
Xerox 4850/4890 HighLight Color LPS System Programming and Administration Guide

Table of contents

Introduction	ix
Conventions	ix
1. Installing software	1-1
Sysgen files	1-1
Types of sysgens	1-1
Sysgen requirements	1-2
Resources needed	1-2
Information needed	1-2
Using system prompts	1-3
Using sysgen commands	1-3
Formatting system disks	1-5
Erasing files on a system disk	1-6
Running a full sysgen	1-7
Requirements	1-7
Loading the system software	1-7
Selecting printer speed	1-8
Changing configuration options	1-8
Downloading system files	1-12
Booting the system	1-13
Setting date and time	1-13
Applying sysgen patches	1-13
Verifying date and time	1-14
Applying OSS patches	1-14
Compiling Interpress font mapping	1-14
Enabling a finishing device	1-14
Running an offline/online update sysgen	1-15
Running a mini sysgen	1-17
Creating a floppy for booting the system	1-18
Configuring a finishing device	1-18
Creating an FCG.LIB text file	1-18
Loading the FCG.LIB text file	1-21

2. Backing up and restoring files	2-1
Backing up and restoring system files to tape	2-1
Saving your system files	2-1
Restoring your system files	2-1
Transferring individual files from a DSR tape	2-5
Restoring a single file to disk	2-5
Restoring a single file from a multi-volume DSR tape	2-6
3. Downloading host files	3-1
Using the HOSTCOPY utility	3-1
Transmitting card-image files	3-1
Transmitting LPS-labeled files	3-2
Using the DJDE FILE command	3-3
Transmitting card-image files	3-3
Transmitting LPS-labeled files	3-4
4. Managing system disk space	4-1
File space allocation	4-1
File space requirements	4-3
Reallocating disk space	4-4
5. Securing files and commands	5-1
Assigning logon class to user accounts	5-1
Logging on with a password	5-1
Changing logon levels	5-2
Assigning and changing passwords	5-2
Passwords and Data Capture Utility (DCU)	5-2
Restricting access to files	5-3
Purging system or print files	5-3
Restricting access to commands	5-3
Tracking console activity with DCU	5-3
Limitation During SYSGEN	5-4
Comment Capability	5-4
6. Generating reports	6-1
Accounting data in the print queue database	6-1
Creating a print queue database during sysgen	6-1
Backup print queue database information	6-2
Accounting page caveats	6-2
Entering the system serial number	6-3
Accounting page fields	6-3
General print job information	6-3

Graphic processing data	6-4
PDL processing data	6-5
Basic job processing data	6-5
Maintaining accounting files	6-9
Generating the customer billing report	6-9
Generating the system activity report	6-9
Generating the user accounting report	6-10
Creating the status file user form file	6-10
Command conventions	6-10
Command statements	6-10
Generating custom reports from the print queue database	6-12
Structure of the print queue database file (QUE.SYS)	6-12
The Status File Converter (SFC)	6-21
Using the SFC commands	6-21
Structure of the status file	6-21
Printing, saving, and copying the status file	6-25
Structure of the host/tape output	6-26
Tracking LPS maintenance calls	6-28
7. Editing text files	7-1
Using the editor	7-1
Illegal file names	7-1
Editing session characteristics	7-1
File directories	7-2
Examples of editor sessions	7-3
Create and save a JSL file	7-3
Modify and resave a JSL file	7-3
Copy a file, list all files, and delete the old file	7-4
Print a text file	7-4
8. Creating, editing, and running command files	8-1
Creating command files	8-1
Command file characteristics	8-1
Building a command file	8-3
Editing command files	8-4
Running sample command files	8-4
Using an editor command file to delete files	8-5
Using an editor command file to verify processor	8-5

