Xerox DocuPrint 4050/4090 NPS/IPS

System Overview Guide

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System Overview Guide

Safety

Laser safety

WARNING

Adjustments, use of controls, or performance of procedures other than those specified herein may result in hazardous light exposure.

The Xerox DocuPrint printers are certified to comply with the performance standards of the U.S. Department of Health, Education, and Welfare for Class 1 laser products. Class 1 laser products do not emit hazardous radiation. The DocuPrint printers do not emit hazardous radiation because the laser beam is completely enclosed during all modes of customer operation.

The laser danger labels on the system are for Xerox service representatives and are on or near panels or shields that must be removed with a tool.

DO NOT REMOVE LABELED PANELS OR PANELS NEAR LABELS. ONLY XEROX SERVICE REPRESENTATIVES HAVE ACCESS TO THESE PANELS.

> ## DANGER
> **LASER RADIATION WHEN OPEN**
> **AVOID DIRECT EXPOSURE TO BEAM**

Ozone information: U. S. only

This product produces ozone during normal operation. The amount of ozone produced depends on copy volume. Ozone is heavier than air. The environmental parameters specified in the Xerox installation instructions ensure that concentration levels are within safe limits. If you need additional information concerning ozone, call 1-800-828-6571 to request the Xerox publication 600P83222, *OZONE*.

Operation safety: U. S.

Your Xerox equipment and supplies have been designed and tested to meet strict safety requirements. They have been approved by safety agencies, and they comply with environmental standards. Please observe the following precautions to ensure your continued safety.

<div align="center">

WARNING

</div>

Improper connection of the equipment grounding conductor may result in risk of electrical shock.

- Always connect equipment to a properly grounded electrical outlet. If in doubt, have the outlet checked by a qualified electrician.

- Never use a ground adapter plug to connect equipment to an electrical outlet that lacks a ground connection terminal.

- Always place equipment on a solid support surface with adequate strength for its weight.

- Always use materials and supplies specifically designed for your Xerox equipment. Use of unsuitable materials may result in poor performance and may create a hazardous situation.

- Never move either the printer or the printer controller without first contacting Xerox for approval.

- Never attempt any maintenance that is not specifically described in this documentation.

- Never remove any covers or guards that are fastened with screws. There are no operator-serviceable areas within these covers.

- Never override electrical or mechanical interlocks.

- Never use supplies or cleaning materials for other than their intended purposes. Keep all materials out of the reach of children.

- Never operate the equipment if you notice unusual noises or odors. Disconnect the power cord from the electrical outlet and call service to correct the problem.

If you need any additional safety information concerning the equipment or materials Xerox supplies, call Xerox Product Safety at the following toll-free number in the United States:

1-800-828-6571

For customers outside the United States, contact your local Xerox representative or operating company.

Operation safety: Europe

This Xerox product and supplies are manufactured, tested and certified to strict safety regulations, electromagnetic regulations and established environmental standards.

Any unauthorised alteration, which may include the addition of new functions or connection of external devices, may impact the product certification.

Please contact your Xerox representative for more information.

Warning markings

All warning instructions marked on or supplied with the product should be followed.

This WARNING alerts users to areas of the product where there is the possibility of personal damage.

This WARNING alerts users to areas of the product where there are heated surfaces, which should not be touched.

Electrical supply

This product shall be operated from the type of electrical supply indicated on the product's data plate label. If you are not sure that your electrical supply meets the requirements, please consult your local power company for advice.

WARNING

This product must be connected to a protective earth circuit. This product is supplied with a plug that has a protective earth pin. This plug will fit only into an earthed electrical outlet. This is a safety feature. Always connect equipment to a properly grounded electrical outlet. If in doubt, have the outlet checked by a qualified electrician.

To disconnect all electrical power to the product, the disconnect device is the power cord. Remove the plug from the electrical outlet.

Ventilation

Slots and opening in the enclosure of the product are provided for ventilation. Do not block or cover the ventilation vents, as this could result in the product overheating.

This product should not be placed in a built-in installation unless proper ventilation is provided, please contact your Xerox representative for advice.

Never push objects of any kind into the ventilation vents of the product.

Operator accessible areas

This product has been designed to restrict operator access to safe areas only. Operator access to hazardous areas is restricted with covers or guards, which would require a tool to remove. Never remove these covers or guards.

Maintenance

Any operator product maintenance procedures will be described in the user documentation supplied with the product. Do not carry out any maintenance on the product, which is not described in the customer documentation.

Before cleaning your product

Before cleaning this product, unplug the product from the electrical outlet. Always use materials specifically designated for this product, the use of other materials may result in poor performance and may create a hazardous situation. Do not use aerosol cleaners, they may be flammable under certain circumstances.

CE mark: Europe only

January 1, 1995: Council Directive 73/23/EEC, amended by Council Directive 93/68/EEC, approximation of the laws of the member states related to low voltage equipment.

 C €

January 1, 1996: Council Directive 89/336/EEC, approximation of the laws of the member states related to electromagnetic compatibility.

March 9, 1999: Council Directive 99/5/EC, on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

A full declaration of conformity, defining the relevant directives and referenced standards, can be obtained from your Xerox representative.

In order to allow this equipment to operate in proximity to Industrial, Scientific and Medical (ISM) equipment, the external radiation for the ISM equipment may have to be limited or special mitigation measures taken.

This is a Class A product. In a domestic environment this product may cause radio frequency interference, in which case the user may be required to take adequate measures.

Shielded interface cables must be used with this product to maintain compliance with Council Directive 89/36/EEC.

Radio and telecommunications equipment directive (Europe only)

Certification to 1999/5/EC Radio Equipment and Telecommunications Terminal Equipment Directive:

This Xerox product has been self-certified by Xerox for pan-European single terminal connection to the analog public switched telephone network (PSTN) in accordance with Directive 1999/5/EC.

The product has been designed to work with the national PSTNs and compatible PBXs of the following countries:

Austria	Germany	Luxembourg	Sweden
Belgium	Greece	Netherlands	Switzerland
Denmark	Iceland	Norway	United Kingdom
Finland	Ireland	Portugal	
France	Italy	Spain	

In the event of problems, contact your local Xerox representative in the first instance.

This product has been tested to, and is compliant with, TBR21, a specification for terminal equipment for use on analog switched telephone networks in the European Economic area.

The product may be configured to be compatible with other country networks. Please contact your Xerox representative if your product needs to be reconnected to a network in another country. This product has no user-adjustable settings.

NOTE: Although this product can use either loop disconnect (pulse) or DTMF (tone) signaling, it should be set to use DTMF signaling. DTMF signaling provides reliable and faster call setup.

Modification or connection to external control software, or to external control apparatus not authorized by Xerox, invalidates its certification.

For further information

For more information on Environment, Health and Safety in relation to this Xerox product and supplies, please contact the following customer help lines:

Europe:+44 1707 353434

USA:1 800 8286571

Canada:1 800 8286571

Introduction

This guide provides an overview of the individual components of the NPS/IPS printing system and how they work together. It is designed to provide you with background information that can be used to make informed decisions regarding printer use and performance.

About this guide

This guide provides information to help you quickly determine hardware, software, and connectivity requirements for printing from various clients to the DocuPrint NPS/IPS.

This reference is useful for users who want to understand the overall DocuPrint NPS/IPS. Managers can use the reference information to assist them in making planning decisions.

Contents

This section lists the contents of this guide:

- Chapter 1, "System overview," describes the features of the DocuPrint 4050/4090 NPS/IPS.

- Chapter 2, "Printer controller overview," describes the hardware and software components of the printer controller.

- Chapter 3, "Printer components and options," describes the printer components and possible configurations. It also traces the path of the paper through printer, which is helpful in locating possible paper jams.

- Chapter 4, "Network printing," provides information that is specific to network printing.

- Chapter 5, "IPDS printing," provides information that is specific to IPDS printing.

- Appendix A, "Supplies," provides information and specifications on paper and other media used with the NPS/IPS, as well as instructions for ordering supplies.

Conventions

This guide uses the following conventions:

- **All caps and angle brackets:** Within procedures, the names of keys are shown in all caps within angle brackets (for example, press <ENTER>).

- **Angle brackets:** Variable information, or the position of a specified argument in the command syntax, appears in angle brackets (for example, List Fonts <Pattern>).

- **Bold:** Within procedures, text and numbers that you enter are shown in bold (for example, enter **privilege operator**).

- **The word "enter" within procedures:** The two-step process of keying in data and pressing <ENTER> (for example, enter **y**).

- **Italics:** Document and library names are shown in italics (for example, the *Xerox DocuPrint NPS/IPS Guide to Managing Print Jobs*).

- **Quotation marks:** Keywords you can enter as arguments appear in quotes (for example, "USLetter").

- **Vertical bars:** Alternatives to specified arguments are separated by vertical bars (for example, Set Time <Time | Remote Host Name | IP Address>).

NOTE: Notes are hints that help you perform a task or understand the text.

CAUTION

Cautions alert you to an action that could damage hardware or software.

WARNING

Warnings alert you to conditions that may affect the safety of people.

Related publications

The Xerox DocuPrint NPS/IPS documentation set includes the documents listed below.

NOTE: For a list of IBM reference manuals for IPDS printing, refer to the Solutions Guide for IPDS Printing.

- *Guide to Configuring and Managing the System*
- *Guide to Managing Print Jobs*
- *Guide to Performing Routine Maintenance*
- *Guide to Submitting Jobs from the Client*
- *Guide to Using Page Description Languages*
- *System Overview Guide*
- *Troubleshooting Guide*
- *Solutions Guide for IPDS Printing*
- *Decomposition Service and Tools Guide*
- *Glossary*
- *Master Index*
- *Customer Information Quick Reference Card*
- *Printer Controller Commands Quick Reference Card*
- *Operator Quick Reference Card*
- *Submitting your Jobs from Macintosh Quick Reference Card*
- *Submitting your Jobs from UNIX & DOS Quick Reference Card*

- *Submitting your Jobs from Windows NT 4.0 (QuickPrint) Quick Reference Card*

- *Submitting your Jobs Using Windows NT 4.0 Drivers Quick Reference Card*

The documentation set also includes an electronic version, the DocuPrint NPS/IPS Interactive Customer Documentation CD.

1. System overview

This chapter introduces the DocuPrint NPS/IPS printing system and describes its major and optional components.

Functional overview of the NPS/IPS

The NPS/IPS printers support the processing and printing of PDL and ASCII jobs from network workstations, as well as IPDS jobs from an IBM host. Supported PDL formats are PostScript levels 1 and 2, HP PCL 5e, and TIFF.

Your organization may print only IPDS jobs, network PDL jobs, or jobs from both environments.

DocuPrint 4050 and 4090 NPS/IPS printers support:

- Printing at a rated speed of up to 50 ppm (4050) or 92 ppm (4090) in black and white in 300 dpi

- Printing simplex and duplex

- Processing and printing of network PDL jobs and IPDS jobs without soft boot to switch modes

- Multiple weights, sizes and types of paper (refer to the "Supplies" appendix for details)

- Optional bypass transport for enhanced finishing and output to third-party finishing devices

- Optional high-capacity feeder

- Optional stitcher/stacker.

