can create and connect up to two more print servers.

To create print servers and print queues:

Create and configure new NetWare print servers and print queues using NetWare Print Console, a NetWare utility that is stored in NetWare's PUBLIC directory. The following steps apply to NetWare version 4.1. For complete instructions and instructions that apply to your version of NetWare, see the documentation that came with NetWare.

1. Decide on the names of new print servers and queues you intend to create on the file server. These names (or the equivalent ID which NetWare assigns) are used for communications between the printer and the NetWare file server. Use the guidelines given here for selecting names.

   - For print servers, use names such as `IPX_SERV` or `COLOR_serv`.

   - For queues, use names such as `BIGq`, `littleq`, and `5pmQ`.

   - Names should be as brief and descriptive as possible. Names cannot begin with a period and cannot include spaces or any punctuation characters other than periods. For example, the print server names `IPX_SERV` and `COLOR_SERV` are both appropriate names, while `IPX SERVER` and `COLOR:SERV` are not.

   - When you configure the printer, you will use the printer to log on to your NetWare file server and print server. You will need login names and any file server login password and print server passwords.

2. Log in to the Novell NetWare server as the Supervisor.

3. At the NetWare MS-DOS prompt, type PCONSOLE. The Available Options menu is displayed.

4. Choose Change Current File Server.

5. Select the name of the file server on which you would like to create the new print server. Note the login name, the name of the file server, and the name of the print server. Later, when you configure the printer, you will select this file server as part of the Network Setup menu configuration.

6. From the Available Options menu, choose Print Server Information.

7. Press the Insert key and type a name for the new print server, such as IPX_SERV, and press the Enter key. Then press the ESC key. Note the login name, the name of the file server, and the name of the print server. Later, when you configure the printer, you will select this print server as part of the Network Setup menu configuration.

8. From the Available Options menu, choose Print Queue Information.

9. Press the Insert key and type a name for the new print queue. Press the Enter key. The print queue name you entered will be highlighted in the Print Queues list.

10. Make sure the name of the print queue you created is selected in the Print Queues list, and press the Enter key. The Print Queue Information menu is displayed.

11. In the Print Queue Information menu, choose Queue Servers and press the Enter key. A blank Queue Servers list is displayed.

12. Press the Insert key. The Queue Server Candidates list is displayed.

13. Select the print server you created in step 7. This server appears in the Queue Servers list.

    You have associated the queue with the print server. At this point, you can stop, create more queues in this print server, or create up to two more print servers.

    If you wish to create more queues in this print server, return to step 8 and follow directions. If you wish to create more print servers, return to step 5 and follow directions.

14. When you are finished, press the ESC key to exit all PCONSOLE windows.

15. Choose Yes or press the Enter key to save changes to PCONSOLE.

You have finished configuring the NetWare file server to support the printer. Now you must configure the printer to attach to the server and receive jobs from it. See "Configuring the IBM Network Color Printer" on page 6–1.

Note: Configuring the client PCs and Macintoshes to use the NetWare queue is an end-user task and is documented in the *IBM Network Color Printer: User's Guide*. However, you can make this process more efficient by using the NetWare file server to share the *Customer CD-ROM* over the network. This allows your users to have access to the software that they need to configure their client PCs and Macintoshes.

Sharing the *Customer CD-ROM* from Your NetWare File Server

The *Customer CD-ROM* contains the end-user software that each client needs in order to print successfully to the printer. This software includes the print driver, printer description files, and Spooler and Downloader utilities. By sharing the *Customer CD-ROM* over the network, you enable the network clients to install the software without CD-ROM drives of their own and without having to wait for access to diskettes or a CD-ROM.

For instructions on sharing a volume with NetWare clients, see the NetWare documentation. For instructions on installing from the *Customer CD-ROM*, see the *User's Guide*.

Chapter 3. Configuring Your Windows NT Network

This chapter discusses integrating the IBM Network Color Printer into your Windows NT network environment. Read this chapter if your network uses an NT server to provide network services to the other workstations, PCs and Macintoshes on the network.

If your NT server does not provide print services, go straight to "Configuring the IBM Network Color Printer" on page 6–1 to configure the printer, and then see the *IBM Network Color Printer: User's Guide* for instructions on configuring the end-user computers.

System Requirements

This section discusses the requirements that you need to integrate the IBM Network Color Printer into your Windows NT network environment.

To integrate the printer into a Windows NT network, you must have one of the following configurations:

- An Ethernet network and a Windows NT server that provides print services to users of the network. The printer has built-in Ethernet support, so if this is your network configuration, continue to "Overview of Windows NT Network Configuration (Ethernet)" on page 3–2.

- A token-ring network and a Windows NT server that provides print services to users of the network. If this is your network configuration, you need a mechanism for attaching the printer to your token-ring network through the printer's parallel port. There are two methods for accomplishing this: using a protocol adapter and directly attaching your server to the parallel port.

  Using a Protocol Adapter

  Protocol adapters are available from retail sources of PCs and network equipment. To use a protocol adapter, follow these steps:
  1. Attach the protocol adapter to the printer's parallel port and to your token-ring network.

  Notes:.

  > 1. With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.
  >
  > 2. Performance using a network protocol adapter may not match performance using the Ethernet attachment.

  2. See "Configuring the IBM Network Color Printer" on page 6–1 and use the information there to enable the printer parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice.

  3. Configure the protocol adapter. For instructions, see the documentation that came with the adapter. After the protocol adapter is configured and attached, it becomes visible as a token-ring-attached

printer on the network.

4. See the documentation that came with Windows NT for instructions on creating a printer on the NT server with which to provide print services to a token-ring-attached network printer.

5. Have each end user install the PostScript Level 2 Printer Driver on his or her client PC, workstation, or Macintosh. Instructions are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities; however, users on a token-ring network should not do so because the utilities are not supported over the parallel port.

You have completed the steps for attachment using a protocol adapter. You can skip the rest of this section and go to "Configuring the IBM Network Color Printer" on page 6–1.

Directly Attach Your Windows NT Server to the Printer Parallel Port

To do so, follow these steps:

1. Use a parallel cable to attach the printer to the server. To assure FCC compliance, use IBM part number 68x3949. Other parallel cables, although they may work, may not comply with FCC regulations.

   Note: With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.

2. See "Configuring the IBM Network Color Printer" on page 6–1, and use the information there to enable the printer's parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice.

3. See the documentation that came with Windows NT for instructions on creating a printer on the NT server with which to provide print services to a parallel-attached printer.

4. Have each end user install the PostScript Level 2 Printer Driver on his or her client PC, workstation, or Macintosh. Instructions are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities, however users on a token-ring network should not do so because the utilities are not supported over the parallel port.

You have completed the procedure for parallel attachment. You can skip the rest of this chapter and go to "Configuring the IBM Network Color Printer" on page 6–1.

Overview of Windows NT Network Configuration (Ethernet)

A Windows NT server can be configured to provide printing services to networked Windows, Windows for Workgroup, Windows 95, and Macintosh clients. You can either attach the server to the printer using the AppleTalk communication protocol or the TCP/IP communication protocol.

Configuring an NT network includes configuring the NT server to work with the printer, configuring the printer to work with the NT server, and configuring the client PCs, workstations, and Macintoshes to use the printer.

General Configuration Tasks

The general configuration tasks you will perform to make the printer an effective part of your network printing environment are:

1. Configure your printer.

   By default, the AppleTalk and TCP/IP communication protocols are already enabled, as are all of the printer queues. Using AppleTalk to connect to the printer is recommended; in this case, no further printer configuration is necessary.

   If you want to attach to the printer using TCP/IP, you must give the printer a unique TCP/IP address. In addition, you may want to configure the printer in other ways, such as changing the name, disabling the Hold queue, or configuring the job log.

   To configure the printer, see "Configuring the IBM Network Color Printer" on page 6–1.

2. Install the printer driver on your NT server, connect to the printer and share the printer. Clients of the NT network server will use this printer. To configure the server, see "Configuring Your Windows NT Server" on page 3–3.

3. After you have configured the server and the printer, have your end users install the printer driver and color reference pages. If some end users will submit jobs directly to the printer rather than through the NT server, those end users may also want to install the Downloader and Spooler utilities. The Downloader provides batch printing capabilities, and the Spooler allows users to manage their jobs that are stored on the printer's hard disk in the Print, Hold, or Printed queues.

Configuring Your Windows NT Server

A Windows NT server is typically a PC that is configured to provide spooling, queue management, and print services to clients. These clients can include Windows, AIX, and Macintosh clients, among others.

This section discusses how to install the printer driver, connect to the printer, and make the printer available to network clients.

Log in to the Windows NT server as an Administrator. Decide whether to connect to the printer using AppleTalk or TCP/IP.

- If you will use AppleTalk, see "Installing the Printer Driver as an AppleTalk Device on Your NT Server" on page 3–4. The procedure is the same as that for installing any AppleTalk printer. It allows Macintoshes to submit jobs to the NT server. Otherwise, Macintoshes on the network must print directly to the IBM Network Color Printer, bypassing the server.

- If you will install the printer as a TCP/IP device, see "Installing the Printer Driver as a TCP/IP Device on Your NT Server" on page 3–7.

Installing the Printer Driver as an AppleTalk Device on Your NT Server

There are two parts to installing the printer as an AppleTalk device. They are:
- Installing AppleTalk network services (called "Services for Macintosh")
- Installing the printer driver on the NT server using AppleTalk.

Adding AppleTalk Network Services

Use this section to install Services for Macintosh on your NT server. Once installed, Services for Macintosh enables the server to attach to the printer as an AppleTalk device and allows the server to provide network printing services to any Macintosh computers on your network. This is true even if you connect to the printer using TCP/IP.

To install Services for Macintosh:

1. On the Control Panel, double-click on the Network icon. The Network Settings dialog box appears.

2. If Services for Macintosh are already installed, go to "Installing the Printer Driver on the NT Server Using AppleTalk Services". If not, select Add Software.

3. Select Services for Macintosh and click on the OK button. You will be prompted for diskettes.

4. Insert Windows NT diskettes as prompted. When installation is complete, **Services for Macintosh** is listed under Installed Network Software in the Network Settings dialog box.

5. Select Services for Macintosh and click on Configure. A configuration dialog box appears.

6. Select Yes or No to enable or not enable AppleTalk routing. For simple networks, choose No. Click on the OK button.

7. If the AppleTalk network has zones, select the desired zone and click on the OK button.

8. Exit Windows and reboot the server.

You have completed the AppleTalk Network Services portion of installation. Continue with the next section.

Installing the Printer Driver on the NT Server Using AppleTalk Services

This section explains how to install the printer driver on the NT server. Steps include creating a printer on the NT server, installing the PostScript Level 2 Printer Driver, and attaching to the printer.

To install the printer driver:

1. From the Program Manager window, open the Print manager.
2. Choose Create Printer from the Printer menu. The Create Printer dialog box appears.
3. Enter a name for the printer.This name should be different from the name of the printer itself. By default, the printer is named "IBMnetcolor", but you may have changed this name when you configured the printer. The name you choose now will be the name that appears in the NT server's Printer window.

You have completed the steps for installing the printer driver on the server. Continue with the next section.

To Install the PostScript Level 2 Printer Driver:

1. From the driver pop-up menu, select Other. Windows NT prompts you to locate the printer driver.
2. Insert the *Customer CD-ROM* or the IBM Windows Driver diskette.
   - If you are using the *Customer CD-ROM,* open the directory that corresponds to the language you wish to use, the WINNT directory, and then the DRIVERS subdirectory. Click on the OK button.

     The DRIVERS subdirectory includes a printer configuration file and the printer PPD file.
   - If you are using diskettes, insert the Windows Drivers diskette. Click on the OK button.
3. During driver installation, select IBM Network Color Printer. Click on the OK button.
4. When installation is complete, the driver name appears on the Driver menu of the Create Printer dialog box. The printer driver is installed and configured with the printer PPD.

You have completed the steps for installing the PostScript level 2 printer driver. Continue with the next section.

To connect to the printer:

1. From the Print to pop-up menu, select Other from the bottom of the list. Click on the OK button. The Print Destinations dialog box is displayed.

2. Select AppleTalk printing devices, and click on the OK button. You are notified that Windows NT is searching for AppleTalk printers.

   The Available AppleTalk Printing Devices window is displayed. For each zone found, the window displays a zone icon with the zone name beside it.

   If no zones are found, the message "No zones were detected on the network. Searching for AppleTalk printing devices in the default zone" is displayed. The window displays a zone icon with no name beside it to represent the default zone and lists the network printers beneath the icon.

   - If the network has no zones, go to step 3.

   - If the network has zones, double-click on the zone containing the printer. This displays a list of printers in the zone.

3. The IBM Network Color Printer appears in the list once for each of its available queues. If all the queues are enabled and the default name "IBMnetcolor" is still the name, the printer appears in the list as:

   IBMnetcolor_Direct
   IBMnetcolor_Hold
   IBMnetcolor_Print

   Choose one. Direct and Print are the recommended choices. If you choose Direct, the jobs will be stored on and spooled from the NT server. If you choose Print, the jobs will be moved from the NT server to the printer's hard disk and will be stored and spooled from there.

   A dialog box appears, asking if you want to capture this device.

4. For most network environments, capturing the printer is not the right choice. Capturing the printer makes it invisible to all the other AppleTalk users out on the network. Choose Yes only if you want to force users to print through the NT server.

5. In the printer dialog box, check the box to share the printer on the network.

   The printer name is the default Share Name that Windows NT clients will see. Change this name if you wish.

6. Click on the OK button. A new document log window is displayed, with columns for Status, Doc Name, Owner, Printed At, Pages, Size, and Priority.

   Client workstations on the network print to the printer by connecting to the printer Print queue on the Windows NT server. They do not have to use AppleTalk Services. For instructions on attaching a network client to the NT print queue, see the section on that client operating system in the *User's Guide*.

Installing the Printer Driver as a TCP/IP Device on Your NT Server

Use this section to install the printer driver on your NT server using TCP/IP.

The printer installed on the NT server will receive jobs from clients on the network, queue the jobs, and send the jobs to the printer.

To install the printer driver on the NT server:

1. From the Program Manager window, open the Print Manager.

2. Choose Create Printer from the Printer menu. The Create Printer dialog box appears.

3. Enter a name for the printer. This name should be different from the name of the printer itself. By default, the printer is named "IBMnetcolor", but you may have changed this name when you configured the printer. The name you choose now will be the name that appears in the NT server's Printers window.