9. Editing font files	9-1
Font editor utility	9-1
Session messages	9-1
Character selection mode	9-2
Source font file	9-3
Primary source font files	9-3
Secondary source font files	9-3
Sample font session	9-3
10. Using highlight color	10-1
Ink catalogs and palettes	10-1
DFAULT ink catalog	10-1
XEROX1 ink catalog	10-2
XEROX ink catalog (Interpress)	10-2
SDFLT\$ ink catalog	10-2
Referencing inks	10-3
Color mapping	10-4
Palettes for application software packages	10-4
Ink substitution	10-5
Printing palettes	10-5
Compatibility with other Xerox laser printing systems	10-6
Adding or modifying color	10-6
Adding color to monochrome files	10-6
Modifying color applications	10-6
11. Converting files to color format	11-1
Using FCU	11-1
Using ink lists	11-2
Overriding ink lists	11-2
Steps for converting files to color format	11-3
Printing with FCU	11-4
12. Using Interpress	12-1
How Interpress works	12-1
Types of Interpress supported	12-1
RIP and job performance	12-2
Using Interpress options	12-3
Ensuring Interpress job integrity with assured printing	12-3
Ignoring or overriding printing instructions	12-4
Scaling images	12-5
Referencing .FRM files	12-5

	Substituting font characters	12-5
	Floating accent marks	12-5
	Specifying paper size	12-6
	Interpress Font Utility (IFU)	12-7
Color in Interpress		12-7
	Effect on queue management	12-8
	Color mismatch parameters	12-8
13. Using the Queue Manager		13-1
Overview		13-1
Scheduling modes		13-1
Initializing the print queue database		13-2
Setting up the scheduling mode		13-2
Displaying the queue status		13-3
Setting the queue display format		13-3
Managing entries in the queue		13-4
	Stopping and restarting the Queue Manager	13-4
	Managing Interpress reports	13-5
Running utilities		13-5
Recovering from a system rollover		13-6
Maintaining the queue database file		13-6
	Saving the queue database file	13-7
	Converting the queue database file to STAFIL.SYS format	13-7
	Converting to STAFIL.SYS format and using SFS	13-7
	Printing the queue database file	13-7
	Clearing the queue database	13-8
14. Setting up clusters		14-1
Displaying cluster status		14-1
	Setting up cluster information	14-2
	Defining cluster status	14-2
Using clusters		14-3
Storing clusters		14-3
How applications use clusters		14-4
	Simple and OTEXT applications	14-4
	Stockset applications	14-4
	Mixed applications	14-5
Guidelines for creating clusters		14-5
Steps for creating clusters		14-6
	Keeping stockset changes to a minimum	14-7
	Using clusters with ordered or tab stock	14-8

Using cluster commands	14-8
Cluster command examples	14-9
Clusters in the database	14-9
15. Editing the HIP.LIB file	15-1
Accessing the HIP.LIB file	15-1
Changing HIP.LIB file option parameters	15-1
ACCEPT	15-1
ACFILES	15-2
ACTREPORTS	15-2
BLOCKSIZE	15-3
BUFFERSIZE	15-3
DUPLICATEFILE	15-4
ECHOSEVER	15-4
ENETMAXCONS	15-4
HOST	15-4
LOGENTRIES	15-5
MAXXNSPKTSIZE	15-5
NAME	15-5
PACKETCOUNT	15-5
QUEUESIZE	15-5
REPORTSTATUS	15-6
STARTCOMMANDS	15-6
XOPERATIONS	15-7
16. Communicating with an online host	16-1
3211 and 4245 processing mode functions	16-1
Similarities between LPS and 3211/4245	16-1
Differences between LPS and 3211/4245	16-2
Xerox LPS processing of 3211/4245 diagnostic commands	16-2
4245 processing mode features	16-3
4245 and 3211 differences	16-3
17. HSPP or SDI administration	17-1
Glossary	GLOSSARY-1
Index	INDEX-1

Xerox Corporation
701 S. Aviation Boulevard
El Segundo, CA 90245

© 1994 by Xerox Corporation. All rights reserved.

Copyright protection claimed includes all forms and matters of copyrightable material and information now allowed by statutory or judicial law or hereinafter granted, including without limitation, material generated from the software programs which are displayed on the screen, such as icons, screen displays, looks, etc.

Printed in the United States of America

Publication number: 720P93610

Xerox® and all Xerox products mentioned in this publication are trademarks of Xerox Corporation. Products and trademarks of other companies are also acknowledged.

Changes are periodically made to this document. Changes, technical inaccuracies, and typographic errors will be corrected in subsequent editions.

This document was created on the Xerox 6085 Professional Computer System using VP software. The typeface is Optima.

The *Xerox 4850/4890 HighLight Color LPS System Programming and Administration Guide* provides the information for operation and maintenance of the 4850 and 4890 highlight color laser printing systems (LPS).