Resolution

The 4050/4090 NPS/IPS provides high print quality at 300 dpi resolution. It can receive data at 240, 300, or 600 dpi. The controller converts 240 and 600 to 300 dpi data.

The following table shows how data streams of different resolutions are interpolated.

Table 1-1. **Data stream conversion**

Printer	Incoming input resolution of document		
	240 dpi data	**300 dpi data**	**600 dpi data**
4050/4090 NPS/ IPS	Converted by controller to 300 dpi	Print at 300 x 300 dpi	Converted by controller to 300 dpi

NOTE: For more information on specifying appropriate resolution settings, refer to the Guide to Managing Print Jobs and the Guide to Configuring and Managing the System. For IPDS printing, refer to the to Solutions Guide for IPDS printing.

System components overview

DocuPrint NPS/ IPS
The entire DocuPrint NPS/IPS system includes the printer (also known as an IOT or print engine), printer controller, printer interface, and all appropriate software. "DocuPrint printer" or "printer" refers to the base printer engine (IOT) only, without the printer controller and interface.

Xerox-supplied printer controller
The printer controller includes a processor, CD-ROM drive, diskette drive, keyboard, mouse, and a monitor. The printer controller accepts the print job from the client workstation or host, converts the files into page images, and sends the page images to the printer. The user interface at the printer controller allows you to perform tasks such as monitoring job status, prioritizing jobs, and configuring the system.

Xerox-supplied printer interface
The printer interface cable provides high-speed data transport and communication between the printer controller and the printer.

Xerox-supplied DocuPrint printer
The printer accepts data from the printer controller and prints the document according to the print options specified by the user. The printer also provides optional paper stacking and collating.

Connectivity configurations

The NPS/IPS can process network PDL and IPDS jobs concurrently.

To support the submission of jobs from a variety of hosts, configuration possibilities include:

- The same Token Ring or Ethernet connection can be used for both IPDS and PostScript/PCL.

- Both a Token Ring card and an Ethernet card can reside in the Sun workstation controller, with one being used for IPDS and the other for PostScript/PCL.

- Bus and tag attachment through the channel interface board or through the Host Channel Unit (HCU) can be used for IPDS jobs from a channel-attached host; Token Ring or Ethernet connection can be used for jobs submitted over the network.

NPS/IPS concurrent printing

The Xerox NPS/IPS can receive a variety of data streams including IPDS, PostScript Levels 1 and 2, PCL 5e, TIFF, and ASCII. The system automatically senses the type of job and processes it appropriately.

When your system is printing IPDS jobs, it can accept network PDL data streams in the background. When network PDL jobs are printing, only one IPDS job can be queued.

SNMP support

The system provides functionality to export the state of a printer using the Simple Network Management Protocol (SNMP), thus allowing printer management software to monitor and report on the printer state.

SNMP is a standardized communications protocol for managing arbitrary networked devices from different vendors, such as workstations, servers, printers, or routers. The information to be communicated is presented as variable name/value pairs, defined in a set of standardized management information bases (MIBs). The MIBs define the legal variables, their types, and possibly a fixed set of values.

SNMP was designed to facilitate managing a heterogeneous set of networked devices that communicate using TCP/IP. Specifically, it addressed management of the network itself and the network traffic between those devices. Over time, MIBs were defined to expand the types of devices that could be managed using SNMP. For example, MIBs were defined specific to managing a workstation or a printer.

The system currently supports variables defined in the following MIBs:

- MIB-II (RFC 1156)

  This MIB defines the basic set of variables any device running TCP/IP should make accessible. It includes, for a particular device, variables for information such as a system description, information about each of the network interfaces present on the device, and information about all the IP datagrams sent and received by the device.

- Host Resources MIB (RFC 1514)

  This MIB defines variables useful in managing a "host" system. In this context, a host is a computer that is directly used by human beings and that communicates with other similar computers attached through a network. The Host Resources MIB includes information such as how long the system has been up, descriptions of the processors and attached storage devices, and possibly information about software running on the host.

- Printer MIB (RFC 1759)

  This MIB defines information useful in managing a printer. It includes information about the physical status of the printer, such as the number of input trays, the media loaded in them, and the number and types of marking engines included in the printer.

Most variables in these MIBs are supported in a standard way, as described in the standard documentation, except that writing to read/write variables is not supported. All variables are treated as read-only. In all cases, the NPS/IPS SNMP implementation supplies textual information only in English.

IPP support

The system supports the Internet Printing Protocol (IPP), which allows you to:

- Add the printer to your PC directly as an Internet printer with a URL, rather than indirectly as an lpr-connected local printer.

- Use an IPP client to access the printer. A limited subset of IPP operations is supported; query the IPP client for details.

Sixth Sense

Sixth Sense is a unique suite of diagnostic tools that allows Xerox customer service engineers, analysts, and consultants to serve customers more effectively.

Sixth Sense is intended to automate and expedite the range of service-related support functions. Sixth Sense is a tool that enables Xerox to provide benchmark service support. Xerox customers benefit from the ability to bring broader support to focus more quickly.

For example, Sixth Sense can allow the Service Representative to repeatedly "preview" the condition of the system prior to an actual site visit. This may provide the ability to determine the correct part or piece of information to have on hand when the site visit is made.

Sixth Sense is a no-charge feature available to customers through Xerox Service. The customer need only provide an analog phone line for use by the Sixth Sense modem connection. For those customers unable to dedicate a phone line to the Sixth Sense connection, three and five port phone share devices are available for purchase.

To take advantage of Sixth Sense, the customer needs to:

- Request Sixth Sense enablement through Xerox Service

- Provide an analog phone line

- If necessary, purchase an optional phone share device.

More information about the Sixth Sense can be found in the *Troubleshooting Guide* for your system.

Software license

In order to use the operating system software, the owner must obtain a software license from Xerox. The license, which is a 20-character text string, is entered at the printer controller keyboard.

Your Xerox service representative can obtain this license text string for you and enter it when the printer is installed or when the software is upgraded. Although your service representative usually does this for you, you are able to enter your license string yourself from the NPS/IPS main window.

Until the license string is entered, your printer cannot print or receive data. You can, however, perform all offline tasks, such as setting up virtual printers.

For details on obtaining and entering the license string, refer to the *Guide to Configuring and Managing the System.*

2. Printer controller overview

The printer controller manages print options, provides the user interface, and runs system management and diagnostic operations on demand. The following is an explanation of tasks that enable the job to be printed:

• The printer controller detects which job protocol is being sent.

• Print option parameters are stored in the Job Pool Manager (JPM) database, which maintains a database of all jobs. This database contains a reference to the print data on the fixed disk, as well as the print options parameters for the print data. The JPM responds to the printer controller commands for deleting, holding, and prioritizing jobs.

• Print data is is stored on the printer controller disk for queuing and while printing.

• When the printer controller begins processing a job, it sends the print data to the decomposer. The decomposer converts the print data into a bitmap in the resolution appropriate to the printing device.

The decomposer utilizes font data from font files stored on the printer controller disk or font information sent to the printer controller with the print job.

• When processed data comes back from the decomposer, the printer controller Device Driver transmits the print data and print option parameters to the printer. Printing is then initiated.

• After the job has been printed successfully, the print data file is deleted from the disk. If an error inhibits job completion, the printer controller manages the recovery and completion of the job.

The system can manage the processing of multiple jobs and the printing of another job simultaneously. When you are printing IPDS jobs, the printer controller is able to queue multiple PostScript, and PCL jobs at the same time. When you are printing PostScript and PCL jobs, you can send only one IPDS job.

Printer controller components

The printer controller consists of a specially-configured Sun workstation and uses proprietary Xerox hardware, firmware, and software.

Sun Ultra 60 workstation

A PCIM2 card for the Sun Ultra 60 is installed in the processor. The printer cable is connected to the processor. In addition, the processor contains the connectivity boards for Ethernet and optional Token Ring. The disk stores the operating system, the system software, and any buffered pages.

Optional components For channel connection to a host for IPDS printing, the system may use a Host Channel Unit (HCU).

An external 4 mm tape drive is available and recommended for backing up site files. A typical color calibration file is 1.5 MB.
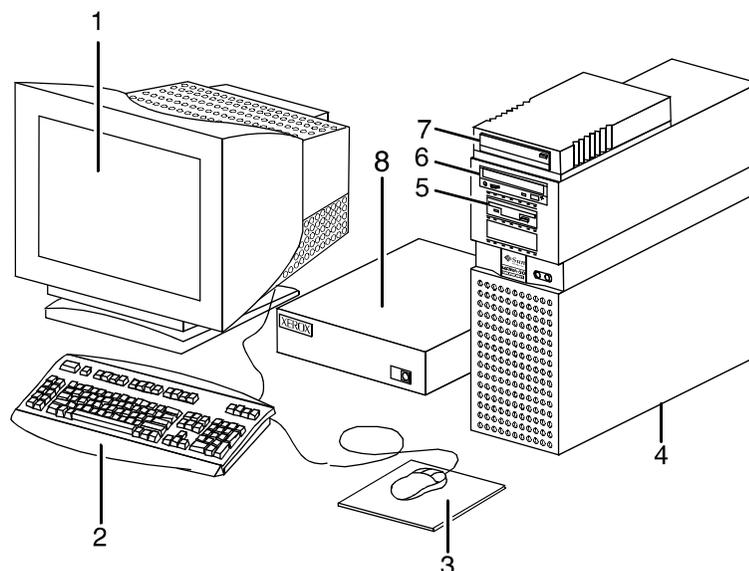
Figure 2-1. Printer controller components (Sun Ultra 60)

1. Monitor
2. Keyboard
3. Mouse
4. Processor
5. Diskette drive

6. CD-ROM

7. Optional cartridge tape drive

8. Optional HCU

Processor   The central processing unit contains the memory, internal disk drive, a CD-ROM drive, a diskette drive, power receptacle and outlet, connectors and ports.

- **Diskette drive:** The floppy disk drive is located in the processor. It uses industry standard 3.5 inch, 1.44-MB, double-sided, high-density floppy disks. This disk drive is not an input source for print jobs or for any other data or application. It is reserved exclusively for use by a service representative to update software and to store files.

- **CD-ROM:** The CD-ROM drive, located in the processor above the diskette drive, is a high-density, read-only, optical laser storage device used for loading the software, fonts and other files.

- **Cartridge tape drive:** The Sun Ultra 60 offers an optional 8 GB, 4 mm external SCSI cartridge tape drive. Unlike the diskette and CD drives, this tape drive is not an input source for print jobs or for any other data or application. It provides the service representative with another means of loading system maintenance files or saving diagnostic information.

Keyboard   The keyboard consists of alphanumeric keys similar to a typewriter, symbols and special character keys, an extended character set, and function keys. You can use the keyboard to make selections, and to enter commands that control functions such as requesting sample prints, or shutting down the system.

Mouse   Use the mouse to select, move, or resize windows.

Display monitor   The display monitor has a high-resolution color screen, which displays the user interface screen.