4. From the Driver pop-up menu, choose Other. Windows NT prompts you to locate the printer driver.

5. Insert the *Customer CD-ROM* or the Windows Drivers diskette.

   - If you are using the *Customer CD-ROM*, open the directory that corresponds to your language, the WINNT directory, and the DRIVERS directory. Click on the OK button.

     The DRIVERS subdirectory includes a printer configuration file, the Windows NT PostScript printer driver, and the printer PPD file.

   - If you are using diskettes, insert the Windows Drivers diskette. Click on the OK button

6. During driver installation, choose the IBM Network Color Printer.

   When installation is complete, the driver name appears on the driver menu of the Create Printer dialog box. The printer driver is installed and configured with the printer PPD.

7. From the Print to pop-up menu, choose Other from the bottom of the list. Click on the OK button. The Print Destinations dialog box is displayed.

8. Select LPR Print and click on the OK button. A dialog box appears.

9. Enter the IP address and name in the dialog box and press Enter.

10. In the printer dialog box, check the box to share the printer on the network. The printer name is the default Share Name for Windows NT clients. Change this name if you wish.

11. Click on the OK button. A new document log window is displayed, with columns for Status, Doc Name, Owner, Printed At, Pages, Size, and Priority.

    Client PCs, workstations, or Macintoshes on the network print to the printer by connecting to the queue on the Windows NT server. For instructions on attaching a network client to the NT print queue, see the section on that client operating system in the *User's Guide*.

Sharing the *Customer CD-ROM* from Your NT Server

The *Customer CD-ROM* contains the end-user software that each client needs in order to print successfully to the printer. This software includes the print driver, printer description files, and utilties.You might want to share the *Customer CD-ROM* from the NT server, which will enable the network clients to install the software without the need for client CD-ROM drives, CD-ROMs, or diskettes.

For instructions on sharing a volume with NT clients, see the NT documentation. For instructions on installing from the *Customer CD-ROM*, see the *User's Guide*.

Chapter 4. Configuring Your Macintosh Network

This chapter discusses the tasks involved in configuring your Macintosh network for the IBM Network Color Printer. The configuration tasks you will perform to make the printer an effective part of your network printing environment are:

1. Configure your printer so that:

   – The AppleTalk communication protocol is enabled. Enabling the AppleTalk communication protocol allows all Macintosh computers on the network to print directly to the printer.

   – The Print queue is enabled. Enabling the Print queue enables Macintosh computers to submit jobs to the printer. The Print queue immediately receives the jobs, freeing the Macintosh to do other things. The printer stores the jobs on its hard disk and prints them in the order in which it receives them.

     If users will print jobs that should not be stored on the printer's hard disk for security reasons, then also enable the Direct queue. A job submitted to the Direct queue waits on the submitting Macintosh until the Direct queue is free and ready to receive it. This may take a long time, especially if the Direct queue is also receiving jobs from a Novell or NT network print server. When the Direct queue does receive the job, the printer prints the job immediately, without first writing it to disk.

   To configure the printer, see "Configuring the IBM Network Color Printer" on page 6–1.

2. Optionally, you can use your Macintosh computer to share the *Customer CD-ROM* with other Macintosh computers. By sharing the *Customer CD-ROM* over the network, you enable other Macintosh users to install the end-user software without possessing CD-ROM drives and without having to physically have the *Customer CD-ROM*. You will find instructions on sharing the *Customer CD-ROM* in "Configuring Your Macintosh for Sharing Files" on page 4–2.

3. Install the end-user software from the *Customer CD-ROM* or diskette on your Macintosh computer. The end-user software includes the PostScript Level 2 Printer Driver, printer description files, and other items that you need in order to take advantage of all the features of the printer.

   Installing the software is an end-user task and is documented in the *User's Guide*. When you are done with configuring the printer and sharing the CD-ROM, see the *User's Guide*.

Configuring Your Macintosh for Sharing Files

This section gives instructions on setting up a networked Macintosh to share the *Customer CD-ROM* with other networked Macintoshes and with networked PCs. You can also skip this section and go directly to the *User's Guide* for instructions on installing the printer driver end-user software on your Macintosh.

A Macintosh computer on your Ethernet network needs no special configuration to communicate with the printer as long as the printer is enabled for AppleTalk. For instructions on configuring the printer so that it is enabled for AppleTalk, see "Configuring the IBM Network Color Printer" on page 6–1.

Sharing the *Customer CD-ROM* from a Macintosh

Follow these steps to set up the *Customer CD-ROM* to be shared:

1. Insert the *Customer CD-ROM* into the CD-ROM drive of the networked Macintosh.

2. Click and hold the mouse pointer on the Apple menu, and slide the pointer down to select Automated Tasks. Release the mouse button.

   The contents of the Automated Tasks folder are displayed

3. Click and hold on the icon for the *Customer CD-ROM* and drag it onto the Share a Folder icon in the Automated Tasks folder. When the Share a Folder icon is selected, release the mouse button.

   The message "Starting File Sharing could take some time, depending on the size of your disk. Continue?" is displayed.

4. Click on the OK button in the message window. After a brief wait, the message "Selected disks/folders are now shared" is displayed.

5. Click on the OK button in the message window. File sharing is turned on and the *Customer CD-ROM* is shared.

Allowing Guests to Use the Shared *Customer CD-ROM*

This section describes how to make the shared *Customer CD-ROM* available to all users on the network rather than only to those with a user ID on your Macintosh.

1. Click and hold the mouse pointer on the Apple menu and slide the pointer down to select Control Panels. Release the mouse button.

   The contents of the Control Panels folder are displayed.
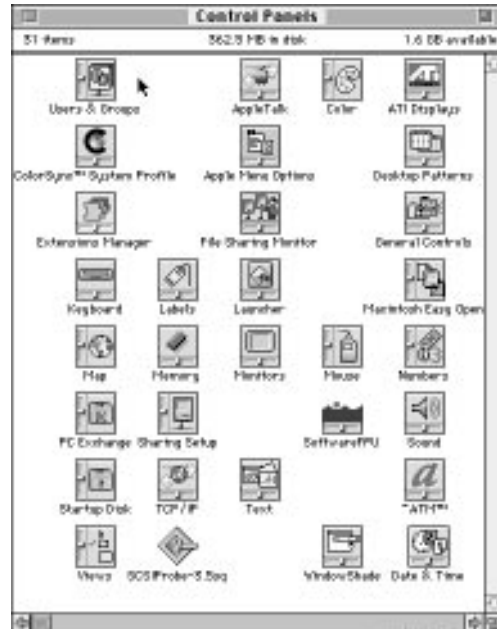
2. Double-click on the Users & Groups icon. A window showing all of the users and groups that are currently defined on your system is displayed.

3. Double-click on the icon labeled <Guest>. The access permissions of the guest user, who has no password, are displayed. Make sure that both the box under File Sharing and the box under Program Linking are checked. If one of these boxes is not checked, click on it with the mouse pointer.

Other users can now access the *Customer CD-ROM* as guest without needing a password.

You have completed the steps for configuring your Macintosh network.

Chapter 5. Configuring Your AIX Network

This chapter explains how to integrate the IBM Network Color Printer into your AIX network environment. Read this chapter if your network uses an AIX server to provide print services to the workstations, PCs, and Macintoshes on the network.

If your AIX server does not provide print services, go straight to "Configuring the IBM Network Color Printer" on page 6–1 to configure the printer, and then see the *User's Guide* for instructions on configuring the end-user computers.

System Requirements

This section describes the requirements for integrating the IBM Network Color Printer into an AIX network. To successfully perform this integration, you must have one of the following configurations:

- An Ethernet network and an AIX server that provides print services to users of the network. If this is your network configuration, skip the rest of this section and go directly to "Overview of AIX Network Configuration (Ethernet)" on page 5–3.

- A token-ring network and an AIX server that provides print services to users of the network. If this is your network configuration, you need a mechanism for attaching the printer to your token-ring network through the printer's parallel port. There are two methods for accomplishing this:

  Using a Protocol Adapter

  Protocol adapters are available from retail sources of PCs and network equipment. To use a protocol adapter, follow these steps:
  1. Attach the protocol adapter to the printer's parallel port and to your token-ring network.

  Notes:.

     1. With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.

     2. Performance using a network protocol adapter may not match performance using the Ethernet attachment.

  2. See "Configuring the IBM Network Color Printer" on page 6–1, and use the information there to enable the printer's parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice.

  3. Configure the protocol adapter. For instructions, see the documentation that came with the adapter. Once the protocol adapter is configured and attached, it becomes visible as a token-ring-attached printer on the network.

4. See the documentation that came with AIX for instructions on creating a Print queue with which to provide print services to a Token-Ring-attached network printer.

5. Have PC and workstation end users install the PostScript Level 2 Printer Driver and connect it to the Print queue that you created. Instructions for installing the driver are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities; however, users on a token-ring network should not do so, because the utilities are not supported over the parallel port.

You have completed the protocol adapter attachment procedure. The remainder of this section does not apply to you, so skip to "Configuring the IBM Network Color Printer" on page 6–1.

Attach Your AIX Server Directly to the Printer's Parallel Port

Follow these steps to do so:

1. Use a parallel cable to attach the printer to the server. To assure FCC compliance, use IBM part number 68x3949. Other parallel cables, although they may work, may not comply with FCC regulations.

   Note: With this configuration, the Spooler and Downloader utilities cannot communicate with the printer.

2. See "Configuring the IBM Network Color Printer" on page 6–1, and use the information there to enable the printer's parallel port and connect it to one of the printer's internal queues. The Print queue is the recommended choice.

3. See the documentation that came with AIX for instructions on creating a Print queue with which to provide print services to a parallel-attached printer.

4. Have end users install the PostScript Level 2 Printer Driver and connect to the print queue that you created. Instructions for installing the printer driver are in the *User's Guide*. The *User's Guide* also contains instructions for installing the utilities, however users on a token-ring network should not do so, because the parallel port does not support the utilities.

You have completed the steps for parallel attachment. Go to "Configuring the IBM Network Color Printer" on page 6–1.

Overview of AIX Network Configuration (Ethernet)

Use this section to review the general tasks for configuring your TCP/IP network, including configuring the printer, the AIX server, and the end-user PCs and workstations.

Overview of Printer Configuration for TCP/IP Printing

Use this section to review the ways in which you will configure the printer to support TCP/IP printing.

Select which queues you want to be enabled and disabled. We suggest that you may want to:

- Disable the Hold queue, because after a job is in the Hold queue, you must use the Spooler utility running on Macintosh or Windows to print it or remove it.

- Enable one of either the Direct or Print queues at the printer. When you print, if you have chosen Direct, the jobs will be stored on and spooled from the AIX server. If you have chosen Print, the jobs will move from the AIX server to the printer's hard disk, from which they will be spooled.

- Make sure that the printer has a valid TCP/IP address. In addition, if your TCP/IP network uses a gateway, enter the gateway address. If your TCP/IP network uses a subnet mask, enter the value of the subnet mask.

- Make sure that the printer has job defaults set that are appropriate for the majority of your users. This is especially important because these defaults will be used for all jobs that are submitted using lpr commands.

To configure the printer, see "Configuring the IBM Network Color Printer" on page 6–1.

Overview of AIX Server Configuration

Create queues on your AIX server to connect to the printer. For example, you may want to create one queue that releases jobs immediately and one that holds all jobs until after 5:00 p.m.

When creating the queues on the AIX server, remember that the printer itself functions as a TCP/IP server. When setting up the AIX queues:

- Specify the printer TCP/IP address as the server address to which to redirect the jobs

- Specify at least one of the queues on the printer. Use these names:

  - for the Print queue, specify `ibmcolor_print`

  - for the Direct queue, specify `ibmcolor_direct`

  - for the Hold queue specify `ibmcolor_hold`

    Note: IBM does not recommend directing jobs to the Hold queue, because after a job is in the Hold queue, you must use the Spooler utility running on Macintosh or Windows to print or remove it.

For a complete discussion of the different printer queues and how they function, see the *User's Guide*. For specific instructions on configuring the AIX server, see the documentation that came with the AIX operating system.

Overview of End-User PC and Workstation Configuration

To review, the general steps involved in AIX configuration for the IBM Network Color Printer include making sure that TCP/IP is installed and configured correctly, installing end-user software, such as the PostScript Level 2 Printer Driver and the printer description files, and configuring the PC or workstation to submit jobs to the AIX queues using TCP/IP.

These tasks, along with printing, are documented in the *IBM Network Color Printer: User's Guide* under the section covering the specific PC or Workstation operating system.

Note: While the Network Color Printer is receiving print jobs through TCP/IP, it can also accept jobs in other supported enabled protocols such as IPX/SPX and AppleTalk.

Chapter 6. Configuring the IBM Network Color Printer

This section describes how to configure the printer so that the users on your network can send jobs to it. Using the operator panel on the front of the printer, you will use the Setup menus to configure the printer. In particular, you will enable the printer for each network communication protocol from which it will receive jobs.

Use the information in the following sections as a guide as you progress through the printer setup menus.

When you have finished configuring your network servers and the printer, see the *IBM Network Color Printer: User's Guide* for information on:

* Installing printer drivers and software on Macintoshes, PCs, and workstations

* Configuring Macintoshes, PCs and workstations to use the customer software and for printing.

Note: If you have a Novell NetWare server, configure it before you continue with this section, then configure the printer.

Printing a Configuration Page

Before you use the Setup menus to configure the printer, take a moment to print out a Configuration Page at the printer. This page will show you what the current printer settings are. Use the page to write any notes that you might need while configuring the printer, such as:

* The name you want to assign to the printer

* The TCP/IP address you want to assign to the printer

* The NetWare print servers you want to attach to the printer, and the login names and passwords you will need in order to do so

* The password you want to assign to the printer

* Login names and passwords for any NetWare print servers and queues that you want to attach to the printer

* Any other information you want to keep on hand while configuring the printer.
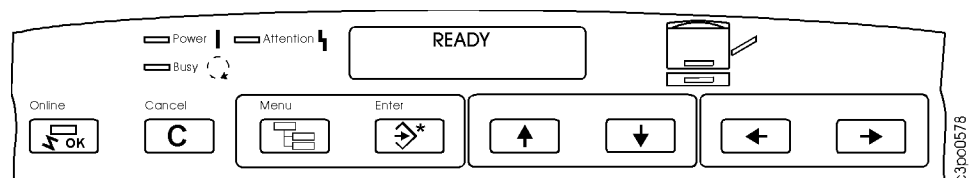
To print a configuration page:

1. Check that the printer is online (the Online light is on). If the printer is not online, press the Online push button.

2. Check that the Attention light is not on. If it is, refer to the section on operator messages in your *IBM Network Color Printer: Operator's Guide* and take appropriate action.