This guide is intended for system programmers and administrators. Administrative tasks include installing software, setting system defaults, and setting up security, accounting, and disk management procedures. Programming tasks include editing text, command, and font files, and setting up and running print jobs, including those using forms, graphics, and highlight color.

Conventions

This guide uses the following conventions:

<>	Angle brackets are used for keys on the system controller keyboard.
{ }	Curly brackets are used for required characters.
...	Ellipses indicate that you can repeat a parameter or list a series of parameters.
[]	Square brackets are used for optional command characters.
	Vertical bars are used to separate parameters in a series. The vertical bar stands for "or."
bold	Bold is used for characters you enter at the command line.
<i>italics</i>	Italics is used for variable information.
TERMINAL FONT	Terminal font is used to display system responses.
<u>underline</u>	System default parameters are underlined.
UPPERCASE	Uppercase letters are used for command names.

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.

1.

Installing software

You install, upgrade, or modify operating system software (OSS) on a Xerox laser printing system (LPS) by performing a system generation (sysgen).

Sysgen files

Xerox distributes new versions of the OSS on magnetic tapes, cartridge tapes, or floppy disks. Each contains the following items:

- The new system files.
- A sysgen processor program for loading the new system files onto the LPS system.
- The patch files you use to modify the new system files for optimal performance.
- A concatenated version of the system files and sysgen processor you use for doing an online sysgen. The files and processor are downloaded to the printing system from a host computer (tapes only).

Types of sysgens

	There are three kinds of sysgens: full, update, and mini.
Full sysgen	Formats the system disks and loads the operating system software on the system disks. Performed when: <ul style="list-style-type: none">• A new system is installed• A system disk is replaced• Read errors or other disk problems have occurred• Required for a specific system or patch• You are updating any software release prior to V3.5.
Update sysgen	Adds new features to the existing operating system or replaces the existing version of the operating system with a new version. You do not have to format system disks.
Mini sysgen	Changes the configuration option of the current system enabled in a full or update sysgen. You do not have to format system disks.

Sysgen requirements

Make sure you have the following resources and information before you perform a sysgen.

Resources needed

You need the following resources to perform a sysgen:

- An installed LPS
- At least 20% of the system disk space available at all times and 40% if your print jobs use many temporary image files (refer to the "Managing system disk space" chapter in this manual)
- The operating system software that comes with your system on one of the following media:
 - Magnetic tapes
 - Cartridge tape
 - Floppy disks
- The font tapes
 - System core fonts (refer to the *Xerox 4890 HighLight Color LPS Product Reference* for a list of fonts)
 - Special, logo, and signature fonts
- The documentation
 - *OSS Program Description*
 - *LPS Reference Set*.

Refer to the documentation roadmap in your reference set for a list of available documentation.

Information needed

You need the following information to perform a sysgen:

- The number of forms, fonts, and (optionally) graphic settings per page in your installation
- A list of all the user files resident on the system disks (user files FSL, JSL, FRM, FR6, JDL, FNT, FN6, and PDE saved from a disk with another OSS version must be restored from the SST to operate correctly)
- A hardcopy of your current system configuration
- The print file size
- The system disk IDs
- Know whether you want job accounting for billing purposes
- Know whether your installation uses Mergenthaler fonts
- Know whether you have any site specific patches applied in the post-sysgen procedure
- If you have XNS or XPAF connection, know whether you need to recompile your font maps for Interpress.

Using system prompts

There are three levels of system prompting:

\$	Sysgen prompt. Displays after the system powers up, if it is not set to AutoBoot, or if you press the Boot button. To load the sysgen processor, enter BD (boot from disk), BT (boot from open-reel tape), BC (boot from 1/4 inch cartridge tape), BX (boot from 1/2 inch cartridge tape), or BF (boot from floppy). To boot the operating system, enter B (boot system).
Enter Cmd ('C' for Menu)>	Enter command prompt. Displays after you load the sysgen processor into system memory. You then enter one of the commands from the displayed Command Menu (see figure 1-1).
OS10000 Ready for Commands	Main operating system prompt. Displays after you load the main operating system into memory and want to enter commands.