NOTE: For information on channel-attached systems, refer to the chapter, "IPDS printing environment".

NOTE: Printer controller hardware configurations are subject to upgrade.

Printer controller software and fonts

The installation of printer controller software is performed by your service representative once all the hardware components are in place and properly connected. The following is a summary of major software components installed on the printer controller:

- Xerox printer controller software
  - UNIX Sun operating system

    NOTE: The Sun operating system used on the controller is based on the standard Sun operating system; however, it has been customized for use with the Xerox printer controller. Therefore, not all standard Sun operating system features are available.

  - DocuPrint Print Service Software including software components for the user interface, driver, decomposers, Job Pool Manager, and other operating system utilities.

- Xerox Client Software
  - Xerox client protocol software (print command) can be downloaded to client workstations or PCs as a means of sending jobs.

- Adobe Type 1 PostScript fonts
  - Courier (Courier, Bold, Oblique, Bold Oblique)
  - Helvetica (Helvetica, Bold, Oblique, Bold Oblique, Light, Light Oblique, Black, Black Oblique Condensed, Condensed Oblique, Condensed Bold, Condensed Bold Oblique Narrow, Narrow Bold, Narrow Oblique, Narrow Bold Oblique)
  - ITC AvantGarde Gothic (Book, Book Oblique, Demi, Demi Oblique)
  - ITC Bookman (Demi, Demi Italic, Light, Light Italic)
  - ITC Garamond (Light, Light Italic, Bold, Bold Italic)
  - ITC Korinna (Korinna, Kursiv Regular, Bold, Kursive Bold)
  - ITC Zapf Chancery (Medium Italic)
  - ITC Zapf Dingbats (Medium)
  - New Century Schoolbook (Roman, Bold, Italic, Bold Italic)
  - Palatino (Roman, Bold, Italic, Bold Italic)
  - Symbol (Medium)

– Times (Roman, Bold, Italic, Bold Italic)

Using font installation commands, you can load other Type 1 PostScript fonts in *.PFB file format from a MS-DOS-formatted, 3.5-inch diskette or CD-ROM or DVD-ROM. Refer to the *Guide to Configuring and Managing the System* for more information on the font installation commands. Type 1 and Type 3 PostScript fonts can also be downloaded with a print job.

- PCL fonts: Intellifont (scalable)

    – CG Times (Medium, Italic, Bold, Bold Italic)

    – Universe (Medium, Italic, Bold, Bold Italic)

    – Universe Condensed (Medium, Italic, Bold, Bold Italic)

    – Courier (Medium, Italic, Bold, Bold Italic)

    – Letter Gothic (Medium, Italic, Bold)

    – Albertus [Medium (semi-bold), Extra Bold

    – Antique Olive (Medium, Italic, Bold)

    – Clarendon Condensed (Bold)

    – Coronet (Medium Italic)

    – Garamond [Antique (medium), Kursiv (Italic), Halbfett (Bold), Kursiv Halbfett (Bold Italic)]

    – Marigold (Medium)

    – CG Omega (Medium, Italic, Bold, Bold Italic

- PCL fonts: Truetype (scalable)

    – Arial (Medium, Italic, Bold, Bold Italic)

    – Times new Roman (Medium, Italic, Bold, Bold Italic)

    – Symbol (Medium)

    – Wingdings (Medium)

- PCL fonts: Bitmap

    – Line Printer (16.67 pitch / 8.5 point medium)

NOTE: The resident fonts are used for PostScript and PCL printing.

3. Printer components and options

The printer processes the electronic data and images received from the controller and produces the printed output. This chapter describes the components and options available for the printer.

Printer components

The DocuPrint NPS/IPS printers contain the xerographic engine, two standard feeder trays, a sample tray, the printer control console, and one of three possible output configurations: the dual stacker, dual stacker with bypass transport, or the stitcher/ stacker.

For installation purposes, the 4050 and 4090 printers have the same appearance, options, and installation requirements. Both printers contain a xerographic engine, two standard feeder trays, a sample tray, the printer control console, and one of three possible output configurations.
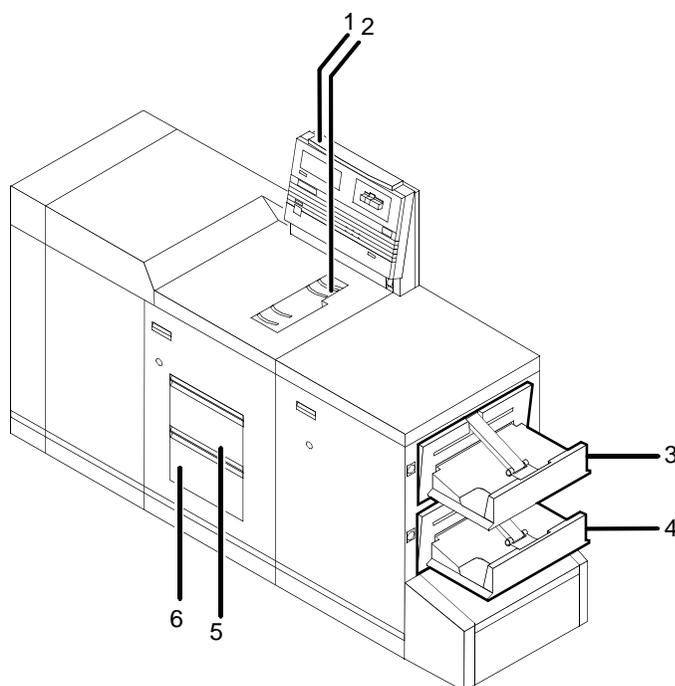
Figure 3-1. DocuPrint 4050/4090 printer shown with dual stacker trays

1. Printer control console

2. Sample tray

3. Stacker tray 1

4. Stacker tray 2

5. Feeder tray 1

6. Feeder tray 2

Printer control console

The printer control console contains message and graphic displays, information, and Stop and Continue buttons. The DocuPrint 4050 or 4090 does not provide sample prints; therefore, the Sample Print button has no effect on operation. A power switch (for the printer only) is located on the printer control console. Indicator lights show which feeder tray is active and the paper size in use.

Sample tray

This output tray is used for sample prints, rejected prints and transparencies. The capacity of the sample tray is 100 sheets of 20-pound or 80-grams per square meter (gsm) paper.

Dual stacker trays 1 and 2
Each output stacker tray has a capacity of 750 sheets of 20-pound or 80-gsm paper (1,500 sheets total capacity). The alternatives to the dual stacker configuration are the stitcher/stacker or bypass transport option.

Feeder tray 1: The capacity of tray 1 is 1,000 sheets of 20-pound or 80-gsm paper.

Feeder tray 2: The capacity of tray 2 is 500 sheets of 20-pound or 80-gsm paper. Except for capacity, this tray is identical to tray 1.

Printer control console

The printer control console contains message and graphic displays, as well as printer status indicator lights that alert you to printer conditions. These indicators and the Information button help you to solve printer problems. The Stop and Continue buttons give you temporary control of the printer, without interrupting input processing.
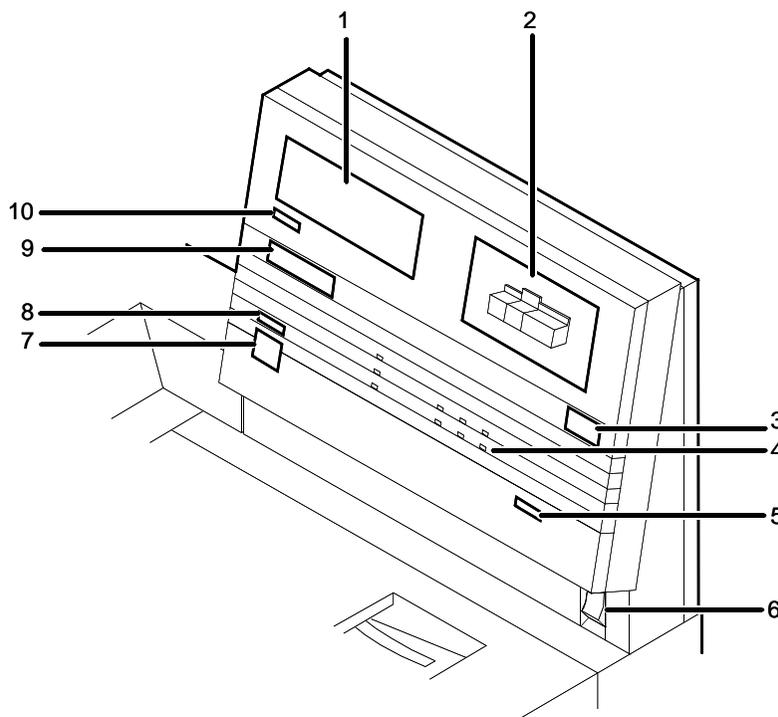
1. Message display
2. Graphic display
3. Wire percentage indicator

4. Feeder tray indicator lights

5. Message display

6. Power on/off switch

7. Continue button

8. Stop button

9. Fault code display

10. Information button

Message display	Shows printer status and simple operating and maintenance instructions in a two-line message display.
Graphic display	Assists you in locating the area where the printer problem occurred, as indicated by the message in the message display.
Wire percentage indicator	Displays the percentage of stitcher wire remaining on the spool. This indicator appears only if your printer has the stitcher/stacker output configuration.
Message display	Shows printer status and simple operating and maintenance instructions in a two-line message display.
Continue button	Use the Continue button to resume printing.
	While it is formatting a complex page, the printer controller may cycle down the printer if the page image is not available within a certain time frame. If this occurs, the following message appears:
	Press <CONTINUE> to resume printing
	You can ignore this message. As soon as the page image is available, the printer controller cycles up the printer and printing automatically resumes.
Graphic display	Assists you in locating the area where the printer problem occurred, as indicated by the message in the message display.You can ignore this message. As soon as the page image is available, the printer controller cycles up the printer and printing automatically resumes.
Stop button	Use the Stop button to interrupt printing.

Fault code display   Shows the number of prints completed and configured by technician, and displays the printer fault messages, such as L152. When a fault message displays, the corresponding message (for example, "Stitcher is out of wire" or "Spool not rotating") appears in the message display.

Information button   When "i" appears on the message display, you can press this button for additional information on printer operation. You can press the button repeatedly for more information as long as "i" appears.

Printer configurations

The DocuPrint 4050 and 4090 NPS may be configured with a high-capacity feeder, a dual stacker, or a wire stitcher/stacker.