3. Press the Menu push button. You see PRINT PAGES on the first line of the display panel.

4. Use the Menu Scrolling push buttons to scroll through the Print Pages menu until you see CONFIGURATION on the second line of the display panel.

5. Press the Enter push button. Several messages appear on the display panel that tell you what the printer is doing until the Configuration Page is printed. READY is displayed when the print job is finished.

On the configuration page, make notes about settings you want to change. Then go on to the next section, "Accessing and Reviewing the Setup Menus".

Accessing and Reviewing the Setup Menus

This section describes how to gain access to the Setup menus on the printer.

Accessing the Setup Menus when the Printer is On

The procedure below describes how to enter the printer Setup menus when the printer is *on* (the power light is lit) and *online.* If the printer is already offline, skip to step 4.

To enter the printer setup menus when the printer is on and online:

1. Go to the operator panel on the front of the printer.

2. Wait until the display panel in the middle of the operator panel reads READY.

3. Press the Online push button. The display panel displays OFFLINE or OFFLINE PENDING.

   Note: If a utility is running and communicating with the printer when you take it offline, the printer will not go offline until the utility is stopped. The printer will remain in OFFLINE PENDING state.

4. Press the Menu push button. You see SELECT FUNCTION on the first line of the display panel and RUN SETUP on the second line of the display panel.

5. Press the Enter push button. RUN SETUP moves to the first line of the display panel, and PRINTER SETUP is displayed on the second line.

   Note: If a password has been assigned for the Run Setup menus, ENTER PASSWORD will display on the second line of the panel when RUN SETUP appears on the first line. If this occurs, see "Entering a Password" on page 6–4 for instructions.

6. Use the Menu Scrolling push buttons to scroll through the menus until you see the one you want. When you see the menu you want, press the Enter push button to select it.

Accessing the Setup Menus when the Printer is Off

This procedure describes the steps for entering the printer Setup menus when the printer is powered *off* (the power light is not lit). Follow these steps:

1. Go to the operator panel on the front of the printer.

2. Press and release the white power button on the lower right-hand corner of the front of the printer. The printer power-on sequence begins.

3. Watch the display panel for the message PRESS MENU FOR SETUP to be displayed; then press the Menu push button.

   You see SELECT FUNCTION on the first line of the display panel and RUN SETUP on the second line of the display panel.

4. Press the Enter push button. RUN SETUP moves to the first line of the display panel, and PRINTER SETUP is displayed on the second line.

5. Use the Menu Scrolling push buttons to scroll through the menus until you see the one you want. When you see the menu you want, press the Enter push button to select it.

Entering a Password

If a password has been assigned for the Run Setup menus, use the following procedure to enter that password.

1. When a password is required, you see ENTER PASSWORD on the display panel. Use the Menu Scrolling push buttons (the push buttons with the up or down arrows on them) to see the first alphanumeric character of the password on the second line of the display panel.

2. Use the right Cursor Position push button (the push buttons with the left or right arrows on them) to advance the cursor to the next character position.

3. Repeat step 1 and step 2 for each character in the password.

4. When you finish entering the password, press the Enter push button.

   – If you entered the right password, you see PRINTER SETUP on the second line of the display panel.

   – If you entered a wrong password, you see PASSWORD INCORRECT on the display panel. Press the Enter push button. You see TRY AGAIN on the first line of the panel. Press the Enter push button and repeat step 1 through step 4.

Deleting a Password

If you forget the password or no longer want to use one, use the following procedure to delete the password.

1. Turn off the printer.

2. Turn on the printer.

3. Watch closely to see the message PRESS MENU FOR SETUP on the display panel. When you see the message, press the up and down Menu Scrolling push buttons *at the same time*.

4. You see on the display panel DELETING SETTINGS... and PLEASE WAIT, STARTING UP. When the printer completes its startup procedure, you may access the offline menus to set a new password (see "Changing the Password") or return to a READY state.

Changing the Password

The Change Password menu enables you to set or change the password for the printer. When a password is required, only someone who knows the password can use the Run Setup function to change the printer settings. In most cases, only the key operator knows the password.

When the printer is first set up, no password exists. If you want a password to be used, you must define it using this menu. If your key operator did not create a password, you are not required to enter a password to use the Run Setup menu.

Use the Change Password function based on who should have access to the Setup menus. Access to the Setup menus enables you to choose commonly used printer settings such as paper type.

Remember that if you use the Change Password function to assign a password, *users who do not know the password cannot use the Setup menus*.

Use the following procedure to set or change a password.

1. Access the System Setup menus.

2. Use the Menu Scrolling push buttons (the push buttons with the up or down arrows on them) to scroll through the System Setup menus until you see CHANGE PASSWORD on the second line of the display panel.

3. Press the Enter push button. CHANGE PASSWORD moves up to the first line of the display panel and you see NO on the second line. NO is the default.

4. Press the down Menu Scrolling push button to display YES on the second line of the display panel. Press the Enter push button.

5. You see NEW PASSWORD on the first line of the display panel. Enter the new password as follows. The password can be any combination of letters and numbers up to 20 characters.

   a. Use the Menu Scrolling push buttons to display the first alphanumeric character of the password on the second line of the display panel.

   b. Use the right Cursor Position push button to advance the cursor to the next character position.

   c. Repeat step 1 and step 2 for each character in the password.

   d. When you finish entering the password, press the Enter push button.

6. You see VERIFY PASSWORD on the first line of the display panel. Repeat step 5.

7. If the password you entered in step 6 matches the one you entered in step 5, you see PASSWORD CHANGED on the display panel. If not, proceed to step 8.

   a. Press the Menu push button 3 times. You see EXIT SETUP on the first line of the display panel and the default setting, NO, on the second line.

   b. Press the down Menu Scrolling push button to see YES on the second line.

   c. Press the Enter push button. You see SAVE CHANGES on the first line of the display panel and the default setting, YES, on the second line. Press the Enter push button to save the changes.

8. If the password you entered in step 6 does not match the one you entered

in step 5, you see PASSWORD INCORRECT on the first line of the display panel. Press the Enter push button. You see TRY AGAIN on the first line of the display panel. Press the Enter push button and repeat step 5 through step 7.

The new password is effective until you change it again.

Choosing a Menu Setting

To choose a menu setting, do one of the following steps:

1. Choose from the settings you see on the display panel. An example is when you use the Menu Scrolling push buttons to show you Yes or No, and then you press the Enter push button to choose the setting that you see on the display panel.

2. Enter a setting one character at a time (such as a password or printer name).

   a. Use the Menu Scrolling push buttons to choose the first alphanumeric character you want on the second line of the display panel. You can use capital letters, small letters, and numerals.

   b. Use the right Cursor Position push button to advance the cursor to the next character position.

      If you need to correct a character in a previous character position, use the left Cursor Position push button to move the cursor to the position you want to correct.

   c. Repeat steps a and b for each character you want.

   d. When you finish, press the Enter push button.

The current setting for a menu item has an asterisk displayed to the left of the setting.

When you are in the Setup menus, the Menu push button gives you a shortcut out of the menu you are working in. After you have made the changes you want in a particular Setup menu, pressing the Menu push button allows you to exit that Setup menu without viewing the remaining choices in that menu.

Printing the Help Map

It may be helpful to print the Help Map and use it as a guide for navigating the menus. The Help Map tells you about the operator panel, push buttons, and panel lights and lists all the menus. Refer to the *Operator's Guide* for instructions on how to print this map.

Reviewing the Setup Menus

There are six main Setup menus. Refer to the table below for information about their functions. Information about the selections that you can make in each menu and about the default values for menu items can be found in Table 1 on page 6–8.

PRINTER SETUP	Use this menu to specify the way print jobs are managed on the printer.
QUEUE SETUP	Use this menu to enable and disable the Print, Direct, Hold, and Printed queues.
JOB LOG SETUP	Use this menu to specify how the printer handles its log of printed jobs.
CLEAR LOG / QUEUES	Use this menu to erase the job log and any jobs stored in the printer queues.
SYSTEM SETUP	Use this menu to specify settings such as time, date, and printer name.
NETWORK SETUP	Use this menu to specify all the active network systems that will transmit print jobs to the printer.
EXIT SETUP	Use this menu to exit the Setup menus.

The choices you make in some menus affect which subsequent options will be available as you continue through the menus.

The following table lists the default menu settings with which the printer arrives and shows the other possible settings. Review this table to determine what you need to change. Before making changes in any of the menus, see the section in this chapter that gives details of the network and operating system implications.

Table 1: Default Settings

PRINTER SETUP	PAPER SOURCE	PAPER SIZE	COLOR MODE
For details, see "Choosing Printer Setup Options" on page 6–9.	Tray1 (default) Tray2 Auxiliary Tray Auto Select	Letter (default) Legal A4 B5	CMYK (default) Grayscale
	PRINT COVER PAGE NO (default) YES	PRINT TO PSERROR NO (default) YES	PRINT START PAGE NO (default) YES
QUEUE SETUP	ENABLE PRINT Q	ENABLE DIRECT Q	ENABLE HOLD Q
For details, see "Choosing Queue Setup Options" on page 6–12.	YES (default) NO	YES (default) NO	YES (default) NO
	ENABLE PRINTED Q YES (default) NO	JOBS TO SAVE 10 (default) Any number between 1 and 99	
JOB LOG SETUP For details, see "Choosing Job Log Setup Options" on page 6–15.	AUTO PRINT NO (default) YES	AUTO CLEAR NO (default) YES	
CLEAR LOG / QUEUES NO (default) YES For details, see "Clearing the Job Log and Printer Queues" on page 6–16.	**Warning:** If you specify YES, all stored jobs in all printer queues and all entries in the printer job log are deleted when you confirm the request to clear.		
SYSTEM SETUP For details, see "Choosing System Setup Options" on page 6–17.	PRINTER NAME IBMnetcolor (default) Specify a name for your printer.	DATE Specify the current date in the format *mm/dd/yy* or the format that applies in your language.	SYSTEM TIME Specify the current time in the 24-hour format: hh/mm
	CHANGE PASSWORD NO (default) YES **Note:** By default, there is NO password set.	POWER SVNGS (M) 120 (default) From 15 to 120 minutes, in 15-minute increments.	

Table 1: Default Settings

NETWORK SETUP	NOVELL SETUP	TCP/IP SETUP	PARALLEL SETUP

For details, see "Choosing Network Setup Options" on page 6–18.	**Note:** By default the IPX/SPX protocol is enabled. However, there is NO connection in place to your print servers.
	
	For the complete path through the Novell setup menus, see "Network Setup Options and Client/ Server Implications: Novell" on page 6–19.
		Note: By default the TCP/IP protocol is enabled. However, to use it, you must define a correct TCP/IP address for the printer.
		
		For the complete path through the TCP/IP setup menus, see "Network Setup Options and Client/ Server Implications: TCP/ IP" on page 6–23.
			YES (default)
			NO
			
			If YES, then go to:
			
			TIMEOUT
			   15 (default)
			   Leave blank or enter a number between 5 and 60
			
			IGNORE EOF
			   YES
			   NO (default)
			
			Note: Before using the parallel port, be sure to configure these items correctly.

> **Note:** Using some Setup menus causes the printer to query the network for zones, network servers, and other information. If the printer is not attached to a working network, the printer will use default information that will probably not be correct for your environment. Always wait until after you have attached the printer to your network cable to configure the printer. If you have a Novell network, also wait until you have configured the NetWare server before configuring the printer.

The following sections guide you through printer configuration.

Choosing Setup Options

As you configure the printer, use this section to learn the implications of each choice for your network environment and client operating systems.

Choosing Printer Setup Options

Use the information in this section to choose options in the PRINTER SETUP menu. To get to the Printer Setup menu, use the information in "Accessing and Reviewing the Setup Menus" from page 6–3 to page 6–3.

In the Printer Setup menu, set the default job options that the printer will use. For most of these options, the end user can also set the option when he or she sends the job. If the end user chooses "Printer's Default" when sending

the job, the job will print with the settings you choose here. These defaults also apply to most jobs sent with the **lpr** command, as this command cannot specify most of these options.

Table 2:   Printer Setup Options and Client/server Implications

Paper Source	Notes	AppleTalk	Windows NT
Tray1 (default) Tray2 Auxiliary Tray Auto Select	• Tray 1 is the first tray under the printer at the front. • Tray 2 is the optional tray that goes under Tray 1. You only have this tray if you purchased the option. • The Auxiliary Tray is the fold-out tray on the right side of the printer. This is the only tray that can use transparencies and thicker bond paper. • Auto Select means that the printer draws from Tray 1 while there is paper in it. When Tray 1 runs out, the printer switches to Tray 2 if Tray 2 contains the same size of paper until Tray 1 again has paper of the needed size.	Users can override this default from the PostScript printer driver window. **NetWare** Users can override this default from the PostScript printer driver window.	Users can override this default from the PostScript printer driver window. **TCP/IP users** Most jobs will use the default you set here.
Paper Size	**Notes**	**AppleTalk**	**Windows NT**
Letter (default) Legal A4 B5	Set the default paper size. For transparencies, you can only choose Letter or A4.	Users can override this default from the PostScript printer driver window. **NetWare** Users can override this default from the PostScript printer driver window.	Users can override this default from the PostScript printer driver window. **TCP/IP** Most jobs will use the default you set here.

Table 2: Printer Setup Options and Client/server Implications

Color Mode	Notes	AppleTalk	Windows NT
CMYK (default) Grayscale	Set the default printer mode. CMYK is recommended, because this setting works with both color and grayscale documents.	Users can override this default from the PostScript printer driver window. **NetWare** Users can override this default from the PostScript printer driver window.	Users can override this default from the PostScript printer driver window. **TCP/IP** Most jobs will use the default you set here.
Print Cover Page NO (default) YES	**Notes** Sets whether each job prints with an identifying page at the start. If PRINT TO PS ERROR is set to YES, the PS error message is printed on the cover page.	**AppleTalk** If set to NO, users can also specify YES from the PostScript printer driver window. If set to YES, users can also specify NO from the PostScript printer driver window. **NetWare** If set to NO, users can also specify YES from the PostScript printer driver window. If set to YES, users can also specify NO from the PostScript printer driver window.	**Windows NT** If set to NO, users can also specify YES from the PostScript printer driver window. If set to YES, users can also specify NO from the PostScript printer driver window. **TCP/IP** Most jobs will use the default you set here.
Print to PS Error NO (default) YES	**Notes** Sets whether the printer will keep printing a job containing a PostScript error up to the point of the error.	**AppleTalk** All jobs will use the default you set here. **NetWare** All jobs will use the default you set here.	**Windows NT** All jobs will use the default you set here. **TCP/IP** All jobs will use the default you set here.
Print Start Page NO YES (default)	**Notes** Sets whether the printer will print a start page when you turn the power on.	**AppleTalk** All jobs will use the default you set here. **NetWare** All jobs will use the default you set here.	**Windows NT** All jobs will use the default you set here. **TCP/IP** All jobs will use the default you set here.