Using sysgen commands

To use sysgen commands, boot the sysgen processor or enter **COMMANDS** following the sysgen prompt. The system displays the Sysgen Command menu:

Figure 1-1. Sysgen Command menu

```

****Sysgen processor, Version XX.X****
COMMAND
COMMANDS .... Display commands
BOOT ..... Boot the Operating System
SYSGEN ..... Build or Update system files on disk from tape or host
FORMAT ..... Format and Initialize disk pack
HOSTCOPY ... Copy user files from host to disk (if LPS has online capability)
AUTO ..... Auto Sysgen
MINI ..... Configuration change only
FLOPPY ..... Sysgen from floppy
ERASE ..... Erase all files
APA2 ..... APA2 Power Up Options (if LPS has APA2 board)
Enter Cmd ('C' for Menu)>

```

Type in a command at the enter command (>) prompt and press <ENTER>. You can enter the full command or abbreviate it to as few letters as necessary to differentiate it from other commands in the menu. To use FLOPPY, for example, enter any of the following abbreviations and press <ENTER>:

- FL
- FLO
- FLOP
- FLOPP

You can also enter several commands as a string. The system executes them serially. For example, if you type FORMAT, SYSGEN, BOOT, and then press <ENTER>, the system invokes each command respectively (see table 1-1).

CAUTION: Do not use <BACKSPACE> if you are using a LINK terminal keyboard. Using <BACKSPACE> causes garbage characters to display on the console, requiring you to reset the terminal.

Table 1-1. Sysgen command descriptions

Command	Description
<u>C</u> OMMANDS	Displays the Sysgen Command menu. You can enter a command without displaying the Sysgen Command menu.
<u>B</u> OOT	Boots the operating system. Enter this command after completing a sysgen.
<u>S</u> YSGEN	Builds a new operating system on the system disk from a system software tape or from system software tape files downloaded from a host computer. Requires more interaction than AUTO.
<u>F</u> ORMAT	Formats any or all of the system disk and performs a sector check. Destroys all files on the system disks, including user files. Do not use this command unless your OSS program specifically calls for FORMAT, or unless read errors or other disk problems occur (refer to ERASE). You may not invoke FORMAT following a boot from disk (BD).
<u>H</u> OSTCOPY	Downloads font files, patch files, and user-generated EBCDIC data files from a host computer to the system disks. Allows an online printing system with no magnetic tape drive to retrieve tape files from the host. For more information, see the "Downloading host files" chapter in this guide.
<u>A</u> UTO	Builds a new operating system on the system disks from a system software tape (SST) and updates all system files. Requires less interaction than SYSGEN. Automatically invokes a standard sequence of sysgen commands. Differs from SYSGEN in the following ways: <ul style="list-style-type: none"> • Builds from a tape or floppy disk only • Does not ask for a configuration update • Saves the accounting file automatically.
<u>M</u> INI	Modifies configuration file according to options you select from on the Configuration Options menu (see table 1-2). Make sure you only change options that are from a previous sysgen. For example, you can deactivate or reactivate an option or change an interface address using MINI. CAUTION: Do not execute MINI immediately following completion of a SYSGEN command. This prevents the application of patches.
<u>F</u> LOPPY	Builds a new operating system on the system disks from the system software floppy disks and updates all system files.
<u>E</u> RASE	Clears any or all of the system disks. Destroys all files on the disks, including user files. ERASE executes more quickly than FORMAT because it only initializes the filing structure; it does not perform a format or sector check. Erase cannot be evoked following a boot from the disk (BD).
<u>A</u> PA2	Allows changes for power-up defaults. Enables or disables the auto boot APA2 feature, selects the level of APA2 board diagnostics at power-on, and enables or disables display of messages at power-on.

Formatting system disks

You format system disks with the **FORMAT** command to delete all files, perform a sector check, and flag any new bad block areas. Format disks when:

- You generate a new system from a system software tape (SST) or from a system software floppy (SSF)
- You install an additional disk in the system
- You replace a system disk.

CAUTION: Contact your site representative before formatting system disks.

Follow these steps to format a system disk:

1. Copy any of the file you want to save onto another media.
2. Press the Boot button. The **READY** message displays followed by the sysgen prompt (**\$**).
3. Enter **BT** (boot from open-reel tape), **BC** (boot from 1/4 inch cartridge tape), **BX** (boot from from 1/2 inch cartridge tape), or **BF** (boot from floppy disk) and press <ENTER>.