High-capacity feeder

Two feeder trays are provided as part of the printer base configuration (feeder trays 1 and 2). For the DocuPrint 4050 and 4090, the high-capacity feeder option increases the versatility and productivity of the printer, which increases the feeder capacity by approximately 2,000 sheets.
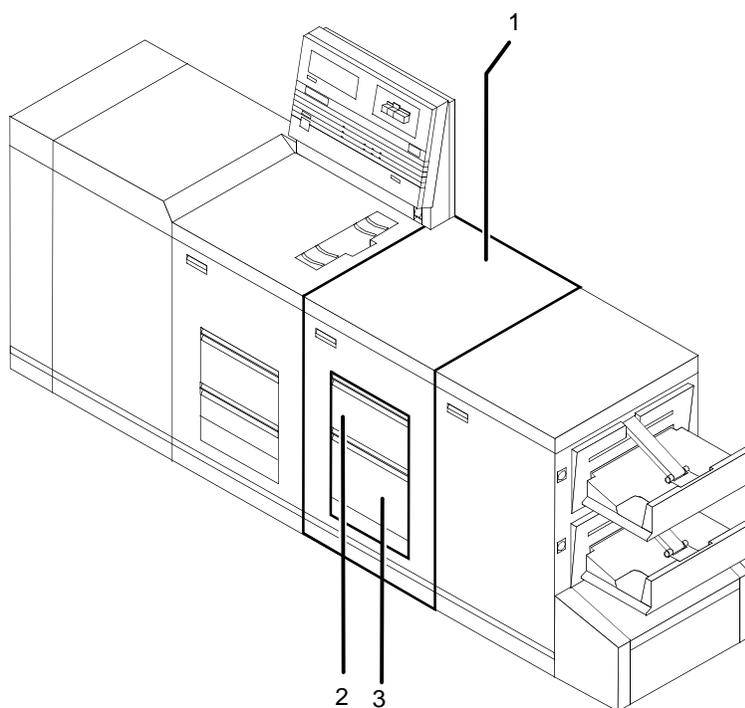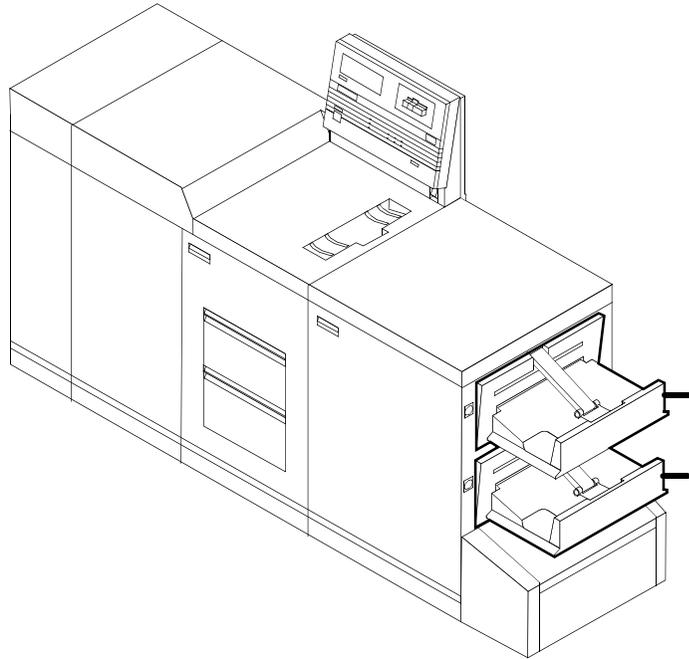
Figure 3-2. DocuPrint 4050/4090 printer with high-capacity feeder

1. High-capacity feeder unit

2. Feeder tray 3

3. Feeder tray 4

Dual stacker

The dual stacker trays each hold 750 sheets of 20-pound or 80-gsm paper (1,500 sheets total capacity).
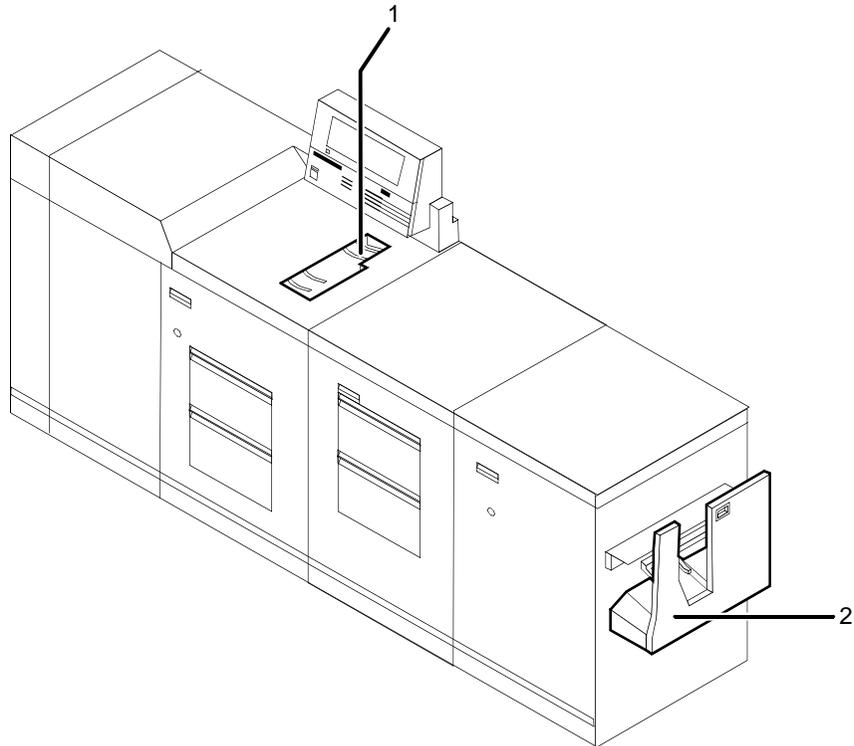

Figure 3-3. DocuPrint 4050/4090 NPS dual stacker configuration

1. Stacker tray 1

2. Stacker tray 2

Stitcher/stacker

The stitcher/stacker wire-stitches documents of up to 50 sheets of paper. The stacker tray holds up to 2,000 sheets of unstitched 20-pound or 80-gsm paper.

Figure 3-4. DocuPrint 4050/4090 NPS/IPS stitcher/stacker configuration

1. Stitcher/stacker tray

2. Sample tray

Sample tray   Used for sample prints, rejected prints, and transparencies. Holds up to 100 sheets of 20-pound or 80 gsm paper.

Stitcher/stacker tray   A single tray for output that is stitched (stapled) and /or offset. The tray holds up 2000 sheets of unstitched 20-pound or 80 gsm paper, or an equally high stack of stitched sets (200 two-sheets). A stitched set consists of up to 50 sheets of 20-pound or 80 gsm paper. The wire supply provides up to 35000 staples.

Additional printer features

Instruction labels   Located throughout the printer to assist you with a variety of tasks.

Audible tones   Alert you to certain conditions. Volume may be adjusted by a service representative.

Power savers   To conserve energy, the printer has two power savers: one for the raster output scanner (ROS) and one for the fuser.

After a predetermined period, each of these parts times itself out and shuts down. The time-out period can be adjusted by a service representative to meet your needs. The printer controller automatically brings the printer out of power saver mode when there is a document to be printed.

- The ROS power saver times itself out after about an hour of inactivity and requires about 30 seconds to warm back up.

- The fuser power saver times itself out after about four hours and requires four to seven minutes to warm up.

Language button   Systems with the dual language option have this button to select a different language, such as French instead of English, for the message display.
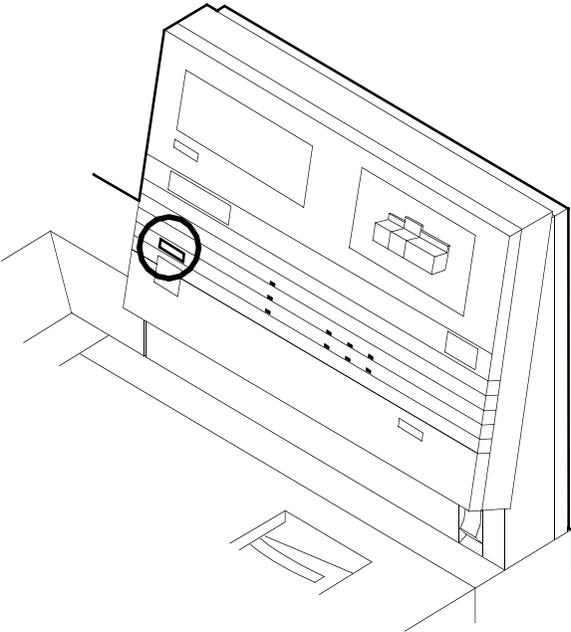
**Figure 3-5. Language button on printer control console**

Paper paths

The paper path is the route that materials (paper, transparencies, labels, and so on) follow through the printer from the feeder trays to the output trays.

The figure below illustrates the simplex (one-sided output) paper path of a printer with a dual stacker tray and a standard feeder tray. The materials move from either feeder tray 1 or feeder tray 2 and are stacked in either stacker tray 1, stacker tray 2, or the sample tray, depending on your selection at the beginning of the job.
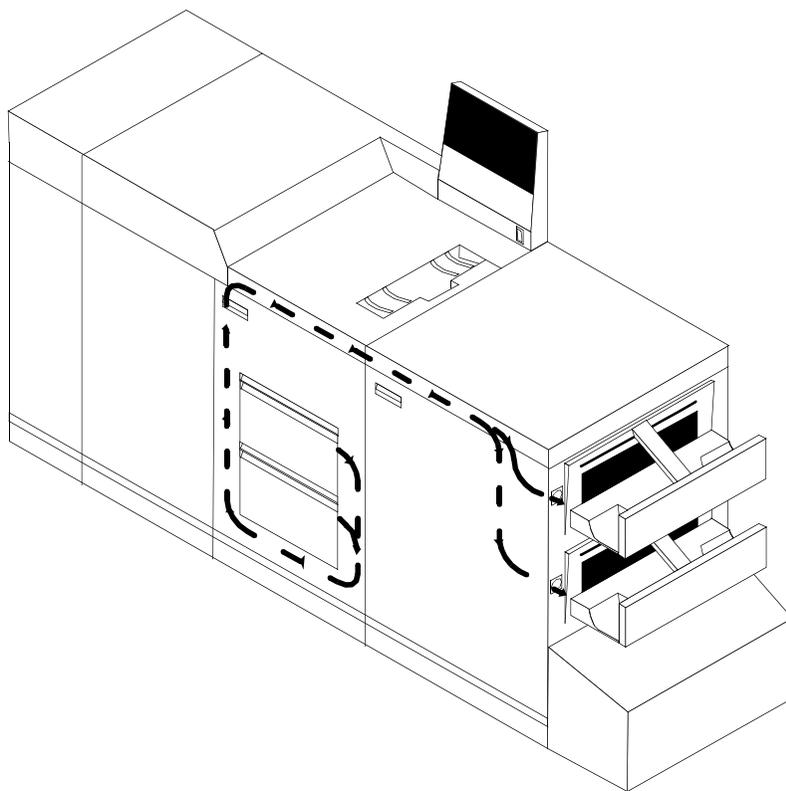
**Figure 3-6. Simplex paper path (dual stacker configuration)**