Choosing Queue Setup Options

Use the information in this section to choose options in the Queue Setup menu. To get to the Queue Setup menu, use the information in "Accessing and Reviewing the Setup Menus" from page 6–3 to page 6–3.

In the Queue Setup menu, set which are enabled among the Print queue, Direct queue, Hold queue, and Printed queue. By default, all the queues are initially enabled.

Table 3: Queue Setup Options and Client/server Implications

Enable Print Q	Notes	Macintosh	Windows NT
YES (default) NO	• YES, allows users to put jobs in the Print queue. Jobs in the Print queue are printed in the order in which the printer received them. • If the Direct queue is also enabled, jobs in the Print queue are printed in alternation with jobs received by the Direct queue. • You must enable either the Print or Direct queue (or both).	• When AppleTalk and the Print queue are enabled, Macintosh users can print directly to the Print queue. • Using the Downloader utility, users can download PostScript jobs to the Print queue.	• Setting Enable Print to YES allows you to attach the NT server to the Print queue using AppleTalk or TCP/IP. • Using the Downloader utility, NT clients and workstations can download PostScript jobs to the Print queue. • Using the Spooler utility, NetWare clients can move jobs that have not yet printed out of the Print queue and into the Hold queue or delete them.
		NetWare • Using the Downloader utility, NetWare clients can download PostScript jobs to the Print queue. • Using the Spooler utility, NetWare clients can move jobs that have not yet printed out of the Print queue and into the Hold queue or delete them.	**TCP/IP** When the Print queue is enabled and the printer has a valid TCP/IP address, TCP/IP users can send jobs to it using the queue name `ibmcolor_print`.

Enable Direct Q YES (default) NO	Notes	Macintosh	Windows NT
	• The Direct queue is different from the other queues in that it has no job storage capabilities. • When the Direct queue is enabled it receives jobs that network users submit to it. • When the Direct queue has a job, it receives and prints the job either immediately, or if the printer is busy it receives and prints the job as soon as the printer finishes the currently-printing job. • Until the Direct queue is ready to receive and print a job, the job remains at the sending server, workstation, PC, or Macintosh. • You must enable either Print or Direct or both.	The Direct queue must be enabled for network users to download fonts to the printer using the Downloader utility. **NetWare** Enable the Direct queue so that you can attach the NetWare server to it. The Direct queue must be enabled for network users to download fonts to the printer using the Downloader utility.	Setting Enable Direct to YES allows you to attach the NT server to the Direct queue using AppleTalk or TCP/IP. The Direct queue must be enabled for network users to download fonts to the printer using the Downloader utility. **TCP/IP** When the Direct queue is enabled and the printer has a valid TCP/IP address, TCP/IP users can send jobs to it using the queue named `ibmcolor_direct`.
Enable Hold Q YES (default) NO	**Notes** • YES allows network users to put jobs in the Hold queue. • Jobs in this queue can only be printed or thrown away by using the Spooler utility to move them to the Print queue or delete them. • An end user can use the Spooler on his or her own jobs. • A person with the printer password can use the Spooler on everyone's jobs.	**Macintosh** • When AppleTalk and the Hold queue are enabled, Macintosh users can print directly to the Hold queue. • Using the Downloader utility, Macintosh users can download PostScript jobs to the Hold queue. **NetWare** Using the Downloader utility, NetWare clients can download PostScript jobs to the Hold queue.	**Windows NT** • When AppleTalk or TCP/IP and the Hold queue are enabled, NT workstations can print directly to the Hold queue. • Using the Downloader utility, NT clients can download PostScript jobs to the Hold queue. **TCP/IP** When the Hold queue is enabled and the printer has a valid TCP/IP address, TCP/IP users can send jobs to it using the queue named `ibmcolor_hold`. **Note:** This is not recommended! Once in the Hold queue, jobs cannot be affected by **lpr** commands.

Table 3: Queue Setup Options and Client/server Implications

Enable Printed Q	Notes	Macintosh	Windows NT
YES (default) NO	• When enabled, the Printed queue automatically receives jobs that the Print queue has finished printing. • This does not include jobs printed using the Direct queue.	When AppleTalk and the Printed queue are enabled, Macintosh users can use the Spooler utility to move their own jobs from the Printed queue to the Print queue, Hold queue, or delete them. To move jobs belonging to others, the printer password is necessary.	If AppleTalk is enabled, users of NT Workstation and Server can use the Spooler utility to move jobs from the Printed queue to the Print queue, the Hold queue, or delete them. To move jobs belonging to others, the printer password is necessary.
		NetWare Clients of a NetWare server can use the Spooler utility to move their own jobs from the Printed queue to the Print queue, the Hold queue, or delete them. To move jobs belonging to others, the printer password is necessary.	**TCP/IP** TCP/IP users who cannot use the Spooler utility, such as AIX and DOS users, cannot move jobs out of the Printed queue.

Jobs to Save
(Appears only if the Printed queue is enabled)

10 (default) Specify a number from 1 to 99	**Notes** • The number you specify here is the maximum number of jobs the Printed queue will save at any one time. When the maximum is reached, jobs are deleted on a first-in-first-out basis. • More jobs take up more space on the printer's hard disk. • If you want to decrease the number of jobs to be saved, you must first delete any jobs over the new limit using the Spooler; or, you can clear the queue completely from the operator panel.

Choosing Job Log Setup Options

Use the information in this section to choose options in the Job Log Setup menu. To get to the Job Log Setup menu, use the information in "Accessing and Reviewing the Setup Menus" on page 6–3.

In the Job Log Setup menu, configure the log that the printer maintains of printed jobs. The log is useful for accounting and tracking purposes.

You can access the Job Log either by printing it manually from the operator panel, like this:

1. While the printer is online, press the Menu push button. The PRINT PAGES menu is displayed.

2. Use the Menu Scrolling push buttons to scroll to the JOB LOG menu item.

3. Press the Enter push button. The Job Log is printed.

Or you can use the Spooler utility to print the Job Log or save it to a file. See the *User's Guide* for information about using the Spooler utility.

You can configure the Job Log to print automatically every time it contains a record of 40 jobs. This is the AutoPrint option in the Job Log Setup menu, and it is explained in Table 4, "Job Log Setup Options and Client/Server Implications," on page 6–15.

Table 4:   Job Log Setup Options and Client/Server Implications

AutoPrint	Notes	Macintosh	Windows NT
NO (default) YES	• When set to YES, the Job Log prints automatically each time it has 40 job records. • When set to NO, the job log accumulates job records until it is printed using the Spooler or from the operator panel.	Using the Spooler utility, Macintosh users can view, copy, and print the job log. **NetWare** Using the Spooler utility, NetWare clients can view, copy and print the job log.	Using the Spooler utility, NT workstations and clients can view, copy and print the job log. **TCP/IP** Select YES for this option.

AutoClear	Notes	Macintosh	Windows NT
NO (default) YES	• When set to YES, the Job Log clears automatically each time it has 40 job records. • When set to NO, the job log entries accumulate until you print the job log using the Spooler or from the operator panel. • If you use this option without setting AutoPrint to YES, you may lose some job records.	Using the Spooler utility, Macintosh users can view, copy, and print the job log. **NetWare** Using the Spooler utility, NetWare clients can view, copy and print the job log.	Using the Spooler utility, NT workstations and clients can view, copy and print the job log. **TCP/IP** Select YES for this option.

Clearing the Job Log and Printer Queues

Use the information in this section to clear all of the stored jobs from the printer queues and to delete all entries from the job log.

For instructions on accessing the Job Log Setup menu, refer to "Accessing and Reviewing the Setup Menus" on page 6–3.

Note: Once you have set this menu item to YES and confirmed the action, you cannot retrieve either the jobs or the job log.

Table 5: Clear Log/Queues Option and Client/Server Implications

Clear Log/Queues			
NO (default) YES	**Notes** • Attention: If you specify YES, all stored jobs in all printer queues, and all entries in the printer job log, are deleted when you specify YES on the CONFIRM CLEAR option. • If you specify NO, queues and logs will only be deleted when you print them from the Spooler or the operator panel.	**Macintosh** Jobs on the printer are deleted. **NetWare** Jobs that have not yet passed from a NetWare server queue to the printer are not deleted.	**Windows NT** Jobs that have not yet passed from an NT server queue to the printer are not deleted. **TCP/IP** Jobs that have not yet passed from a TCP/IP server queue to the printer are not deleted.

Choosing System Setup Options

Use the information in this section to set the printer name, date, time, printer password, and power savings timer.

For instructions on accessing the System Setup menu, refer to "Accessing and Reviewing the Setup Menus" on page 6–3.

Table 6: System Setup Options and Client/Server Implications

Printer Name	Notes	Macintosh	Windows NT
IBMnetcolor (default) Specify a name for your printer.	If you have more than one IBM Network Color Printer on your network and there are any AppleTalk users, it is very important that you give each printer a unique name. Descriptive names are best.	Macintosh and other AppleTalk users will see this name for each enabled printer queue. For example: IBMnetcolor_Print IBMnetcolor_Direct IBMnetcolor_Hold To avoid confusion It is very important that each IBM Network Color Printer on your network have a unique name.	• If you use AppleTalk to connect to the printer you will see this name for each enabled printer queue. See the Macintosh column. • If you use TCP/IP to connect to the printer, ignore this setting. **TCP/IP** This name does not apply to TCP/IP printing. You will always use the queue names: ibmcolor_print ibmcolor_direct ibmcolor_hold
Date Specify the current date in the format *mm/dd/yy* or the format that applies to your language.	**Notes** The printer uses the date on start pages, cover pages, and in the job log.		
System Time Specify the current time in the 24-hour format: hh:mm	**Notes** The printer uses the time on start pages, cover pages, and in the job log.		

Change Password

NO (default) YES	**Notes**	**Macintosh**	**Windows NT**
	• Use this menu option to create or change the printer password.	After a password is set, a user must know the password in order to use the Spooler utility to change a job that does not belong to him or her.	After a password is set, a user must know the password in order to use the Spooler utility to change a job that does not belong to him or her.
	• **Do not forget the password you set here!**		
	• If you set a password and forget it, you will need to follow the procedure in the Operator's Guide to delete it.	**NetWare**	**TCP/IP**
	• Setting a password protects the printer settings from being changed by casual users.	After a password is set, a user must know the password in order to use the Spooler utility to change a job that does not belong to him or her.	Setting a printer password protects TCP/IP jobs in the printer queues from being changed by other end-users who run the Spooler utility.

Enter Password Enter a printer password	**Notes** Use the up and down arrow buttons to scroll through the available characters. Use the right arrow button to move to the next character position. Use the left arrow button to move to the previous character position.		

Power Savings 120 (default) Set a number of minutes, in 15-minute increments.	**Notes** Set the amount of time that the printer can be inactive before it goes into a low-power consumption mode.		

Choosing Network Setup Options

Use the information in this section to choose Network Setup menu options.

For instructions on accessing the Network Setup menu, refer to "Accessing and Reviewing the Setup Menus" on page 6–3.

In the Network Setup menu, you enable all the network communication protocols that network users and servers will use to communicate with the printer. For each protocol you enable, the menu prompts you for settings

pertaining to that protocol. You must specify network addresses and names that will be used by workstations, servers, and the printer when they communicate with each other.

If the printer is configured to enable more than one protocol, it automatically switches to the correct protocol when it receives a print request.

Important: Before entering any Network Setup options, ensure that the network cable is connected to the printer. During Network setup, the printer queries the network for zones and servers. If you do the network setup without the printer being connected to a functioning network, the printer will use default settings that may not work later. For instructions on cabling the printer, see the *Installation and Relocation Guide*.

Choosing Novell Setup Options

Use the information in this section to choose Novell Setup options.

Notes:.

1. If you have a Novell network, configure the NetWare server that you want to attach to the printer *before* you enter Network Setup options. See "Configuring Your Novell Network" on page 2–1 for instructions.

2. If you are defining connections to more than one NetWare file server, you must enter all of the options for all of the connections at the same time. If you have one file server defined and want to add another one, you will have to define the first server again when you add the second one.

The following table summarizes Novell network setup options and their network and operating system implications.

Table 7: Network Setup Options and Client/Server Implications: Novell

Enable Novell	Notes	NetWare
YES (default) NO	• Select YES if you have a Novell network. When you select YES, the printer scans the network for NetWare file servers. • If you select NO, skip to "Enable TCP/IP" on page 6–23.	Selecting YES enables the printer to connect to NetWare file servers and print servers.
IPX Frametype	**Notes**	
Ethernet 802.2 (default) Ethernet 802.3 Ethernet II	Select the Ethernet Frame Type that your NetWare file server uses.	

IPX Settings	**Notes**	
VIEW (default) CHANGE	• Select VIEW to see a list of connected file servers. • Select CHANGE to *delete all existing connections* to NetWare file servers and print servers, and begin connecting a new set of file servers and print servers to the printer.	

Available Servrs

(Appears only if you selected CHANGE for IPX Settings)

Select one of the displayed available NetWare file servers	**Notes** The printer displays the first item in a scrollable list of available NetWare file servers. • Select the file server within which you created a print server and queue for the printer. • When you select a server, the printer immediately tries to log in to the server as Guest without a password. If successful, the printer skips over the FS LOGIN menu item and goes to "Print Server" on page 6–21.	**NetWare** Selecting YES enables the printer to attach to a print server on a NetWare file server.

FS Login

(Appears only if the printer cannot log in as Guest)

SUPERVISOR (default) ADMIN LOGIN NAME	**Notes** • Selecting Login Name allows you to login as Guest or to enter a login name. • Selecting Supervisor or Admin skips to the FS PASSWORD menu item.	

Enter Name

(Appears only if you selected LOGIN NAME as the FS Login menu item option)

GUEST (default)	**Notes** • Select GUEST to again try to log in with the Guest login name. • To enter a different File Server login name, use the Menu Scrolling push buttons to enter each character.	

Table 7: Network Setup Options and Client/Server Implications: Novell

FS Password
 	
Enter the File Server password
	Notes
	• Use the Menu Scrolling push buttons to enter each character of the File Server password.
	• If you enter an incorrect password, you are prompted to try again.
	  - Select YES to try entering the password again.
	  - Select NO to exit this menu item and return to the FS LOGIN menu item, where you can choose a different login name.