The system loads the sysgen processor into the main memory. The Sysgen Command menu displays followed by the enter command prompt (>).

CAUTION: When you are installing a new system or a new version of software, it is essential to boot the sysgen processor from the system software tape or floppy disks so that you use the format program contained in the new version of software. Do not boot from disk.

4. Enter **FORMAT** and press <ENTER>. The following message displays:

```

FORMATTING/ERASING THE DISKS WILL DESTROY THE DATA.
DO YOU WANT TO FORMAT/ERASE THE DISKS? [Y/N]

```

5. Enter **Y** and press <ENTER>.

An **ARE YOU SURE [Y/N]** message displays.
6. Enter **Y** and press <ENTER>.
7. Enter **1** to format all system disks or **2** to format selected disks and press <ENTER>.
8. Enter the disk unit numbers, separating each number by a comma and press <ENTER>. The system displays the numbers of disk drive units you selected and asks you to confirm your selection. Enter **Y** if correct or **N** to correct your selection
9. The system displays information for each disk unit you selected. Enter **Y** to confirm you have seen the information.
10. The system prompts you to format or abort. Enter **1** to format or **2** to abort.
11. Run a full sysgen as described in the "Running a full sysgen" section of this chapter.

Erasing files on a system disk

You can erase all files on the system disks:

- When you generate a new system from a system software tape, cartridge, or floppy disk
- When you install a new version of software from a system software tape (SST) or from a system floppy disk (SSF).

The ERASE command erases all four disks in less than one minute. It does not perform a format or sector check.

Follow these steps to erase a disk:

1. Copy any files you need to save to tape or floppy disk, or use the Disk Save and Restore (DSR) command to back up the entire system to tape or cartridge.

The system displays the `READY` message followed by the character (\$) prompt.

2. Press the Boot button.
3. Enter **BT** (boot from open-reel tape), **BC** (boot from 1/4 inch cartridge tape), **BX** (boot from 1/2 inch cartridge tape), or **BF** (boot from floppy).

The information on the tape or floppy loads the sysgen processor into main memory. The system displays the Sysgen Command menu followed by the enter command (>) prompt.

4. Enter **ERASE**.

The system displays the following message:

```
FORMATTING/ERASING THE DISKS WILL DESTROY THE DATA.  
DO YOU WANT TO FORMAT/ERASE THE DISKS? (Y/N)
```

5. Enter **Y** to erase the disks.

An `ARE YOU STILL SURE? [Y/N]` message displays.

6. Enter **Y** if you are sure it safe to erase the disks.

The system starts the erasing process.

7. Enter **1** to erase all system disks or **2** to erase selected disks.
8. Enter the disk unit numbers, separating each number by a comma. The system displays the numbers of disk drive units you selected.
9. Enter **Y** to confirm your selection. Enter **N** to correct your selection. The system displays information for each disk unit you selected. Enter **1** to erase or **2** to abort.

When erasing is complete, the table remains on the screen, displaying the `**FORMAT PROGRAM OFF**` message followed by the "enter" prompt (>).

Run a full sysgen as described in the "Running a full sysgen" section of this chapter.

Running a full sysgen

A full sysgen includes formatting the system disks and loading the operating system software on the system disks. You run a full sysgen if:

- A new system is installed
- A system disk is replaced
- Read errors or other disk problems have occurred
- It is required for a specific system or patch.

Requirements

Before you begin the sysgen, make sure you comply with the following:

- Do not overwrite the current version of the system files with system files from previous software versions.
- Do not copy the current version of system files to a system with an older version of software.
- If the system disk you are formatting contains user files, make sure you back up those files before formatting. Otherwise, the system deletes the files from the system disk.
- Make sure that at least 20% of the system disk space is available at all times and 40% if your print jobs use many temporary image files.

Loading the system software

You can perform a full sysgen from magnetic tape, cartridge tape, or floppy disk.

1. Copy the user files you want to save to a tape, cartridge, or floppy disk.
2. Insert the system software tape, cartridge, or disk 1 of the system software floppy disks (SSF) into the appropriate drive.
3. Press the Boot button. The system displays the `READY` message followed by the character (\$) prompt.
4. Enter **BT** (boot from open-reel tape), **BC** (boot from 1/4 inch cartridge tape), **BX** (boot from 1/2 inch cartridge tape), or **BF** (Boot from floppy).