The following figure illustrates the duplex (two-sided output) paper path of a printer with a dual stacker and a standard feeder. Materials may originate in either feeder tray 1 or feeder tray 2. The duplex paper tray receives the materials before they go through a second time to receive the second image. As the pages move through for the second image, they follow the simplex path. The pages are then stacked in either stacker tray 1 or stacker tray 2, depending on your selection at the beginning of the job.
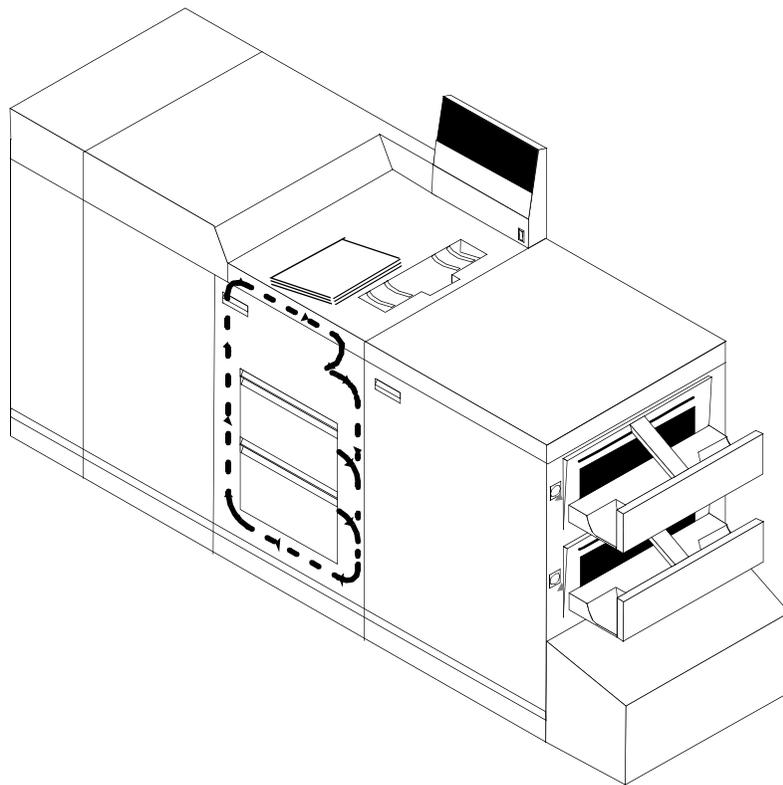
Figure 3-7. Duplex paper path (dual stacker configuration)

When you add a high-capacity feeder to your system, only the beginning of the paper path changes, which is the source of paper supply.

The following figure illustrates the simplex paper path of a printer with the high-capacity feeder.
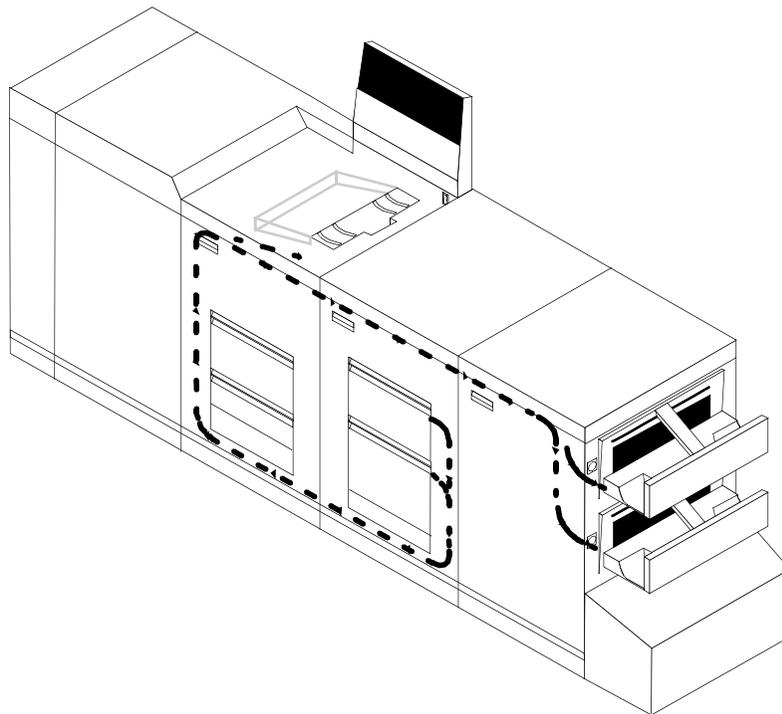
Figure 3-8. Simplex paper path (printer with high-capacity feeder)

If you have the stitcher/stacker option, the paper path is the same, except there is only one tray for the output (other than the sample tray).

System Overview Guide

4.   Network printing environment

The NPS/IPS system supports the personal computer (PC), Sun workstation, DEC workstation, HP/Apollo, IBM RS/6000 and Apple Macintosh. It accepts PostScript levels 1 and 2, PCL 5, TIFF, and ASCII output.

Client workstations and system software

To send print jobs to the printer, the customer needs to provide the proper client hardware, operating system, and network software.

Print data originates at the client workstation, mainframe or minicomputer. This is where a user creates and formats documents according to specifications with the help of application software. The printer supports the following types of networked client workstations and operating systems:

- Sun workstation running a Sun or Linux operating system

- PC running MS-DOS 6.2 and Microsoft Windows 95, 98, NT, 4.0, 2000, and ME using Ethernet with TCP/IP or Novell NetWare 3.11 and 3.12.

NOTE: Customers using Novell 4.1 must set the "Bindery Emulation Mode" to be backwards compatible with Novell 3.11 and 3.12.

- IBM RS/6000 running IBM AIX, version 4.1

- HP/Apollo running HP-UX, version 10.01

- DECStation 5000/200 running DEC Ultrix, version 4.3

- Apple Macintosh, System 7, 7.5, or 8.x, using AppleTalk through EtherTalk, phase 1 or 2

- Any system that supports RFC-1179 lpr/lpd.

The software may be compatible with workstation models and software versions other than those listed above.

Client software

On your PC or workstation, you must install or set up a supported means of submitting jobs to the printer. Depending on your system, you can use the following:

- Xerox drivers for Windows 3.x, 95/98, or NT/2000

- Xerox Document Submission Software for DOS, Windows 3.x, 95/98, NT/2000, or Macintosh

- Third-party drivers

  - Some PostScript drivers can be used in conjunction with Xerox-supplied PPD files

  - HP Color LaserJet for PCL 5c jobs

  - HP LaserJet 4 for monochrome jobs

- Third-party TCP/IP lpd utility

- Apple/Macintosh Printer Access Protocol (PAP)

NOTE: The printing options vary according to the network software that is loaded on the client workstation.

Submitting print jobs

There are basically two ways you can submit print jobs: You can send print data directly from the application to the printer; or you can create a PDL data file on the workstation and then send the data file to the printer. The method you choose depends on the workstation configuration and the job submission requirements.

Sending the print data directly from the application to the printer is accomplished with a Xerox print driver or a third-party driver. This method is sometimes referred to as "transparent printing." It may not support all available print options, such as number of copies, simplex or duplex printing, and stitching.

The other way to submit print jobs to the printer is by creating a PDL data file. After the file is created, the user closes the document and submits the job using one of the following methods:

- **lpr command:** Provides options for submitting print jobs. The functionality of the lpr command is dependent on the TCP/IP software installed on the workstation.

- **Xerox Client Software:** Provides a print command for submitting jobs and specifying print options. The functionality of the print command is dependent on the TCP/IP software installed on the workstation.

- **Xerox DocuPrint Document Submission Client software for the Macintosh:** Provides a graphical user interface for submitting jobs and specifying print options.

- **Xerox DocuPrint Print Submission software for Windows 3.x, Windows 95/98, Windows NT, and Windows 2000:** Provides graphical user interfaces for submitting jobs and specifying print options.

- **Internet Printing Protocol for Windows 2000:** Allows job submission over the Internet.

In many cases, the workstation can be set up for more than one method of job submission.

The application software provides the capability to print the document using a page description language (PDL). The application produces print data in one of the supported page description language formats, for example PostScript level 2.

Communicating with the network

After the print data has been prepared for printing and combined with print options data—either by the application software or by a print job submission utility—the print job is sent over the network.

The printer supports TCP/IP, AppleTalk, and Novell NetWare network communications protocols.

Client workstations require a network software utility that submits the job using the appropriate network protocol. This software must be installed and running for jobs to be submitted successfully to the printer. Once this software is installed, its operation is transparent to the user.

The Macintosh uses Printer Access Protocol (PAP) to communicate with one or more DocuPrint printers. For convenience, your internet may be divided into zones. A zone can be any logical grouping of individual workstations and printers. Your network administrator defines your zone when setting up the network.

Shown below are the workstations, networking options, and job submission methods available for each client.

Table 4-1. Clients

Client workstation hardware	Operating system	Ethernet connection	Protocol; *Translation requirements*	Job submission method
Sun Microsystems	Solaris SunOS	Standard	TCP/IP; none	Print using the lpr command or Xerox Client Software.
IBM PC and compatible	MS-DOS	Optional Ethernet interface card (for example, 3Com 3C503)	TCP/IP; *network communication utility recommended*	Print to disk file, then send using the lpr command or Xerox Client Software.
IBM PC and compatible	Windows 3.1	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; *network communication utility recommended with TCP/IP*	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows 95/ 98	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; *network communication utility recommended with TCP/IP*	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows NT	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; *network communication utility recommended with TCP/IP*	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows 2000	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; *network communication utility recommended with TCP/IP*	Print directly from application or use Xerox DocuPrint Print Submission software for Windows, or the Internet Printing Protocol (IPP)
Digital Equipment Corporation DECstation	ULTRIX	Optional Ethernet interface	TCP/IP; *none*	Print directly from application, or use the lpr command or Xerox Client Software.

Table 4-1. Clients (Continued)

Client workstation hardware	Operating system	Ethernet connection	Protocol; *Translation requirements*	Job submission method
Apple Macintosh	Apple OS	Optional Ethernet interface	AppleTalk using EtherTalk Phase I or II; *none*	Print directly from application or use Xerox DocuPrint Print Submission Client software for the Macintosh.
IBM RS/6000	IBM AIX	Standard	TCP/IP; *none*	Print using Xerox Client Software.
HP/Apollo	HP-UX	Standard	TCP/IP; *none*	Print using Xerox Client Software.

Job status feedback

Client workstations display fault messages and additional information, such as the status of feeder trays and output bins. If properly configured, the workstations may be able to display job status, as shown below.

Table 4-2. Job status feedback

Platform	Job status capability
Sun workstation	Job status and job deletion are available by issuing the appropriate command at the command line. Job status information is available for jobs submitted using Xerox Client Software.
IBM and compatible personal computers	Job status and job deletion are available depending on the TCP/IP software installed on the workstation. You must issue the appropriate command at the command line. Job status information is available for jobs submitted using Xerox Client Software. Job status information is available using the Novell PCONSOLE utility if the printer is configured with a RPRINTER or PSERVER enabled.
Apple Macintosh	Job status information is available at the workstation through AppleTalk.
IBM RS/6000 and HP/ Apollo	Job status information is available for jobs submitted using Xerox Client Software or lpstat (native utility).

To determine the status of jobs submitted using the lpr command, you must issue an lpq command at the command line. Some application software packages may provide a simplified means of obtaining job status, such as through the use of icons.