Print Server Select a print server	**Notes** The printer displays the first item in a scrollable list of print servers on the NetWare file server. • Select the print server that you previously created for the printer. • When you select a print server, the printer immediately tries to log in as Guest without a password. If successful, the printer skips over the PS PASSWORD menu item, and goes to the SELECT QUEUE menu item.

PS Password
(Displays only if the printer cannot log into the print server without a password)

Enter your print server password	**Notes**
	• Use the Menu Scrolling push buttons to enter each character of your print server password.
	• If you enter an incorrect password, you are prompted to try again.
	  - Select YES to try entering the password again.
	  - Select NO to exit this menu item and return to the PRINT SERVER menu item, where you can choose a different print server.

IPX Poll Interval 15 (default)	**Notes** In seconds, set the interval at which the printer queue will poll the NetWare print server for jobs. Use the Menu Scrolling push buttons to select the interval you want.

Table 7: Network Setup Options and Client/Server Implications: Novell

Select Queue	Notes
Direct (default) Print Hold	• The printer displays the first item in a scrollable list of the enabled printer queues. **Note:** These are the built-in printer queues, not NetWare queues. • Select the printer queue to which you want to connect the NetWare print server. • The first two times through this menu item, selecting one of the queues returns you to the AVAILABLE SERVRS menu item on page 6–20. You can then connect another file server and print server, for a total of three connections. • After you have connected to a third print server, you exit this menu. **Note:** If the print server you are working with is already connected to one of the other printer queues, the message Q ASSIGNED is displayed. Press the Enter button to go on to the REASSIGN prompt.

Reassign

(Appears only if you try to connect an already-connected print server to a different printer queue than that to which it is already assigned.)

YES (default) NO	**Notes** • Select YES to move the print server from one printer queue to another. • Select NO to leave the print server with the printer queue to which it is already connected.

Choosing TCP/IP Setup Options

The following table summarizes TCP/IP network setup options and their network and operating system implications.

Table 8: Network Setup Options and Client/Server Implications: TCP/IP

Enable TCP/IP	Notes	Windows NT
YES (default) NO	Select YES to enable and configure TCP/IP on the printer.	Select YES if you will use TCP/IP to connect an NT server or workstation to the printer. **TCP/IP** You must select YES for TCP/IP printing.
IP Address		
Enter an IP address for the printer.	**Notes** • Use the Menu Scrolling push buttons to enter each character of the IP address exactly. • Obtain the IP address from the AIX or TCP/IP administrator for your site.	
Subnet Mask		
255.0.0.0 (default) Leave default or enter a selection.	**Notes** • If your network uses a subnet mask, use the Menu scrolling push buttons to enter each character exactly. • If your network does not use a subnet mask, leave the default of 255.0.0.0 • Obtain the subnet mask from the AIX or TCP/IP administrator for your site.	
Gateway Address		
Leave blank or enter a selection.	**Notes** • If your network uses gateways, use the Menu Scrolling push buttons to enter each character of the gateway address exactly. • If your network does not use gateways, leave blank. • Obtain the gateway address from the AIX or TCP/IP administrator for your site.	

Choosing Parallel Setup Options

The following table summarizes parallel setup options.

Table 9: Network Setup Options: Parallel

Parallel Setup	Notes
YES (default) NO	Select YES to enable and configure the printer's parallel port.
Timeout 15 (default) Leave blank or enter a number between 5 and 60.	**Notes** • If you will be sending TIFF files and PostScript files in *binary* format, enter a number of seconds. Files in binary format lack a unique end-of-file character. For these files, the timeout will signal the end of the file. • If you will be sending TIFF files and PostScript files in *ASCII* format, leave blank.
Ignore EOF NO (default) YES	**Notes** • If you will be sending TIFF files and PostScript files in *binary* format, select YES. The printer will ignore end-of-file characters. • If you will be sending TIFF files and PostScript files in *ASCII* format, select NO. The printer will use end-of-file characters to signal the ends of files.

Exiting the Setup Menus

While in the Setup menus, if you repeatedly press the Menu push button, the printer skips through the other menus directly to this one. Use this menu to save or not save the changes you have made and to exit the Setup menus.

Table 10: Exit Setup and Save Changes

Exit Setup	Notes
NO (default) YES	• Select YES if you are done configuring the printer. • Select NO to go back into the setup menus.
Save Changes YES (default) NO	**Notes** • Select YES to save the changes you have made to the printer configuration. • Select NO to return the printer to the configuration it had when you started.

If you accessed the Setup menus during a power-up sequence, the printer will initialize your changes and continue with the power-on sequence. If you accessed the Setup menus by pressing the Online push button, press it again now. The printer initializes any changes you have made and comes on line.

Appendix A. Assembling a Software Package for Your Customers

If you operate the IBM Network Color Printer in a copy shop, quick print shop, or service bureau, you might want to give the PostScript Level 2 Printer Driver and IBM Network Color Printer PPD to your customers who regularly bring in color print jobs. Customers can install the printer driver and use it to print documents to file. They can bring these files in to your shop for printing on the IBM Network Color Printer. The resulting PostScript files are properly formatted for taking advantage of the printer features.

When the customer brings a PostScript file into the shop, the file can be downloaded to the printer with the Downloader utility. This is fast, eliminates the necessity of having the original application loaded at your shop, and protects the print job from unwanted changes.

In order for customers to generate PostScript files that activate IBM Network Color Printer CRDs and get the best printed results:

- Each customer needs a copy of a Printer Drivers diskette suitable for his or her operating system. There are two ways to create additional Drivers diskettes:

    - You can duplicate one of the driver diskettes that came with the printer.

    - You can use the disk images on the *User Software CD* to create more driver diskettes.

- Each customer needs the *User's Guide*. This book gives instructions on installing the printer driver, setting printer-specific print options, and printing to a PostScript file. You can copy this from the *User Software CD* onto a diskette, or print it and make photocopies.

    If you give customers the *User's Guide* on diskette, to view it they will need Adobe Acrobat Reader. This freeware utility is available from the Adobe FTP and WWW sites. In addition, the Macintosh version is available on the *User Software CD*.

For customers who need to specify colors exactly, you may want to show them the color reference pages. This allows the customers to see exactly what the color output will be when they specify a named Pantone color or a CMYK percentage.

Appendix B. Upgrading the Printer System Software

This appendix contains instructions for upgrading the system microcode on your IBM Network Color Printer.

Before you begin:

Close all open Spooler and Downloader utility sessions. Open utility sessions prevent the printer from going offline. To do a microcode upgrade without risking the loss of print jobs or damage to the printer, you must be able to take the printer offline.

The upgrade will cause these changes:

- The printer name will be the default, IBMnetcolor.

- Any connections to NetWare Print Servers will be deleted. Make sure that you will be able to restore NetWare connections, if necessary. For example, make sure that you have any needed NetWare server passwords.

Choosing the right upgrade procedure:

Use the following table to choose the correct microcode upgrade procedure for your printer.

If:	Then:
You want to upgrade the microcode to take advantage of new functionality.	Perform the microcode upgrade over the network. See the following section, "Upgrading Microcode over Ethernet or Parallel Connections."
The printer does not print or does not print correctly, although when you switch the printer on, it passes internal diagnostics and comes to a ready state.	Perform the microcode upgrade over the network. See the following section, "Upgrading Microcode over Ethernet or Parallel Connections."
When you turn the printer on, it does not pass internal diagnostics, stopping before coming to a ready state.	Perform the upgrade from a SCSI II CD-ROM drive that is attached to the printer. See "Upgrading Microcode using an External SCSI II CD-ROM Drive" on page B–7.

Upgrading Microcode over Ethernet or Parallel Connections

Use this section to upgrade the microcode on your printer if the printer passes internal diagnostics and reaches a ready state when switched on. This section contains information on:

- Getting the microcode upgrade file
- Upgrading microcode using the printer parallel port
- Upgrading microcode using Ethernet

To get the Microcode upgrade file:

The first step is to get the microcode upgrade file. Microcode upgrades are available at no charge from the IBM World Wide Web (WWW) site. To get a new microcode upgrade file from the IBM WWW site:

1. Access the IBM Home Page at:

   `http://www.ibm.com`

2. Select "What we offer"... The What we offer page is displayed.

3. Select "Printing systems"... The Printing systems page is displayed.

4. Use the menu selections to find and download the IBM Network Color Printer microcode upgrade you want. Choose the microcode upgrade that is the appropriate version and is in the format that works with your operating system. Readme files located next to each upgrade file describe how to use that file format.

5. Save the file to an appropriate location on your PC or workstation. You will need at least 10 MB of free space on your hard disk.

   Attention: Do not change the name of the file. If you do so, the microcode upgrade may not work properly.

6. Double-click on the file to uncompress it. You will need at least 25 MB of free space on your hard disk to uncompress the file.

Once you have the microcode upgrade file, use one of the two following sections to upgrade the printer system microcode.

- If the printer is connected to your Ethernet network, see "Upgrading Microcode Over Ethernet Networks" on page B–5.

- If the printer is parallel-attached, see the following section, "Upgrading Microcode over the Parallel Port."

Upgrading Microcode over the Parallel Port

Use the instructions in this section to upgrade the microcode on your IBM Network Color Printer using a parallel attachment. You are going to take the printer offline, disconnect the printer from the Ethernet network, and bring the printer online again to do the microcode upgrade.

Before you begin:

- Get the microcode upgrade file from the IBM WWW home page. See "To get the Microcode upgrade file" on page B–2.
- Make sure that you have a PC or workstation parallel-attached to the printer.
- Ask your users to shut down open utilities sessions with the printer.

To upgrade printer microcode over the parallel port:

1. Press the printer Online push button to take the printer offline.

   The printer may not go offline immediately:

   - If the printer does not respond at all when you press the Online push button, the printer is receiving a file. When the printer has finished receiving the file, it will respond.
   - If the display panel shows OFFLINE PENDING, the printer is processing something or there is an open utility session.

2. Wait for the printer to go offline. If the busy light continues to flash and the printer stays in the offline pending state, someone is probably connected to the printer with a Spooler or Downloader. In this case, wait until you believe that the printer has had enough time to finish receiving any job it may have been receiving when you pressed the Online push button.

3. Once the printer has gone offline or you believe enough time has passed since you pressed the Online push button for any file in transfer to finish transferring, disconnect the Ethernet cable from the back of the printer. Leave the parallel cable and power cables attached. If the printer was in an offline pending state because of open utilities sessions, disconnecting the Ethernet cable should allow it to go offline.

4. After the printer has gone offline, press the Online push button again to bring the printer back online.

5. From the parallel-attached PC or workstation, open a DOS window.

6. Use the **copy** command to submit the microcode upgrade file to the IBM Network Color Printer connected to the parallel port. For example, use the command:

   ```
   copy filename LPT1
   ```

   where `filename` is the name of the microcode upgrade file and `LPT1` is the port to which the printer is connected.

7. When the printer finishes receiving the file, the printer busy light starts flashing. The busy light flashes until the printer finishes processing the upgrade file.

8. When busy light stops flashing and the printer returns to a ready state, take the printer offline by pressing the Online push button.

9. When the printer goes offline, turn the printer off by pressing the power button on the lower right front corner of the printer.

10. Wait a moment and then turn the printer back on. As the printer starts up, booting and scanning messages are displayed.

11. *Wait* until the following message is displayed:
    UPGRADE CODE NOW
    YES

12. Press the Enter push button to upgrade the system microcode now. (If you select NO, there will be a short delay, the printer will continue initializing, and the upgrade option will display again the next time you turn the printer on.)

    If you select YES, the following message is displayed:
    UPDATING CODE
    DO NOT POWER OFF

    Attention: Do not turn off power to the printer at this point. If you do so, you will damage the printer's hard disk.

13. *Wait* until the following message is displayed:
    SELECT FUNCTION
    RUN SETUP

14. Attach the Ethernet cable to the back of the printer.

15. What you do next depends on what the name of the printer should be and whether or not the printer should be connected to a Novell NetWare server.

    • If the name IBMnetcolor is acceptable and the printer is not connected to a NetWare server, press the Menu push button to exit. The printer initializes and enters a ready state.

    • If the name of the printer needs to be something other than IBMnetcolor, or if there were connections in place to a NetWare server before the microcode upgrade, press the Enter push button to enter the setup menus. Use the instructions in "Configuring the IBM Network Color Printer" on page 6–1 to change the printer name and to review the connections to the NetWare server. You may need to recreate the connections to the NetWare server.

You have finished upgrading the printer microcode.

Note: Although the microcode is new, page count information, error log information and most configuration information is saved.

Upgrading Microcode Over Ethernet Networks

Use this section to upgrade printer microcode from a workstation or PC that is connected to the printer over the Ethernet network. This section discusses using the **lpr** command to submit the microcode upgrade to the printer.

Before you begin:

- Get the microcode upgrade file from the IBM World Wide Web home page. See "To get the Microcode upgrade file" on page B–2.
- Make sure that you have a networked PC or workstation that can use the **lpr** command. Put the microcode upgrade file on this PC or workstation.
- Make sure that the printer is connected to the Ethernet network.
- Make sure that you have the TCP/IP address of the printer.
- Ask users to delay submitting print jobs to the printer until after you have finished the microcode upgrade.
- Ask users to shut down Spooler and Downloader utilities sessions with the printer.

To upgrade printer microcode over the Ethernet network:

1. Wait for the printer busy light to stop flashing and for the printer to reach a ready state. This indicates that all jobs in the printer have finished processing and printing and that all utilities sessions have been shut down.

   Note: If the printer reaches a ready state but the busy light flashes continuously, there is an open utilities session with the printer. Ask your users to close all utilities sessions. If this is not possible, you can still upgrade, but the process is less simple.

2. From the network-attached PC or workstation, open a DOS window or go to an AIX or UNIX shell prompt.

3. Use the **lpr** command to submit the microcode upgrade file to the printer as a PostScript job. For example, from Windows NT DOS, use the command:

   ```
   lpr -Sserveraddress -Pibmcolor_direct filename
   ```

   where *serveraddress* is the TCP/IP address of the printer and *filename* is the name of the microcode upgrade file. The TCP/IP name of the Direct queue is always ibmcolor_direct. Either the Print or the Hold queues will work equally well, as long as the specified queue is enabled.

4. When the printer finishes receiving the file, the printer busy light begins to flash. After the busy light stops flashing, press the Online push button to take the printer offline.

   Note: If, because of an open utilities session, the busy light never stops flashing, wait 20 minutes to be sure the upgrade file is done processing before pressing the Online push button. The printer enters the offline pending state. If you think anyone may have submitted additional jobs to the printer during the time when you were waiting for the upgrade file to process, wait until you think those files have finished processing. Then turn the printer off by pressing the power button on the lower right front corner of the printer, and go to step 6.