The information on the tape or floppy loads the sysgen processor into main memory. The system displays the Sysgen Command menu followed by the enter command prompt (>).

5. Enter **ERASE** or **FORMAT**.

Refer to the "Formatting system disks" or the "Erasing files on a system disk" sections for the specific steps. Then continue with step 6 in this procedure.

6. Enter **FLOPPY** if you have booted from a floppy in step 4 and are continuing the sysgen on floppy disk. Enter **SYSGEN** if you have booted from tape or cartridge and are continuing the sysgen on tape or cartridge, or if you have booted from a floppy but are continuing the sysgen on tape or cartridge.

For a floppy sysgen, the following message displays: REMOVE FLOPPY VOLUME X. **INSERT FLOPPY VOLUME X.

Remove and insert the floppy disks as prompted. You can also continue the sysgen on tape, even if you booted from floppy.

The ENTER SYSTEM ID OF UP TO 30 CHARACTERS message displays.

7. Enter the new system ID.

Assign the ID name, using up to 30 alphanumeric characters, including the arrow keys and the <LINE DELETE> key. Do not use the <BACKSPACE> key.

The DO YOU WANT TO ENTER A NEW SYSTEM ID? Enter 'Y' OR 'N' message displays

8. Enter **N**, unless you entered the wrong ID name in step 7.

The system initializes each system disk drive, listing each file as it is written.

Selecting printer speed

The SELECT PRINTER SPEED WITH PAPER PATH OPTION message displays.

Enter the number corresponding to your printer's speed.

Changing configuration options

The system displays the base system configuration and the message DO YOU WISH TO MAKE ANY CHANGES? Enter 'Y' OR 'N'

1. Enter **N** if you do not want to make changes and proceed to the "Downloading system files" section if you have an online/offline switchable system. If you do not have a switchable system, proceed to the "Booting the system" section.

If you want to make changes, enter **Y**.

The Configuration Options menu displays (see table 1-2).

2. Enter the corresponding number of the option you want to change. To change more than one option or suboption, enter several numbers consecutively, separating each by a comma. Some options you select are enabled or disabled while others have suboptions.
3. Enter the suboption number of the requested parameter.

When you complete your selections, the options you select are put in the base configuration file. The DO YOU WANT TO MAKE ANY CHANGES? Enter 'Y' OR 'N' message displays.

4. Enter **N** if you have finished making changes.

The DO YOU WANT TO DISCARD THE CHANGES YOU'VE JUST MADE? 'Y' OR 'N' message displays.

5. Enter **Y** or **N**. The following message displays:

Creating file DISPCF.SYS on drive O.

Table 1–2. Configuration options

Option	Description
0) NONE	Returns to the base configuration display.
1) TAPE DRIVE	Adds the tape drive feature to the system you are generating.
2) ONLINE INTERFACE ADDRESS OR MODE	<p>Displays the following question:</p> <p>DOES THE SYSTEM HAVE AN ONLINE INTERFACE, ADDRESS, OR MODE? ENTER 'Y' OR 'N'.</p> <p>Enter N to remove the online feature. Enter Y to have the system determine hardware configurations automatically.</p>
3) PRINTER SPEED	<p>Displays the following printer speed and paper path suboptions:</p> <p>1) 120 PPM - SIMPLEX 2) 120 PPM - DUPLEX 3) 92 PPM 4) 70 PPM - SIMPLEX 5) 70 PPM - DUPLEX 6) 50 PPM 7) 50 PPM - H/L COLOR 8) 92 PPM - H/L COLOR</p> <p>Select the appropriate printer speed and paper path for your system. Refer to your product guide for specific information on your printer speed and path options.</p>
4) REMOTE INTERACTIVE COMMUNICATIONS	Does not apply.
5) GRAPHICS	Adds the graphics handling option (GHO) or graphics video generator (GVG) feature. Refer to your product guide to determine which graphics feature applies to your system.
6) KANJI	Does not apply.
7) ETHERNET	<p>Displays the following question:</p> <p>IS THIS SYSTEM CONNECTED TO A XEROX ETHERNET? ENTER 'Y' OR 'N'.</p> <p>Enter N to remove the Ethernet feature or Y to choose one of the following suboptions:</p> <p>ETHERNET CHANGE LIST: 1) NONE 2) READ PRINTER'S ADDRESS 3) ETHERNET NETWORK ADDRESS</p> <p>Select 1 if there are no Ethernet changes. Select 2 to provide the printer's internal address as a sysgen parameter. Enter this address in hexadecimal or decimal form. In decimal form, enter an asterisk followed by the address. A value not preceded by an asterisk is hexadecimal. Select 3 to provide the Ethernet network address. Enter this address in hexadecimal or decimal form. In decimal form, enter an asterisk followed by the address (for example, *355). A value not preceded by an asterisk is hexadecimal.</p>