The job status command (lpq) is available at client workstations unless your TCP/IP network communications utilities do not support it.

Xerox Client Software provides commands for listing the status of the job and for listing the queue. These commands are available for jobs submitted using Xerox Client Software.

AppleTalk provides job status information at the client workstation through the print monitor function. Workstation users can also determine the status of a virtual printer.

NOTE: Job status is also available by establishing a telnet connection to the Printer Controller to access the user interface from your workstation. Printer and additional status information is also available. You can also use a Web browser to obtain job status. See the Guide to Configuring and Managing the System for more information.

Ethernet LAN

Users of networked client workstations may send print jobs to the printer over the Ethernet LAN using either the TCP/IP, AppleTalk using EtherTalk Link Access Protocol (ELAP), or Novell NetWare as the network protocol.

Regardless of printing or transmission protocol, the Ethernet connection to the Printer Controller must be compatible with the Institute of Electrical and Electronics Engineers (IEEE) 802.3 standard.

Token Ring

Users of networked client workstations may send print jobs to the printer over a Token Ring network using TCP/IP, Novell NetWare or AppleTalk network protocol.

Regardless of the printing transmission protocol, the Token Ring connection to the Printer Controller must be compatible with the Institute of Electrical and Electronics Engineers (IEEE) 802.5 standard.

Multiple network connectivity

The system supports multiple network connectivity, that is, the ability for protocols such as TCP/IP to run on more than one network interface. For TCP/IP, the system can support any combination of Ethernet or Token Ring. One interface is designated as the primary network interface. Novell NetWare can run on only the primary network interface, but the type of interface can be selected.

AppleTalk can run on only one network interface, but it does not have to be the primary one.

5. IPDS printing environment

The NPS/IPS emulates an IBM AFP Group 3 page printer with the Advanced Function Image and Graphics (AFIG) option. It can print in all the following PSF environments: MVS, VM (channel-attached only), VSE (channel-attached only, OS/2, OS/400 (with TCP/IP only), and AIX.

NOTE: Although PSF/VSE does not support TCP/IP directly, a printing system with PSF/2, PSF/6000, or IBM InfoPrint Manager can attach to a PSF/VSE system and the PSF/2, PSF/6000, or IBM InfoPrint Manager can furnish the TCP/IP support for the printer.

Host connectivity

Host environments

The system emulates an IBM AFP Group 3 page printer with the Advanced Function Image and Graphics (AFIG) option and can print in all the following PSF environments:

- MVS
- VM (channel-attached only)
- VSE (channel-attached only)
- OS/2
- OS/400 (with TCP/IP only)
- AIX

NOTE: Although PSF/VSE does not support TCP/IP directly, a printing system with PSF/2, PSF/6000, or InfoPrint Manager can attach to a PSF/VSE system and the PSF/2, PSF/6000, or InfoPrint Manager can furnish the TCP/IP support for the printer.

NOTE: There is no minimum host operating system software level required. The minimum PSF level needed to support full color is v.3.2.

The NPS/IPS can be set up to receive data from the IBM host in one of two ways:

- Through a bus and tag channel connection.

    NOTE: If your system will be channel-attached, the printer controller requires an additional component—either a channel interface board and channel cable connector box, or a Host Channel Unit (HCU) that serves as an interface between the IBM host and the printer controller.

- Through a Token Ring or Ethernet interface using TCP/IP.

    NOTE: Your system supports only one other connectivity option in addition to Ethernet. For example, Ethernet and channel connection or Ethernet and Token Ring.

    NOTE: A transmission rate of at least 16 megabits per second should be used with a Token Ring interface. (Overall performance depends on network traffic and job density.)
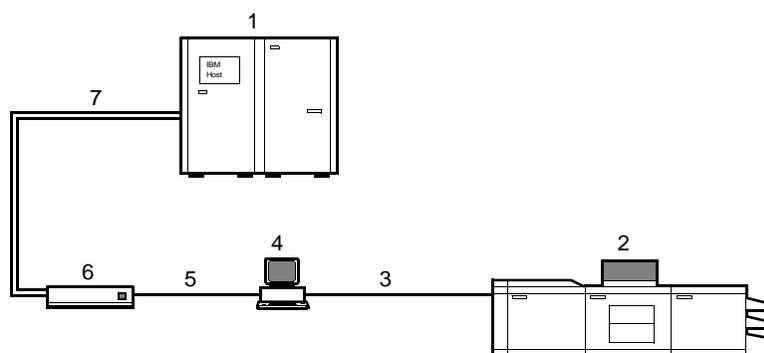
Figure 5-1. Printing system: channel-attached configuration

1. Host system (PC or mainframe)
2. Printer
3. Printer interface cables
4. Printer controller
5. Internal channel cable
6. Host Channel Unit (HCU)
7. Bus and tag cables
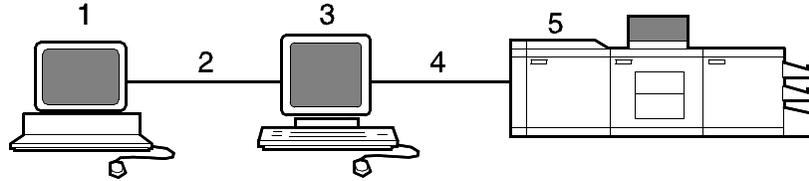
Figure 5-2. Printing system: TCP/IP configuration

1. Host system (PC or mainframe)

2. Interface network (Ethernet or Token Ring)

3. Printer controller

4. Printer interface cables

5. Printer

For information on the various printer configuration options, refer to the "Printer components and options" chapter of this guide.

Channel interface —channel-attached systems only

Your system may use a channel interface board and connector box for channel connection to a host for IPDS printing. The channel interface board, connected to a channel cable connector box, handles all IPDS communications and handshaking with PSF on the host when the NPS/IPS is receiving data over a channel. (It is not used when the NPS/IPS is printing data using TCP/IP.)
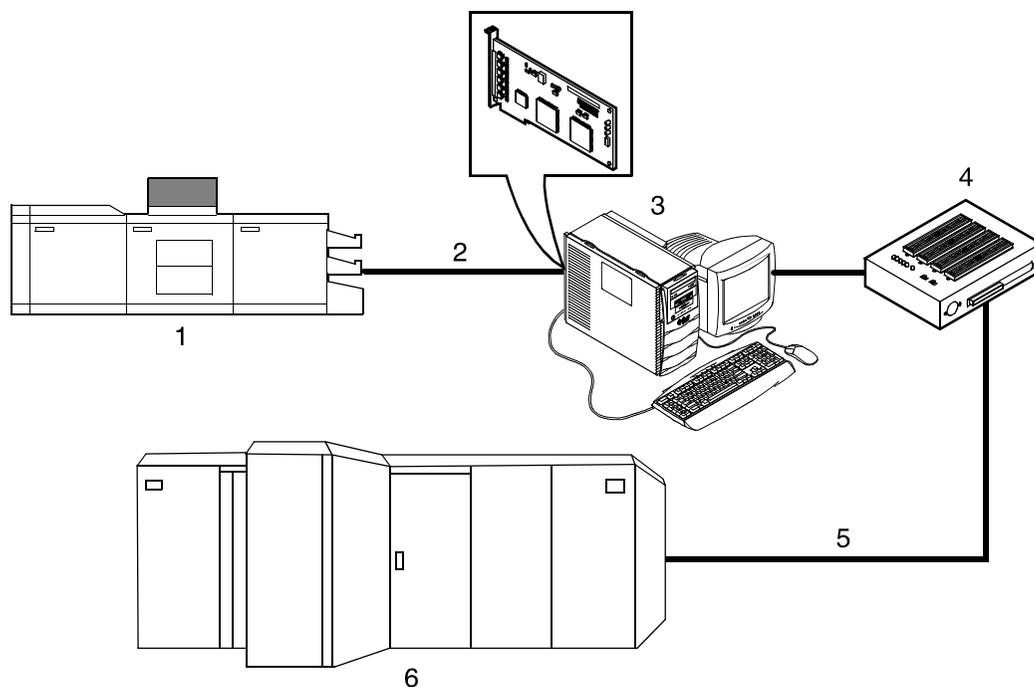
Figure 5-3. Channel board and control unit

1. Printer

2. Printer control and video cable

3. Printer controller with channel interface board

4. Channel cable connector box

5. Channel cables

6. Host system

NOTE: The customer is responsible for obtaining, stringing, and maintenance of the bus and tag cables. The bus and tag cables must be fully populated cable sets.

Host Channel Unit (HCU)—channel-attached systems only

Your system may use a Host Channel Unit (HCU) for channel connection to a host for IPDS printing.

The HCU handles all IPDS communications and handshaking with PSF on the host when the system is receiving data over a channel. It is not used when the system is printing data using TCP/IP.
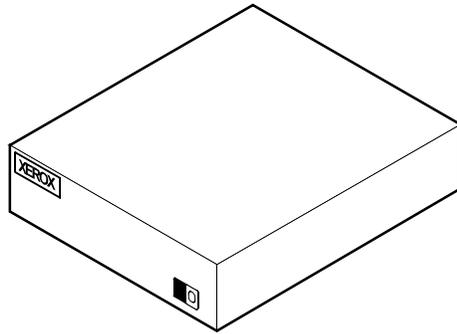
Figure 5-4. Host Channel Unit (HCU)

The front panel of the HCU provides a single-digit LED display that enables you to monitor power-up and offline status, and alerts you to error conditions. (Refer to the Messages Guide for an explanation of the HCU codes.)

The back panel of the HCU has a power switch and outlet, bus and tag cable input and bypass connectors, and a dual serial port.

NOTE: The customer is responsible for obtaining, stringing, and maintenance of the bus and tag cables. The bus and tag cables must be fully populated cable sets.

IPDS data stream

All IPDS resources (print data sets, page definitions, form definitions, page segments, fonts, and overlays) that are supported by the IBM 3825 and 3827 printers are supported by the Xerox software. Additionally, the data towers that are supported within the AFP environment by the IBM 3825 and IBM 3827 printers are fully supported by the software. Data towers supported are:

- **IM Image IMD1**
- **FOCA:** Font Object Content Architecture
- **MO:DCA-P:** Mixed Object Document Content Architecture for Presentation
- **PTOCA PT1, PT2, and PT3:** Presentation Text Object Content Architecture
- **IOCA:** Image Object Content Architecture
- **GOCA:** Graphics Object Content Architecture
- **BCOCA:** Bar code Object Content Architecture

- **OL1:** Overlay One
- **PS1:** Page Segment One
- **Line mode data streams**

Each of the data objects follow the same object rule of containing delimiting fields with structured fields describing each object.

Software features for IPDS

This section describes some of the software features for IPDS printing.

IOCA Replicate and Trim

The printer supports Replicate and Trim, which improves the processing of IM and IO images that contain large areas of shaded graphics. (IM images are resolution-dependent images that cannot be compressed or scaled; IO images are resolution-independent.)