5. Once the printer has gone offline, turn the printer off by pressing the power button on the lower right front corner of the printer.

6. Wait a moment and then turn the printer back on. As the printer starts up, booting and scanning messages are displayed.

7. *Wait* until the following message is displayed:
   UPGRADE CODE NOW
   YES

8. Press the Enter button to upgrade the system microcode now. (If you select NO, the upgrade option will display again the next time you turn the printer on.)

   The following message is displayed:
   UPDATING CODE
   DO NOT POWER OFF

   Attention: Do not turn off power to the printer at this point. If you do so, you may damage the printer's hard disk.

9. *Wait* until the following message is displayed:
   SELECT FUNCTION
   RUN SETUP

10. What you do next depends on what the name of the printer should be and whether or not the printer should be connected to a Novell NetWare server.

    • If the name IBMnetcolor is acceptable and the printer is not connected to a NetWare server, press the Menu push button to exit. The printer initializes and enters a ready state.

    • If the name of the printer needs to be something other than IBMnetcolor or if there were connections in place to a NetWare server before the microcode upgrade, press the Enter push button to enter the setup menus. Use the instructions in "Configuring the IBM Network Color Printer" on page 6–1 to change the printer name and to review the connections to the NetWare server. You may need to recreate the connections to the NetWare server.

You have finished upgrading the printer microcode.

Note: Although the microcode is new, page count information, error log information and most configuration information is saved.

Upgrading Microcode using an External SCSI II CD-ROM Drive

Use this procedure to apply a microcode update using a system upgrade CD-ROM provided to you by IBM support. This procedure is only necessary if the printer will not finish its boot sequence and reach a ready state. If the printer will reach a ready state, you should use the simpler procedure documented in "Upgrading Microcode over Ethernet or Parallel Connections" on page B–2.

In this section you will do both a low- and high-level disk format and then install new printer system software.

Before you begin:

- Make sure that you have an external SCSI II CD-ROM drive

- Make sure that you have a SCSI cable with which to connect the CD-ROM drive to the SCSI port on the back of the printer. The cable:

  – Should be a meter or less in length (if the cable is longer, you may need to use a passive terminator),

  – Must have a 50-pin male Centronics connector on one end and a 50-pin male SCSI II connector on the other.

- Make sure that you have a microcode upgrade CD-ROM, provided to you by IBM support.

- Disconnect the Ethernet cable from the printer. This prevents users from submitting print jobs or opening utilities sessions while the upgrade is in progress.

To upgrade microcode using a SCSI II CD-ROM drive:

1. Turn off the printer by pressing the power button on the lower right front of the printer. When the printer is off, the power indicator light is dark.

2. Connect the SCSI II CD-ROM drive to the printer's SCSI port. As you face the back of the printer, the SCSI port is on the far right.

3. Switch on power to the CD-ROM drive.

4. Insert the microcode upgrade CD-ROM. After a moment, the light on the CD-ROM drive will blink.

5. When the drive light stops blinking and goes dark, turn on the printer power.

   The printer goes through POST procedures, and several status messages are displayed. The message SCANNING BOOT DEVICE... is displayed. Then the message PRESS MENU FOR SETUP is displayed.

6. When PRESS MENU FOR SETUP is displayed, do *not* press the Menu push button. Press the left and right Cursor Position push buttons at the same time.

7. SCANNING FILES is displayed, then:
       SELECT FUNCTION
       INSTALL SOFTWARE

   Note: If LOADING SYSTEM... is displayed instead of SCANNING FILES... you did not press the buttons quickly enough. Turn the printer power off and go back to step 5.

8. Scroll to:
   SELECT FUNCTION
   FORMAT DISK

9. Press the Enter push button to select FORMAT DISK. The display reads:
   FORMAT DISK?
   NO

10. Scroll until YES is displayed on the second line and press the Enter push button. The following message is displayed:
    FORMAT METHOD
    HIGH-LEVEL

11. Scroll until LOW-LEVEL is displayed on the second line and press the Enter push button. The printer performs a low-level disk format while displaying the FORMATTING... message.

12. After the low-level disk format is completed, the SELECT FUNCTION menu is displayed again. The following message appears:
    SELECT FUNCTION
    FORMAT DISK

13. Press the Enter push button to again select FORMAT DISK.

    The display reads:
    FORMAT DISK?
    NO

14. Scroll until YES is displayed on the second line and press the Enter push button. This message appears:
    FORMAT METHOD
    HIGH-LEVEL

15. Press the Enter push button to select a high-level disk format. The printer quickly performs a high-level disk format while displaying the FORMATTING... message.

16. After the high-level disk format is completed, you are returned to the SELECT FUNCTION menu. The following message is displayed:
    SELECT FUNCTION
    FORMAT DISK

17. Scroll until the display reads:
    SELECT FUNCTION
    INSTALL SOFTWARE

    Press the Enter push button. The following message is displayed:
    INSTALL SOFTWARE
    NO

18. Scroll until YES is displayed on the second line and press the Enter push button. Several messages are displayed:
    SCANNING
    DIRECTORIES...

    then
    INSTALLING...

    A status bar shows the progress of the installation. When the installation is done, PRESS ENTER TO RESTART SYSTEM is displayed.

19. Turn off the CD-ROM drive.

20. Press the Enter push button.

21. As the printer restarts, booting and scanning messages are displayed.

22. *Wait* until the following is displayed:
    SELECT FUNCTION
    RUN SETUP

    Attention: You must enter the Setup menus and save changes to
    complete the microcode upgrade. Press the Enter push button.

23. What you do next depends on what the name of the printer should be and
    whether or not the printer should be connected to a Novell NetWare server:

    • If the name IBMnetcolor is acceptable and the printer is not connected
      to a NetWare server, press the Menu push button to exit the Setup
      menus. Scroll to:
          EXIT
          YES

      Press the Enter push button and scroll to:
          SAVE CHANGES
          YES

      Press the Enter push button. The printer initializes and enters the
      ready state.

    • If the name of the printer needs to be something other than IBMnetcolor
      or if there were connections in place to a NetWare server before the
      microcode upgrade, use the instructions in "Configuring the IBM
      Network Color Printer" on page 6–1 to change the printer name and to
      review the connections to the NetWare server. You may need to
      recreate the connections to the NetWare server.

    Attention: When you exit the setup menus, you must select YES to the
    SAVE CHANGES option.

You have finished upgrading the printer microcode.

Note: Although the microcode is new, page count information, error log
information and most configuration information is saved.

Acronyms and Abbreviations

ac	alternating current		HVT	high-voltage transformer
ADB	Apple Desktop Bus		Hz	herz
AIX	Advanced Interactive Executive		IC	integrated circuit
ANSI	American National Standards Institute		I/O	input/output
APC	automatic photoemission control		ipm	impressions per minute
C	centigrade		IPX	Internet package exchange
CCITT	Comité Consultatif International Télégraphique et Téléphonique		IPX/SPX	Internet packet exchange/sequenced packet exchange
CCW	channel command word		ISO	International Organization for Standardization
CD-ROM	compact disk read-only memory		JIS	Japanese Industry Standard
CE	customer engineer		K	kilo
CPU	central processing unit		KB	kilobyte
CRC	cyclical redundancy check		kg	kilogram
CRD	color-rendering dictionary		laser	light amplification by stimulated emission of radiation
CRT	cathode-ray tube			
CRU	customer replaceable unit		LED	light-emitting diode
dB	decibel		LGL	legal
dc	direct current		lpi	lines per inch
DEV	developer		LPR	local printer
dpi	dots per inch		LPT	local port
DRAM	dynamic random access memory		MB	megabyte
DTP	desktop publishing		mm	millimeter
EBCDIC	extended binary-coded decimal interchange code		OHP	overhead projection
			OPC	organic photoconductor
EC	engineering change		PC	personal computer, photoconductor
EEPROM	electronically erasable programmable read-only memory		PCB	printed circuit board
			PDF	printer description file
EPROM	erasable programmable read-only memory		PEL	pixel
			pixel	picture element
ERP	error recovery procedure		POST	power-on self-test
F	Fahrenheit		ppi	pixels per inch
FIFO	first in first out		ppm	pages per minute
FM	fan		RAM	random access memory
FRU	field-replaceable unit		RH	relative humidity
GDI	graphics device interface		RIP	raster-image processor
GND	ground		RISC	reduced instruction set computer
GUI	graphical user interface		ROM	read-only memory
H	fuser heater			

SCSI	small computer system interface
SEF	short edge feed
SIMM	single inline memory module
spool	simultaneous peripheral operations online
TCP/IP	transmission control protocol/Internet protocol
TIFF	tagged image file format
TP	test point
V ac	volts alternating current
V dc	volts direct current

Glossary

The following terms are defined as they are used in this publication. If you do not find the term you need, see the *IBM Dictionary of Computing*, New York, McGraw-Hill, 1994, and the *IBM Dictionary of Printing*, G544-3973.

The following cross-references are used in this glossary:

- *Deprecated term for* refers to a term that should not be used and lists the preferred term.
- *Contrast with* refers to a term that has an opposite meaning.
- *See* refers to a preferred term with the same meaning.
- *See also* refers to related terms.

Numerics

60,000-Page Usage Kit. An air filter, ozone filter, transfer drum cleaning assembly, separation corona unit, and fuser to be installed in the printer by the operator after 60,000 prints. The 60,000-page Usage Kit is available for the low-voltage (110 V) and high-voltage (220 V) models.

A

actuator. A device that initiates mechanical motion.

administrator. See *network administrator*.

Adobe Acrobat Reader. A program used to view the online documentation supplied with the printer.

Adobe Illustrator. A professional illustration program for Macintosh computers and PCs that produces object-oriented images and prints them on PostScript laser printers.

air filter holder. The area on the back of the printer that holds the printer's air filter and gives you access to the printer's ozone filter.

air ventilation system. Horizontal slots on the back and left sides of the printer that prevent

overheating and ensure that the printer works reliably.

AIX operating system. IBM's version of the UNIX operating system.

aliasing. Unwanted effects such as Moiré patterns in an image. These patterns, called artifacts, look like two sets of parallel lines or two halftone screens superimposed.

anti-aliasing. The rendering of hard-edged objects so that they blend smoothly into the background.

Apple Desktop Bus (ADB). An interface standard for connecting a keyboard, mouse, trackball, or other input devices to an Apple Computer Macintosh SE, Macintosh II, or Macintosh IIGS computer.

AppleShare. A network operating system developed by Apple Computer, Inc., that transforms a Macintosh computer into a file server for an AppleTalk network. See also *AppleTalk*.

AppleTalk. A local area network (LAN) standard developed by Apple Computer, Inc. AppleTalk can link as many as 32 Macintosh computers, PCs, and peripherals such as laser printers.

auxiliary tray. A paper feeder tray that holds either 100 sheets of plain paper (at 80 g/m^2) or 20 transparencies.

B

banding. Visible steps between shades in a gradient. See also *gradient*.

batch printing. The queueing of one or more documents to print in a separate job as a background process.

bias. An electrical charge applied to a component of the printer such as the toner cartridge, transfer drum, discharge roller, attraction roller, or separation

corona unit. The bias can be ac or dc or a combination of both.

bindery context. An option that allows you to use the printer with Novell NetWare release 4.x. Bindery context is explained in the Novell NetWare documentation.

bindery emulation mode. See *bindery context.*

bitmap. An image formed by a rectangular grid of pixels. Each pixel in the grid is assigned a value to denote its color. 1-bit images are black and white only, 8-bit images are 256 colors or grays, and 24-bit images are full color. CMYK images are 32-bit per pixel to encode 256 levels in each of 4 channels. Also called *raster image*. See also *pixel, raster, raster image.*

bond. A paper formulated with at least 80% wood pulp. Bond is the best paper to use in the printer.

burr. A thin ridge or area of roughness produced in cutting or shaping metal.

C

calibration. The process of ensuring that a device works consistently according to a set of specifications.

Calibrator utility. See *IBM Color Calibrator.*

cam. A rotating or sliding piece in a mechanical linkage used especially in transforming rotary motion to linear motion and vice versa.

cassette. A deprecated term for tray 1 or tray 2 on the printer. See *universal cassette*.

caution notice. A notice that calls attention to a condition that is potentially dangerous to people.

Chooser. A Macintosh desktop accessory that governs the selection of printer drivers.

cleaning connector cover. The electrical connector cover for the transfer drum cleaning brush.

client. In a local area network (LAN), a workstation with processing capabilities such as a PC that can request information or applications from the network's file server.

CMYK. Cyan, magenta, yellow, and black, the four basic colors used in offset printing, as opposed to red, green, and blue (RGB), the three basic colors of light.

CMYK_REF.PS file. A file consisting of PostScript color pages that enable you to specify percentages of cyan, magenta, yellow, and black and get an exact rendering of those percentages in your document.

coated paper. Paper with a surface coating applied to produce smoothness.

color lights. The lights on the printer's density control panel that turn green when you choose the color next to each light to change the density of that color.

color pages. Pages you can print to see the red, green, and blue (RGB); cyan, magenta, yellow, and black (CMYK); and PANTONE colors available on the printer.

color reference pages. See *color pages*.

color-rendering dictionary (CRD). A feature on PostScript level-2 color printers that gives improved matching between the monitor and printed output. Color-rendering dictionaries are used by the printer's PostScript interpreter when converting RGB data sent to the printer to CMYK data used by the print processor. See also *rendering style*.

color-rendering style. See *rendering style*.

COLOR SELECT push button. A button on the printer's density control panel that you press to choose a color whose density you want to change.

configuration page. A page you can print to see the printer's current server and device configuration.

connector. A means of establishing electrical flow.

consumable supplies. A deprecated term for *supplies.* See *supplies.*

container. An entity in a computer such as a storage area that holds other entities such as files or programs**.**

control unit.   The printed circuit board (PCB) that supplies the printer's connection path to the customer's network. The control unit also gives commands to the print engine dc controller PCB to manipulate the motors, solenoids, and actuators during a print cycle. See also *actuator, solenoid.*

controller.   See *control unit.*

corona.   See *separation corona.*

cursor-position push buttons.   The left and right arrow buttons that you press to enter text and numbers for some menu settings (such as a password or a numeric setting).

customer CD-ROM.   A CD-ROM holding the user software for the printer, including the IBM Color Calibrator, Downloader, and Spooler utilities and the PostScript color pages.

customer engineer (CE).   An IBM representative who services IBM products at the customer's site.

cutout.   An area of the printer that is shaped ("cut out") to hold a connecting mechanism such as a tab on another part of the printer.