The IOCA Replicate and Trim capability allows for faster transmission to the printer of AFP applications with IM images that have large or widespread shaded areas. It also reduces the storage area required on the host and on the printer.

Trace facility

To help diagnose problems, the system provides a trace mechanism. Trace files store system configuration information, maintain TCP/IP protocol headers, and time-stamp all records.

For detailed information on this feature, refer to the "Using utility commands" chapter in the *Guide to Configuring and Managing the System*.

Overstrike, underscore, subscript, and superscript

Support for the PT2 Subset of PTOCA enables the printer to print overstrikes, underscores, subscripts, and superscripts where specified in jobs.

Color image support

Some IM1 images (for example, logos) can be converted to IOCA for resolution correction. The bi-level IOCA feature enables such IM1 images to be printed in color on the highlight-color printer. PSF does not strip the color information from the print job.

Also supported are JPEG compressed IOCA, as well as JPEG and EPS files in object containers.

NOTE: Hosts may not support JPEG files in object containers.

Background color for OCA colors

Users can specify COLOR on DRAWBOX (i.e., background color) as long as the color is restricted to colors defined with the OCA model.

Bi-level IOCA colors

The printer accepts the new IOCA color spaces in the extended controls (referred to as the "4E" color triplets). These include the Highlight Color and Standard OCA Color.

Outline font support

The printer supports the use of IBM outline fonts for both single-byte and double-byte applications. These fonts must be downloaded during the jobs.

These outline fonts allow users to specify a single font that can be rasterized in a variety of point sizes by the printer. The IBM outline fonts are based on Adobe type 1 and type 0 fonts that are in PostScript format.

A. Supplies

This appendix provides information and specifications for the media you use with your Xerox DocuPrint 4050/4090 NPS/IPS printer. Instructions for ordering supplies are also provided.

Consumable supplies (those that are depleted during operation of the system), such as paper, dry ink, developer, fuser lubricant, etc., must be ordered for your printer. It is important that an adequate supply of these items be on hand for installation, and that your supply be maintained afterwards.

Paper and other throughput stocks

The success of any print run is greatly dependent on the proper selection, care, and handling of the stock used.

Selecting paper

You need to select your paper carefully. If you do not use the proper paper, you increase the probability of paper jams and misfeeds. The stocks you use must meet the specifications set forth by Xerox for operability in the printer. For additional information about paper specifications, refer to *Helpful Facts about Paper*, delivered with your printer.

Acceptable paper stocks and sizes
Your DocuPrint 4050/4090 printer accepts the following standard size cut-sheet papers:

- US Letter: 8.5 by 11 inches / 216 by 279 mm
- US Legal: 8.5 by 14 inches / 216 by 356 mm
- A4: 8.27 by 11.69 inches / 210 by 297 mm

Recommended weight and grade: Use a good quality, xerographic-grade paper. For best results, use paper that is 20-pound or 80 gsm (grams per square meter) bond, xerographic grade. Xerox 4024 Dual Purpose Paper provides optimal performance in the printer. Refer to the consumable supplies table, later in this appendix.

Use paper within these parameters:

- Lightest: 20-pound or 80 gsm bond

- Heaviest: 110-pound or 200 gsm index.

Characteristics The paper stock should have the following characteristics:

- Low moisture content (a paper-to-moisture ratio below 5.7 percent). Paper with higher moisture content may curl and jam.

- Smooth surface

- Moisture-resistant wrapping

- No defects (bent edges, uneven surfaces)

- Grain long (parallel with the long side of paper).

   Paper is usually fed into the printer with the long side as the leading edge. When you purchase paper, buy long-grain paper. Make sure the grain is parallel with the long side (long-grain) for the most reliable feeding and stacking.

Special stocks Following are some guidelines for choosing and using special materials:

- **Labels:** Must be the type designed for high-speed printers and must meet the specifications described in the section above. Loading instructions are printed on all paper trays.

   Load labels with the label side up. You can direct them to any output tray.

- **Transparencies:** Must be the type designed for high-speed printers and must meet the specifications described in the section above. Loading instructions are printed on all paper trays.

   Load transparencies with the opaque strip to the right. All printed transparencies are delivered to the sample tray.

   As long as they meet your printer's paper specifications, you can also use:

- **Tinted paper:** Available in a variety of colors, it has many uses, including calling attention to certain printed material, separating special sections, or dividing chapters of a report.

- **Preprinted paper:** May be letterhead, forms, or logos.

- **Predrilled paper:** Has a varying number of holes for use in binders or binder rings. Before loading predrilled paper, fan it to remove loose plugs that could cause paper jams. Load predrilled paper in the printer with holes to the right.

- **Perforated paper**

Paper care

After you have purchased your paper, you must be sure it is stored and conditioned properly, so that it performs optimally in the printer with a minimum of jams.

Storing paper Paper has a tendency to curl under the heat that is present inside xerographic equipment. To minimize the amount of curling, use paper with low moisture content. Paper with excessive moisture content has a tendency to jam because of the greater curl. The maximum recommended moisture content is 5.7 percent.

Keep these points in mind when preparing your paper storage area:

- Store paper in its own wrapper; do not leave it unwrapped or where it can be damaged by dampness or heat.

- Store paper on a flat surface and not on its side or edge.

- Store reams of paper in a closed cabinet.

- Always store paper in a cool, dry area. Store on pallets or shelves, not on the floor.

- Plan ahead and keep at least a day's supply of paper in the same area as the printer to allow environmental stabilization prior to printing.

For more detailed information on paper for Xerox printers, refer to *Helpful Facts about Paper*, provided with your printer.
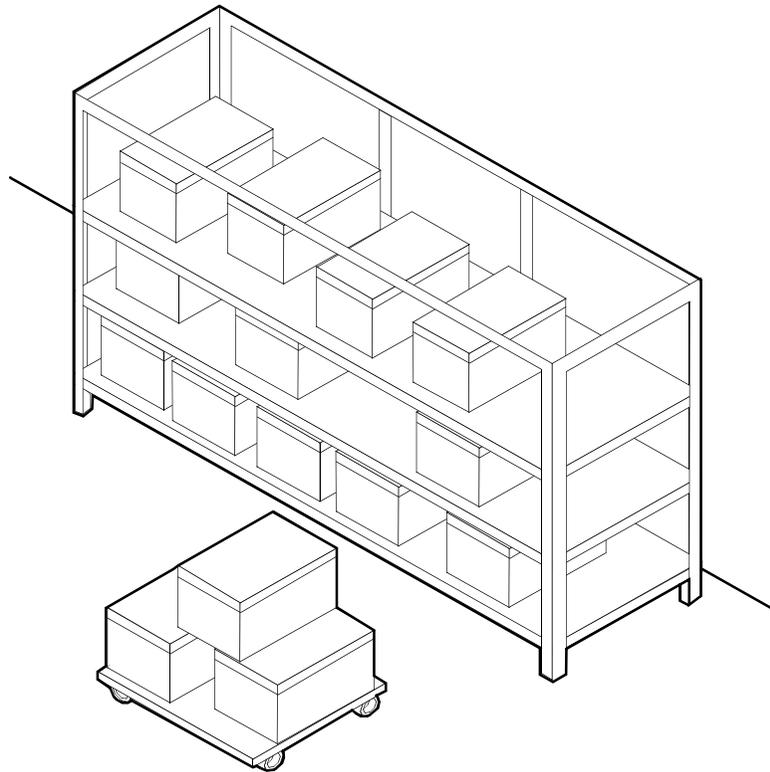
Figure 5-5. Storing paper correctly
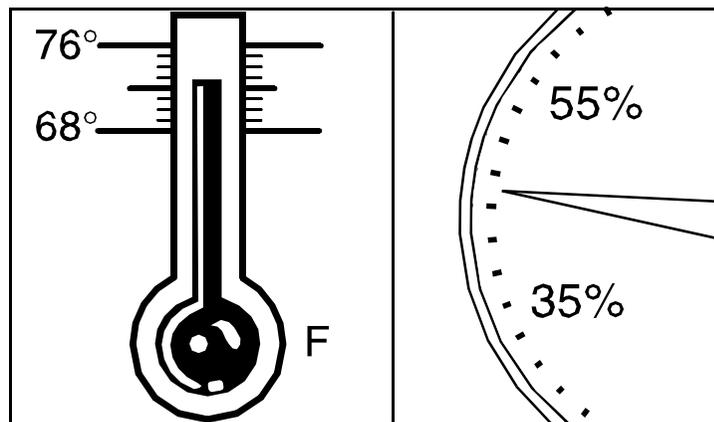
Figure 5-6. Recommended temperature and humidity for paper storage

Conditioning paper Because temperature and humidity affect paper performance in the printer, you need to condition paper before using it. To do this, store paper for a specified length of time in the same type of environment as your printer.

The length of time you should condition your paper depends on the amount of paper and the difference between the storage and operating temperatures.

Use the following chart to determine the length of time needed to condition stacked cartons of paper.

NOTE: The numbers in the top two rows indicate the temperature difference between the storage area and the operating environment, not actual room temperatures.

Table 5-1. Paper conditioning: Recommended temperature differences between storage and operating areas

Temperature differences between storage and operating areas						
Fahrenheit						
10°	15°	20°	25°	30°	40°	50°
Centigrade						
5.5^o	8.5^o	11°	13°	17°	22°	28°

Cartons	Hours						
1	4	8	11	14	17	24	34
5	5	9	12	15	18	25	35
10	8	14	18	22	27	38	51
20	11	16	23	28	35	48	67
40	14	19	26	32	38	54	75

Example: (See the shaded rows in the table above.) If you want to move ten cartons of paper from a storage area with a temperature of 90 ^{o}F to an operating area with a temperature of 75 ^{o}F (a 15° difference), you should do so at least 14 hours before using the paper.

Other supplies

This section describes the supplies other than paper that are necessary for installation and afterward. Your sales representative will help you place your initial supply order.

Dry ink

Dry ink (also called toner) is the powder which forms the image on the printed page. There are six cartridges of dry ink in each carton. You should keep at least one extra cartridge on hand at all times. The disposable cartridges are easily changed with no mess. The consumption rate of Xerox dry ink is approximately one cartridge per 30,000 pages for black dry ink and 86,500 pages for colored dry ink. Use only dry ink that is specified for use in the DocuPrint 4050/4090 printer, as described in the consumable supplies table.

NOTE: Dry ink yields are based on 5% area coverage. Your yield may vary, depending on coverage.

Fuser lubricant

Fuser lubricant is a consumable item required by the printer. You should keep at least two boxes on hand for installation by the service representative. The consumption rate of Xerox fuser lubricant is approximately one tube per 120,000 pages. For product information, refer to the consumable supplies table in this appendix.

Developer

Developer is not consumed by the printer but does have an effective life of approximately 300,000 pages per bottle, guaranteed by Xerox. Developer is a required item and must be kept on hand.

Use only the developer specified for use in your DocuPrint 4050/4090 printer.

The developer is changed by your service representative. For product information, refer to the consumable supplies table, later in this appendix.