D

daemon.   A software program that runs unattended.

danger notice.   A notice used to call attention to a condition that is potentially deadly or extremely dangerous to people.

dedicated file server.   In a local area network (LAN), a file server whose function is to provide services to the users of the network and to run the network operating system.

densitometer.   An instrument that measures density according to a specified standard. Status T and XRite densitometers are two such color calibration devices.

density.   A precise measurement of the light energy transmitted or reflected by a surface in the presence of a standard light source.

density control panel.   The set of controls on the back of the printer that enable you to adjust the density of any of the four colors: magenta, cyan, yellow, or black.

density detection sensor.   A device on the printer containing a light source and a sensor. The density detection sensor measures the specific density of toner applied to known surface to regulate the quantity of toner applied during the print process. The reflectance of light on toner varies with the density and color of that toner. Thus the density detection sensor emits a specific amount of light on a toner patch and estimates the density of the toner patch by the amount of light reflected from the toner patch.

density gauge.   A row of indicators on the printer's density control panel. When you make a test print, the indicator on the gauge goes on to confirm the test pattern you chose for the test print: solid colors, solid white, gradient, horizontal lines, vertical lines, or grid pattern. See also *gradient.*

dequeue.   To remove items from a queue. Contrast with *queue.*

desktop.   In a graphical user interface (GUI), a computer representation of day-to-day work; for example, a desktop with open file folders.

desktop publishing (DTP).   The use of a PC or other platform as an inexpensive production system for generating typeset-quality text and graphics.

dialog box.   In a graphical user interface (GUI), an on-screen message box that interacts with the user to convey or request information. See also *graphical user interface (GUI).*

diagnostic mode.   A mode of operation in which the printer can check itself in case of a problem.

Direct queue.   A storage area for the printer that supplies a direct connection to the printer. When you submit a job to the Direct queue, the printer accepts the job when it is ready to print the job. Jobs in the Direct queue are not stored on the printer's hard disk and are not spooled. See also *Hold queue, Print Queue, Printed queue, spooling.*

discharging.   The application of ac bias by the printer's discharge roller to remove any charges remaining on the transfer drum surface after separation of the paper.

diskette. A thin, flexible, magnetic disk enclosed in a protective jacket.

display panel. The area on the printer where information such as error messages is displayed.

dots per inch (dpi). The number of dots that can be printed per inch by a laser printer. Each dot is either on or off, printed or not printed. See also *pixels per inch (ppi)*.

Downloader utility. See *IBM Color Downloader*.

driver. A disk file that holds information needed to operate a peripheral such as a computer monitor or printer.

duplex printing. Printing or reproducing a document on both sides of the page so that the verso (left) and recto (right) pages face each other after the document is bound.

E

electrostatic latent image. The image formed on the photoconductor drum surface by a negative charge where the laser beam has not irradiated.

encapsulated PostScript. Any file containing the PostScript page-description language that conforms to Adobe 2.0 document-structuring conventions and the Adobe conventions that allow the file to be included by other applications.

end user. A person, device, program, or computer system that uses a computer network for data processing and information exchange.

enqueue. To put items in a queue. Contrast with *dequeue*.

error log. A file in the printer that stores error messages for later access.

error message. An operator message that you see on the display panel and that causes the **Attention** light to flash. Error messages are listed in the *Operator's Guide*.

\ETC\HOSTS file. A file that allows you correlate TCP/IP addresses with the names of the devices (such as printers, workstations, and PCs) those addresses represent. See also *TCP/IP*.

Ethernet. A 10-megabit, baseband local area network (LAN) that allows multiple stations to access the transmission medium at will without previous coordination, avoids contention by using carrier sense and deference, and resolves contention by using collision detection and transmission.

F

feeder. See *paper feeder*.

feeder access door. A door on the upper right side of the printer that gives you access to the paper feeder area to remove jammed paper, do maintenance tasks, or replace the transfer drum cleaning unit.

feeder access door on tray 2 paper feeder. A door on the optional tray 2 paper feeder that gives you access to the tray 2 paper feeder area to remove jammed paper.

file server. In a local area network, a PC that provides access to files for all the workstations in the network.

folder. A file used to store documents electronically.

font. A family of characters of a given size and style.

format. The size, style, kind of page, margins, printing needs, and other aspects of a printed page.

frame. The bits in a packet that are assigned to control and synchronize data transfer over a network. See also *packet*.

fuser. The part of the printer that uses heat and pressure to embed toner into the fibers of paper and make a permanent bond.

fuser access door. A door on the upper right side of the printer that gives you access to the paper output area to remove jammed paper and replace the fuser.

fuser access strap. A strap on the fuser access door that is attached to the upper locking tab on the printer's frame to keep the door from dropping down when you open it.

fuser cleaning belt. Part of the mechanism on the fuser cleaning unit that cleans the fuser upper roller.

fuser jam-release lever. A lever to the right of the paper guide inside the printer that is used to pump fuser oil from the oil bottle and to free jammed paper in the fuser area.

fuser nip width check. A procedure done by the customer engineer (CE) to get a specific measurement that shows if the right fuser roller pressure is supplied during the fusing process.

fuser oil. Oil that helps the release of paper from fuser rollers.

fuser oil bottle. A bottle inside the front door of the printer that holds the fuser oil. See also *fuser oil.*

fuser rollers. The hardware devices used to transfer the heat and pressure needed for the toned image on the paper during the fusing process.

fuser slide plate. A metal plate in the printer onto which you slide a fuser when installing it in the printer.

G

gateway address. The computer location of a device that connects two dissimilar local area networks (LANs) or that connects a LAN to a wide area network (WAN), minicomputer, or mainframe.

gradient. A test print that shows an image with multiple stripes that begin in full color on one end and gradually reduce the color content to nearly zero so that only the white paper is visible on the other end.

graphical user interface (GUI). A design for the part of a software program that interacts with the user and takes advantage of the bitmapped graphics displays of PCs. A GUI uses pull-down menus, dialog boxes, icons, and a variety of visually attractive on-screen typefaces. See also *icon.*

graphics device interface (GDI). The graphics and display technology used on computers running the Windows operating system. GDI is the equivalent of the PostScript language that sends words and pictures to the printer.

grayscale. A series of shades from white to black.

H

halftone. A printing method that simulates continuous-tone shading using dots of varying sizes laid out on a regular grid. Larger dots simulate darker tones and vice versa.

help map. A document you can print to guide you to the printer's operator panel, push buttons, and panel lights. The help map lists the menus and tells you how to access each menu.

Hold queue. A job storage area for the printer. When you submit a job to the Hold queue, the printer gets the job immediately and stores it on the hard disk. Jobs in the Hold queue do not print or clear from the printer until someone uses the IBM Color Spooler to move them to the Print queue or to discard them from the printer's hard disk. See also *Direct queue, Print queue, Printed queue, spooling.*

I

IBM Color Calibrator. A software utility program that enables you to keep the printer's colors at a consistent performance level across time.

IBM Color Downloader. A software utility program that enables you to print PostScript and encapsulated PostScript files directly to the printer without using the application in which the files were created. Printing with the Downloader is faster than printing from applications and also enables you to manage the printer fonts installed on the printer.

IBM Color Spooler. A software utility program that enables you to view the order and priority of print jobs, customize printer settings for jobs, delete jobs, and move jobs between queues. You can also use the Calibrator to see a list of the jobs the printer has finished.

icon. In a graphical user interface (GUI), an on-screen symbol that represents a function or resource of the software program or computer hardware. See also *graphical user interface (GUI).*

ISO sizes. A set of paper sizes used in data processing and chosen from paper sizes that are standardized by the International Organization for Standardization (ISO).

Internet. A wide area network (WAN) connecting thousands of disparate networks in business, technology, education, government, entertainment, and research. The Internet uses the TCP/IP as the standard for transmitting information. See also *TCP/IP*.

Internet address. The numbering system used in TCP/IP internetwork communications to specify a network or host computer on a network. See also *TCP/IP*.

J

jam. See *paper jam*.

job. The result of a command to desktop publishing software to print a document. The PostScript language allows for single PostScript files holding multiple jobs and single jobs spread over multiple files.

job log. A list of the printer's last 40 jobs. The job log includes information such as user name, document name, time and date printed, and number of pages printed for each job.

jumper. A short wire used to close a break or cut out part of a circuit.

K

kilobyte (KB). 1024 bytes.

L

landscape orientation. Text and images that are printed parallel to the longer side of the paper. Contrast with *portrait orientation*.

laser (light amplification by stimulated emission of radiation). A device that emits a beam of coherent light.

laser diode. A laser that uses a forward-biased semiconductor junction as the active medium.

laser interlock. The mechanical blockage of the laser beam when the printer's front door is open. The front door panel has a plastic protrusion that fits into an opening in the printer and mechanically forces the interlock open.

latent toned image. See *electrostatic latent image.*

lens. A piece of transparent material such as glass that has two opposite regular surfaces, either both curved or one curved and the other flat. A lens is used either singly or combined in an optical instrument for forming an image by focusing rays of light.

local area network (LAN). A network of workstations within a limited area connected by high-performance cables so that users can exchange information, share peripherals such as printers, and have access to the resources of a secondary storage unit called a *file server*. See also *file server*.

M

megabyte (MB). 1,024,000 bytes.

menu-scrolling push buttons. The up and arrow buttons that you press to scroll through the menus on the printer's display panel.

microcode. The microprogramming stored on a microcode diskette. Microcode is used by the controller to manage the printer and its functions.

Microsoft Excel A graphics-oriented spreadsheet program developed by Microsoft Corporation for IBM PC-compatible computers and Macintosh computers.

monitor style. A rendering style that produces color similar to the color on a computer monitor. See also *photographic style, presentation style, and solid-color style.*

multifeed. A condition in which more than one sheet of paper at a time is inserted into the printer's feed roller. A multifeed prevention mechanism on the printer separates the extra sheets to correct the condition.

N

named color. A color that is defined according to a custom color system. For example, PANTONE 107C is a named color.

native file format. The default file format an application uses to store data on disk.

NET_WSCK.INI file. A file used by the utilities running over the TCP/IP and IPX/SPX protocols to find printers on the network.

network administrator. In a local area network (LAN), the person responsible for maintaining the network and helping its users.

Novell NetWare. A network operating system for 80286- and 80386-based DOS computers.

NuBus. Apple Computer's hardware standard for expansion cards.

O

offset. An unintentional transfer of ink such as from a freshly printed page.

operating environment. The physical environment of the printer; for example, temperature, humidity, layout, and power source.

operator panel. The area on the front of the printer with lights, push buttons, and a display panel that help you use the printer.

optical character recognition (OCR). The conversion of scanned text to editable ASCII characters using optical recognition software.

optional tray 2 paper feeder. A tray for feeding paper to the printer that comes with a universal cassette and two locking pins to fasten it to the printer. See also *universal cassette*.

P

packet. A block of data bytes that contains a header, data, and a trailer. The format of a packet depends on the network protocol used to transfer the data. See also *frame*.

PageMaker. A popular page layout program for Windows and Macintosh computers typically used for generating documents such as newsletters, brochures, reports, and books.

paper-amount indicator. A blue bar on the front of the printer below the front door. When the blue

bar has completely disappeared, it is time to add paper to the tray.

paper feeder. The mechanism that inserts paper into the printer.

paper guides. Guides on the auxiliary tray that adjust the width of the tray to fit the paper, and guides on the paper feeder trays that adjust both the width and the length of the tray to fit the paper.

paper jam. A condition in which paper wedged into the paper path prevents the printer from working.

paper path. The entire route that paper travels through the printer during processing.

paper-size indicator. A bar on the front of the printer that tells you the size of the paper in the printer.

PANTONE Matching System. A standard color-selection system for professional color printing that works with high-end illustration programs like Adobe Illustrator and PageMaker 4.0.

PANTONEC.PS. A PANTONE coded file that allows you to choose a named PANTONE color for a document rather than CMYK percentages. See also *CMYK_REF.PS file, named color, PANTONE Matching System*.

PANTONEU.PS. A PANTONE uncoded file that allows you to choose a named PANTONE color for a document rather than CMYK percentages. See also *CMYK_REF.PS file, named color, PANTONE Matching System*.

parallel-attached. See *parallel printer*.

parallel port. A port that supplies the synchronous, high-speed flow of data along parallel lines to peripheral devices, especially parallel printers. See also *parallel printer*.

parallel printer. A printer designed to be connected to a computer's parallel port. See also *parallel port*.

pel. See *pixel*.

photoconductor drum. A light-sensitive surface that when electrically charged can be discharged by the laser light beam. The remaining charged area

attracts applied toner particles from the toner cartridge and transfers the particles to the paper to produce a latent toned image. See also *electrostatic latent image.*

photoconductor drum cartridge. A customer-replaceable unit (CRU) that holds the photoconductor. See also *photoconductor drum.*

photoconductor drum cover. A cover that holds the used toner bottle in place on the photoconductor drum cartridge.

photoconductor drum shield. The orange cover installed on the photoconductor drum cartridge that protects the photoconductive surface from light when the cartridge is not installed in the printer. See also *photoconductor drum cartridge.*

photodiode. A photoelectric semiconductor device for detecting and measuring radiant energy such as light.

photographic style. A rendering style that preserves tonal relationships in images. Unprintable colors are mapped to printable colors in a way that keeps differences in lightness and slightly sacrifices color accuracy as necessary.

photosensitive drum. A deprecated term for *photoconductor drum*. See *photoconductor drum.*

PICT. A Macintosh graphics file format developed by Apple Computer. PICT files consist of separate graphics objects like lines, arcs, ovals, or rectangles that you can independently edit, size, move, or color.

pixel (pel). (1) The smallest distinct element of a raster image or an image displayed on a monitor. (2) The elementary graphical cell that constitutes an image. (3) An element of a raster pattern or a point where a toned area on a photoconductor can appear.

pixels per inch (ppi). The number of pixels per linear inch. Unlike dots, which are bilevel entities, pixels can hold multiple levels of information. See also *dots per inch*, *pixel*.

point. A unit of about 1/72 of an inch that is used to measure typefaces.

point size. See *point*.

port. An entry or exit boundary mechanism that controls and synchronizes the flow of data into and out of a processor from and to external devices such as printers and modems.

portrait orientation. Text and images that are printed parallel to the wider side of the paper. Contrast with *landscape orientation*.

PostScript. The page-description language developed by Adobe Systems that has become a standard for graphic design and layout software. PostScript files can hold both vector and raster data, and fonts are defined with PostScript coding. Many desktop publishing systems output PostScript data that is interpreted by a laser printer.