Stitcher wire

Stitcher wire is a consumable item for a printer equipped with the stitcher/stacker option. You need to order stitcher wire reels and keep them on hand. They are installed by the service representative or operators who have completed the Advanced Customer Training (ACT) or eXcellerate courses offered by Xerox.

Diskettes

Diskettes are optional items that provide loading and backup of fonts, forms, and user files to and from the printing system. The processor accepts 3.5-inch, 1.44 MB, double-sided, high density diskettes.

Tapes

The optional 4 mm cartridge tape drive uses 5 GB or 8 GB tapes.

The 1/4-inch QIC tape drive uses quarter-inch stream cartridge tapes. The tape data capacity should be 320/525 MB. Tape density is critical. The QIC drive can read low density tapes, but to write reliably requires tape with 21,000 Flux Transitions Per Inch (FTPI). The FTPI figure is usually listed on the cartridge.

Fonts

Data can be printed on DocuPrint printers in many sizes and type styles called fonts. A font is a character set which has unique characteristics, such as type style, size, weight, orientation (portrait, landscape, inverse portrait, and inverse landscape), character spacing (fixed and proportional), line spacing, and postures (Roman, italic, and so forth).

There are three classifications of fonts:

- Standard fonts
- Licensed fonts
- Custom fonts.

Standard fonts   A library of 51 fonts is provided with your printer operating system software.

| | Licensed fonts | Additional fonts may be ordered from your local Xerox Font Center. |

Licensed fonts   Additional fonts may be ordered from your local Xerox Font Center.

Custom fonts   Custom fonts and graphic images such as company logos and signatures can be digitized by the Xerox Font Center for use on your printer.

Receiving fonts   Fonts are received on a diskette from your local Xerox Font Center.

Consumable supplies tables

A number of supplies are available from Xerox for your DocuPrint printer. Use the following tables to help determine your supply needs.

NOTE: Customers in the U. S. may use the part numbers in these tables to order supplies. Customers outside the U. S. should contact their local service organization for part numbers.

Paper and special stocks tables

The following tables list all throughput stocks available for the DocuPrint 4050/4090 printer, with size, order number, and a brief description for each.

Table 5-2. **Stocks list for DocuPrint 4050/4090 NPS/IPS printer**

Item	Description	Part number
Paper	Xerox paper quantities are 10 reams (5,000 sheets) to a carton unless otherwise noted below.	
8.5 x 11 inch	4024 Dual Purpose Paper	3R721
A4	4024 Dual Purpose Paper	3R2594
8.5 x 14 inch	4024 Dual Purpose Paper	3R727
8.5 x 11 inch	4024 Dual Purpose Paper, 3-hole	3R723
8.5 x 11 inch	4024 Dual Purpose Paper, 3-hole*	3R2193
8.5 x 11 inch	4024 Dual Purpose Paper, 4-hole	3R1983
8.5 x 11 inch	4024 Dual Purpose Paper, 4-hole*	3R3008
*5/16-inch drilled holes ** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Table 5-2. **Stocks list for DocuPrint 4050/4090 NPS/IPS printer (Continued)**

Item	Description	Part number
8.5 x 11 inch	4024 Dual Purpose Paper, 7-hole	3R1984
8.5 x 11 inch	4024 Dual Purpose Paper, 7-hole*	3R3010
8.5 x 11 inch	4024 Smooth	3R2675
8.5 x 14 inch	4024 Smooth	3R2677
8.5 x 11 inch	Dual Purpose Colors—Blue	3R3052
8.5 x 11 inch	Dual Purpose Colors—Blue, 3-hole	3R3068
8.5 x 14 inch	Dual Purpose Colors—Blue, 3-hole	3R3084
8.5 x 11 inch	Dual Purpose Colors—Green	3R3056
8.5 x 11 inch	Dual Purpose Colors—Green, 3-hole	3R3072
8.5 x 14 inch	Dual Purpose Colors—Green	3R3088
8.5 x 11 inch	Dual Purpose Colors—Pink	3R3058
8.5 x 11 inch	Dual Purpose Colors—Pink, 3-hole	3R3074
8.5 x 14 inch	Dual Purpose Colors—Pink	3R3090
8.5 x 11 inch	Dual Purpose Colors—Yellow	3R3054
8.5 x 11 inch	Dual Purpose Colors—Yellow, 3-hole	3R3070
8.5 x 14 inch	Dual Purpose Colors—Yellow	3R3086
8.5 x 11 inch	Dual Purpose Colors—Buff	3R3060
8.5 x 11 inch	Dual Purpose Colors—Buff, 3-hole	3R3076
8.5 x 14 inch	Dual Purpose Colors—Buff	3R3092
8.5 x 11 inch	Dual Purpose Colors—Goldenrod	3R3062
8.5 x 11 inch	Dual Purpose Colors—Goldenrod, 3-hole	3R3078
8.5 x 14 inch	Dual Purpose Colors—Goldenrod	3R3094
8.5 x 11 inch	Dual Purpose Colors—Ivory	3R3064
8.5 x 11 inch	Dual Purpose Colors—Ivory, 3-hole	3R3080
8.5 x 14 inch	Dual Purpose Colors—Ivory	3R3096
8.5 x 11 inch	Dual Purpose Colors—Gray	3R3066
8.5 x 11 inch	Dual Purpose Colors—Gray, 3-hole	3R3802
8.5 x 14 inch	Dual Purpose Colors—Gray	3R3098
8.5 x 11 inch**	Dual Purpose Colors, Rainbow Pack—35,000 sheets per carton**	3R3107
*5/16-inch drilled holes ** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Table 5-2. **Stocks list for DocuPrint 4050/4090 NPS/IPS printer (Continued)**

Item	Description	Part number
8.5 x 11 inches	4200 Primary Image	3R5802
8.5 x 14 inches	4200 Primary Image	3R5804
8.5 x 11 inches	4200 Primary Image, 3-hole	3R5803
8.5 x 11 inch	10 Series Dual Purpose Paper	3R2950
8.5 x 11 inch	10 Series Dual Purpose Paper, 3-hole	3R2952
8.5 x 11 inch	10 Series Dual Purpose Paper, 3-hole*	3R3016
8.5 x 14 inch	10 Series Dual Purpose Paper	3R2954
8.5 x 11 inch	10 Series Smooth	3R54
8.5 x 14 inch	10 Series Smooth	3R83
8.5 x 11 inch	4024 Dual Purpose, reinforced 3-hole*	3R2057
Transparencies	Xerox transparencies are packaged 100 sheets to a box.	
8.5 x 11 inch	Clear, with a white strip on the edge	3R2780
8.5 x 11 inch	Clear, high speed, with paper backing	3R3028
Labels (Gummed)	Xerox labels are packaged 100 sheets to a box.	
8.5 x 11 inch	33 labels per sheet	3R3139
8.5 x 11 inch	6 labels per sheet	3R3146
8.5 x 11 inch	Custom form (uncut)	Contact Xerox Supplies Order Service
8.5 x 11 inch	1-up label	3R4476
8.5 x 11 inch	1-up label	3R4475
8.5 x 11 inch	1-up label	3R4474
Cover stock	Xerox cover stock is packaged 2,500 sheets per carton.	
8.5" x 11"	65-pound, blue	3R3044
8.5" x 11"	65-pound, white	3R3041
*5/16-inch drilled holes ** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Complete supplies list—4050/4090 printers

The following table lists the supplies in addition to paper that are available for your printer. Use this table to help you determine your supplies needs.

Table A-1. Complete supplies list for 4050/4090

Item	Description	Part number	Items/ carton	Expected yield
Developer material	Packaged one container per carton. (Needs replacement only if current supply becomes contaminated.)	5R302	1/carton	
Diskettes	3.5-inch, 1.44 MB, double-sided, high density diskettes. Packaged 10 diskettes per box.	8R7683	10/box	
Dry ink	Dry ink is packaged six bottles per carton. (Consumption rate is approximately 45,000 pages per bottle.)	6R301	6/carton	270,000 prints/ carton
Fuser lubricant	Packaged two tubes per carton.	8R983	2/carton	240,000 prints/ carton
Cartridge tape	4mm blank cartridge tape, 5GB 4mm blank cartridge tape, 8GB	9R01190 109R00314		
Cleaning supplies	4mm cartridge head cleaning kit Foam-tipped swabs Lint-free towels	9R01189 99P87256 35P2163		
Stitcher wire	Packaged one reel per box.	8R1174	One reel	32,000 staples

Ordering supplies

To avoid unnecessary downtime, always have an adequate amount of the necessary supplies. To do this, you need to establish a procedure for checking and ordering supplies. A supplies checklist is provided at the end of this appendix to help you with this task. It lists the supplies needed for the printer and contains a column for you to enter the date when you want to place the order and a column to record the date of the actual order. The consumable supplies table, above, contains a list of Xerox supplies available for the printer.

Be sure to check your supplies regularly and order before you run out. Plan on approximately five working days for delivery after placing the order. You can make arrangements to receive them sooner in emergency situations.

Your Xerox sales representative can help you submit the initial order of supplies needed for installation. These items include paper, dry ink, fuser lubricant, and developer.

After your printer volume has been established, planning ahead and buying Xerox supplies in quantity can save you money. Your Xerox supply specialists can help you. There are two centers available to assist you:

- To order Xerox paper, transparencies, labels, dry ink, developer, fuser lubricant, stitcher wire, cartridge tapes, and diskettes, call the Xerox Supply Center at 1-800-822-2200, weekdays between 7:30 a.m. and 6:00 p.m., Pacific time.

  If you prefer, you may mail orders to the following address:

  Xerox Corporation
  P. O. Box 25075
  Santa Ana, CA 92799-5075

- To order cleaning supplies, call the Xerox Customer Parts and Product Support Center at 1-800-828-5881, weekdays between 5:30 a.m. and 5:00 p.m., Pacific time, (U.S. only).

  You may also mail cleaning supply orders to the following address:

  Xerox Corporation
  Parts Marketing Center
  Building 214-07S
  P. O. Box 1020
  Webster, NY 14580

  Please provide the following information when placing orders:

- Your customer number (provided by your Xerox sales representative)

- Your printer model: 4050 or 4090

- Your supply order, including the following information:

  – Item name

  – Part number

  – Quantity desired

– If your company requires a purchase order for payment of an invoice, you need to provide the purchase order number to Xerox at the time you place the order.

The following table is a checklist you can use to keep track of the supplies you order.

Table A-2. Supplies checklist for DocuPrint 4050/4090 NPS/IPS printer

Supplies checklist Use this checklist to help record the supplies and accessories you need, the date you plan to place the order, and the actual date of the order.				
Item	**Description and part number**	**Quantity**	**Date to order**	**Date ordered**
Paper				
Transparencies, labels, and special stocks				
Dry ink				
Fuser lubricant				
Diskettes				

Table A-2. Supplies checklist for DocuPrint 4050/4090 NPS/IPS printer (Continued)

Supplies checklist Use this checklist to help record the supplies and accessories you need, the date you plan to place the order, and the actual date of the order.				
Item	**Description and part number**	**Quantity**	**Date to order**	**Date ordered**
Stitcher wire				
Cartridge tapes				
Cleaning supplies				

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