PostScript level 2. The current version of PostScript language that is used to print and display pictures and text. PostScript level 2 includes many enhancements to older versions of PostScript, including improved color matching and the ability to control printer-specific features from applications.

Power Saver. A mechanism on the printer that sets the amount of time the printer stays idle before changing to a lower power-consumption mode.

power-on self-test (POST). A series of electrical and mechanical tests made by the printer. If the tests reveal an electrical or mechanical problem, you see an error message on the display panel.

presentation style. A rendering style that does not match printed colors to displayed colors precisely. Presentation rendering is used for bright saturated colors in illustrations and graphs.

print job. See *job*.

print mode. The working mode in which the printer gets information from the controlling computer system and produces printouts. Contrast with *diagnostic mode* and *test mode*.

print quality. The quality of printouts in relation to existing standards and to printouts from earlier jobs.

Print queue. A storage area for the printer that supplies a job storage, queueing, and spooling. When you submit a job to the Print queue, the printer gets the job immediately and stores it on the printer's hard disk. Jobs in the Print queue print in the order the printer receives them. You can use the IBM Color Spooler to move jobs from the Print

queue to the Hold queue or to discard them. Finished jobs in the Print queue are automatically moved to the Printed queue if it is enabled. See also *IBM Color Spooler.*

Printed queue.   A storage area for the printer that moves a finished job from the Print queue to the Printed queue for temporary storage. You can then use the IBM Color Spooler to move the job into the Print queue or the Hold queue, or to discard it from the printer's hard disk. See also *IBM Color Spooler.*

primary charging.   The uniform charging of the photoconductor drum cartridge with negative potential.

process color.   A mixture of CMYK inks that simulates a specified color. Process color is the traditional method for reproducing continuous-tone color images. See also *spot color.*

protocol adapter.   A device for attaching a printer to a token-ring network through a parallel port. The AXIS Protocol Adapter: Token Ring, available from retail suppliers, is the recommended device. See also *token-ring network.*

Q

QuarkXPress.   A page layout program developed by Quark, Inc., for Macintosh computers and PCs that accepts documents of unlimited length and includes many word processing functions.

Quickdraw.   The graphics and display technology built into Macintosh computers. Quickdraw is the equivalent of the PostScript language to send words and pictures to printers.

R

raster.   (1) On a computer monitor or television screen, the horizontal pattern of lines that forms the image. (2) A pattern of dots that consist of different data depths. For example, images with only black-and-white values are 1-bit (on or off), grayscale images are 8-bit (256 levels), RGB images are 24-bit (3 channels of 8 bits each), and CMYK images are 32-bit (4 channels.) Also called a *bitmap.*

raster image.   A series of pixels arranged in scan lines to form an image.

raster image processor (RIP).   A computer processor that renders PostScript instructions into dot patterns that are transferred to the final print medium. Most RIPs use reduced instruction set computer (RISC) processors to achieve extremely high throughput. A RIP typically includes a substantial amount of RAM to store the image as it is formed and a hard disk to buffer multiple pages. See also *"ripping."*

red, green, blue (RGB).   The colors of computer monitor phosphors. RGB images are for monitor display only and are converted to CMYK images before printing.

registration.   In printing, the relative print positions of images that are printed at different times. For example, when you print on preprinted forms, the registration is good if the new image is aligned correctly with the preprinted image. Print that extends beyond box edges and text that overlaps other text are examples of poor registration.

rendering style.   A feature of the printer's color management software that enables the best possible translation of color from one color device to another. The color-rendering styles that you can choose using their respective color-rendering dictionary (CRD) name are monitor, photographic, presentation, and solid color. See also *rendering style, monitor style, photographic style, presentation style, solid-color style.*

relocation kit.   The packaging and instructions you need to safely move the printer a substantial distance.

rendering.   See *color-rendering style, photographic rendering.*

"ripping."   Raster-image processing. See also *raster-image processor.*

route power cable.   A cable that connects the power outlet on the optional tray 2 paper feeder with the power receptacle on the body of the printer.

S

scanner.   A device that examines OCR, MICR, or bar code patterns, generates electrical signals corresponding to the patterns, and sends the signals to a computer for processing.

scatter. To cause a beam of radiation to diffuse or disperse.

security paper. Specially formulated paper used for negotiable documents like checks to prevent fraud.

separation. The process of separating a color image into cyan, magenta, yellow, and black, the primary color components for printing.

separation corona. The unit in the printer that electrically charges paper to attract photoconductor toner onto the paper. The separation corona has a thin, electrically charged wire inside a metal tube with a narrow opening.

separation corona mode. The voltage control mode for the separation corona. You can adjust the mode on the printer's density gauge to resolve print quality problems by choosing voltage control on, off, or on or off in response to the environment. See also *density control panel*, *density gauge, separation voltage*.

separation voltage. The ac corona charges applied in the separation charging unit to prevent image distortion in low-temperature, low-humidity environments. See also *separation corona*, *separation corona mode*.

server. See *file server*.

SETUP.EXE file. The file used to run a utility such as the IBM Color Downloader.

side-registration adjustment dial. A dial at the back of the printer that adjusts the side registration of the tray 2 paper feeder.

single inline memory module (SIMM). A plug-in memory module holding all the chips needed to add 256K or 1M of random access memory (RAM) to a computer.

shipping spacers. Any of several kinds of materials used to secure parts of the printer during shipping.

side output tray. When open, a tray that receives printouts faceup. The side output tray holds approximately 20 sheets of plain paper at 80 g/m^2.

simplex printing. Printing or reproducing in which only one side of the page is printed or reproduced.

small computer system interface (SCSI). A standard for attaching peripheral hardware to computers.

soft font. A printer font that must be transferred from a computer's or printer's hard disk to the printer's random access memory (RAM) before the printer can use the font. Also called *downloadable font*.

solenoid. An electrical conductor wound as a helix with a small pitch or as two or more coaxial helixes.

solid-color style. A rendering style that maps unprintable colors to the closest printable colors when color accuracy is crucial. See also *color-rendering style*, *photographic rendering*, and *presentation rendering*.

Spooler utility. See *IBM Color Spooler.*

spooling. The use of auxiliary storage as buffer storage to reduce processing delays when transferring data between peripheral equipment and the processors of a computer.

spot color. Individual colored inks formulated to match a specified color exactly. See also *process color*.

star network. A local area network (LAN) with a centralized topology and the physical layout of a star. See also *Ethernet*, *token-ring network*.

status message. An operator message that you see on the display panel reporting on the current state of the printer.

subnet mask. A filter for Internet protocol (IP) addresses that allows those addresses local to the network to be visible to the printer.

supplies replacement log. A form provided in the *Operator's Guide* on which you note printer supplies you replace and the date and print count at the time you replace them.

SyQuest. A hard disk with removable media that is useful for the rapid transfer of large files between systems.

T

tagged image file format (TIFF). A bitmapped graphics format for scanned images of up to 300 dpi.

TCP/IP transmission control protocol/Internet protocol. The standard used by the Internet for transmitting information.

telnet. In TCP/IP, an application protocol that allows a user at one site to access a remote system as if the user's computer were locally attached. Telnet uses TCP as the underlying protocol. See also *TCP/IP*.

test mode. The operational mode in which the printer can produce print samples, accept configuration changes, and control traces.

test page. A page you can print to see samples of color and grayscale on the printer.

text orientation. The position of text as a combination of print direction and baseline direction. See also *orientation*.

thermistor. A semiconductor device whose electric resistance is dependent on temperature.

token. In a local area network (LAN), a message or bit pattern that signifies permission to transmit. The token is passed successively from one workstation to another to indicate the workstation temporarily in control of the transmission medium. See also *token-ring network*.

token-ring network. A local area network (LAN) with an architecture that combines token-passing with a hybrid star-and-ring topology. See also *Ethernet, star network, token.*

toner. In color printing, the material that forms an image on paper. Toner adheres to the exposed areas on the photoconductor drum during the developing process and is then transferred to the paper to form the developed image on the paper.

toner cartridge. A cylindrical unit that supplies the toner for one of the four colors (cyan, magenta, yellow, and black) used for color printing. Four toner cartridges fit in the printer's turret. See also *turret*.

toner cartridge position mark. A mark on the printer's turret that you use to align with the arrow on a toner cartridge.

toner projection development. The process in which, when the area on the printer's photoconductor drum cartridge that is irradiated by the laser beam comes close to the negatively charged toner on the cylinder, the difference in potential causes the toner to jump across and adhere to the drum surface.

topology. The geometric arrangement of nodes and cable links in a local area network (LAN).

top output tray. When the side output tray is closed, a tray that receives printouts facedown. The top output tray holds approximately 20 sheets of plain paper at 80 g/m^2.

torque. A force that produces rotation or torsion.

trailing edge. The edge of the paper that goes into the printer last as it is inserted by the paper feeder.

transceiver chip. Semiconductor material used for transmitting and receiving signals.

transfer drum. The part of the printer where a toned image on the photoconductor drum is transferred to the paper.

transfer sheet. A special plastic-like material that surrounds the transfer drum and can maintain an electrical charge for paper attraction and image transfer. See also *transfer drum.*

transmission control protocol/Internet protocol (TCP/IP). The standard used by the Internet for transmitting information.

transparency. An acetate sheet that holds information to be shown by an overhead projector.

transparency film. See *transparency.*

tray. A receptacle to store paper or transparencies for printing. The printer has three trays: tray 1 used for paper, tray 2 used for paper, and an auxiliary tray used for paper and transparencies.

TrueType. A font technology that offers scalable fonts to Macintosh and Windows systems for display on monitors and for use on printers.

turret. A rotating device in the printer that positions a selected toner cartridge for transferring toner to the photoconductor drum.

turret rotation knob. The knob on the printer's turret that you push and turn to replace a toner cartridge.

U

universal paper cassette. A receptacle that fits into the printer's tray 1 paper feeder or optional tray 2 paper feeder. The universal paper cassette accepts Letter, Legal, A4, and JIS B5 paper sizes, and holds about 250 sheets (at 80 g/m^2) of plain paper.

used-toner bottle. A bottle on the inside of the printer's front door that receives excess toner not fused during the print cycle.

V

vector. Absolute coordinate points and lines in space. PostScript files can hold vector graphics (also called *object-oriented artwork*). Vector files are converted to rasters in a raster image processor (RIP) during printing, giving the vector graphics device independence.

vector image. Graphics created on computers in which the pixels are defined mathematically as lines or curves between points. Graphics created in illustration and page layout applications are also vector images.

W

warning message. An operator message that causes the **Attention** light to flash to alert you to an upcoming problem. You press ENTER to see the message on the display panel. See also *error message*, *status message*.

wire cleaner. A small metal tool stored inside the printer and used to clean the separation corona wire and the window of the density detection sensor.

workstation. In a local area network (LAN), a desktop computer that runs application programs and serves as an access point to shared network resources.

Z

zone. In a local area network (LAN), a subgroup of networked workstations set aside and named by the network administrator to be treated as a group.

Index

Numerics

A

B

C

D

E

F

G

H

Hold queue 1–3, 6–13
    disabling, suggestions for 5–3
hold queue
    using with Novell NetWare 2–5

I

IBM Network Color Printer
    integrating into AIX networks 5–1
    integrating into Windows NT networks 3–1
introducing the IBM network color printer 1–1

M

Macintosh
    configuring to share files 4–2
Macintosh network
    configuring 4–1

N

NetWare
    File Server 2–6
    Print Console 2–6
    Print Server 2–6
    setting bindery context 2–4
NetWare server
    sharing the Customer CD-ROM 2–7
NetWare server on Token-Ring
    parallel-attaching 2–2
NetWare server on token-ring
    protocol adapter 2–1
network configuration
    Windows NT, overvew 3–2
network setup 6–18
Novell NetWare
    creating a print server 2–5
Novell NetWare network
    Also see NetWare 2–1
    configuration overview 2–3
    configuring 2–1
    system requirements 2–1
    token-ring networks with
        attaching printer by parallel attachment 2–2
        attaching printer using protocol adapter 2–1
Novell NetWare server
    configuring 2–3
    hold queue 2–5
Novell NetWare server, creating print queues 2–5

O

overview of Novell NetWare network configuration
    2–3

P

parallel cable, recommended 5–2
parallel port, connecting to Windows NT server 3–2
parallel port, using for printer attachment to network
    5–2
parallel-attaching
    NetWare server on Token-Ring 2–2
PCONSOLE 2–6
performance
    16-MB configuration 1–1
    32- and 48-MB configuration 1–3
Print queue 1–2
print queues
    creating, in Novell NetWare 2–5
print server, creating for Novell NetWare 2–5
Printed queue 1–2
printer
    16-MB configuration 1–1
    32- and 48-MB configuration 1–2
    introducing 1–1
printer driver
    installing as Appletalk device on Windows NT 3–4
printer driver, installing as a TCP/IP device on Win-
    dows NT 3–7
printer driver, installing using AppleTalk Services in
    Windows NT 3–5
printer name, default 3–5, 3–7
protocol adapter
    for Novell NetWare 2–1
protocol adapter, using for printer attachment 5–1
protocol adapter, Windows NT on token ring 3–1
protocols, network
    multiple enabled 6–19

Q

queue
    Direct 1–3
    Hold 1–3
    Print 1–2
    Printed 1–2

S

servers
    AIX, attaching 5–2
    Windows NT 3–1
setup

network setup 6–18

setup menus
    accessing 6–3
spooler, color 1–4
system requirements
    for AIX integration 5–1
    integrating Windows NT network environments
        3–1
    Novell NetWare network 2–1
    Windows NT 3–1

sharing customer CD-ROM 3–8

T

TCP/IP
    address, for configuring in AIX 5–3
    device
        installing printer driver in Windows NT 3–7
    printing with in AIX environments 5–3
token-ring
    Novell NetWare network 2–1
    protocol adapter, Novell NetWare 2–1
token-ring network, using with Windows NT 3–1
token-ring, AIX
    parallel-attaching server to printer 5–1

U

utilities
    calibrator, color 1–4
    spooler, color 1–4

W

Windows NT
    adding Services for Macintosh to server 3–4
    network configuration overview 3–2
    setting up client 3–6, 3–7
    setting up server 3–2
    system requirements 3–1
Windows NT network
    configuring 3–1
    on token-ring
        parallel-attaching server to printer 3–2
        protocol adapter 3–1
WIndows NT server
    token-ring network 3–1
Windows NT server
    configuring 3–3
    installing printer driver as Appletalk device 3–4
    installing printer driver as TCP/IP device 3–7
    installing printer driver using AppleTalk Services
        3–5
    parallel port 3–2
    protocol adapter 3–1