Table 1-2. Configuration options (continued)

Option	Description
8) LANGUAGE	<p>Specifies language of display dialogue:</p> <ul style="list-style-type: none"> 0) NONE 1) U.S. ENGLISH 2) U.K. ENGLISH 3) GERMAN 4) FRENCH 5) DUTCH 6) SWEDISH 7) NORWEGIAN 8) FINNISH 9) DANISH 10) SPANISH 11) ITALIAN 12) PORTUGUESE <p>Select 0 to make no change and leave the default as U.S. English. U.S. English displays paper size in inches. U.K. English displays paper sizes in millimeters.</p> <p>Only French, German, and Spanish suboptions are currently translated. The system displays U.S. English messages if you perform a sysgen in any other language.</p>
9) PAPER SIZE	<p>Selects the correct paper size for your system:</p> <p>ENTER PAPER SIZE OPTION:</p> <ul style="list-style-type: none"> 1) 8.5 × 11 (US LETTER) 2) 8.27 × 11.69 (A4) 3) 8.5 × 14 (US LEGAL) 4) 8.0 × 10.2 5) 8.0 × 10.5 6) 8.0 × 13.0 7) 8.27 × 10.63 8) 8.27 × 13.0 9) 8.37 × 10.78 10) 8.46 × 10.83 11) 8.46 × 12.40 12) 8.46 × 14.02 13) 8.50 × 10.75 14) 8.50 × 13.0 15) 20.32 × 25.91 16) 20.32 × 26.67 17) 20.32 × 33.02 18) 21.01 × 27.0 19) 21.01 × 33.02 20) 21.26 × 27.38 21) 21.49 × 27.51 22) 21.49 × 31.5 23) 21.49 × 35.61 24) 21.59 × 27.3 25) 21.59 × 33.02 <p>Forms you use for diagnostics are available in two paper sizes: 8.5 x 11 and 8.27 x 11.69 inches (A4) inches. Select option 1 or 2 to download the appropriate forms to the system.</p> <p>Consult your site representative if your plan to print on paper sizes other than 8.5 x 11, 8.5 x 13, 8.27 x 11.69, 8.5 x 14, or 8.5 x 14.</p>
10) 871 CM (4850 ONLY)	<p>Adds the 871 CM to the system. Use this only if the OEMI board is installed. The 871 CM and Xerox Print Access Facility (XPAF) are mutually exclusive. (4850 ONLY)</p>
11) 9500 XEROGRAPHIC	<p>Does not apply.</p>

Table 1–2. Configuration options (continued)

Option	Description
12) MICR	Does not apply.
13) TERMINAL TYPE	Selects appropriate terminal type for your system: 0) NO CHANGES 1) ADM-3 2) ADM-11/LINK MC2 3) UI-90 4) VG920
14) XEROX PRINT ACCESS FACILITY (XPAF)	Adds the XPAF option to the system. If you want to configure both the Ethernet and the XPAF options, you must perform a sysgen with the Ethernet option configured first. After the sysgen is complete, perform a mini sysgen to select the XPAF option. XPAF and the 871 CM are mutually exclusive.
15) DEFAULT PRINTER RESOLUTION	Selects printer resolution for input data: 1) 300 SPI (<i>default</i>) 2) 600 SPI (<i>for 4650 printers only</i>)
16) FINISHER	Selects stacker or stitcher/stacker: 1) 2-TRAY STACKER 2) 1-TRAY STITCHER/STACKER
17) DEFAULT PRINTING ORDER	Selects order of printing output: 1) 1 - N (<i>first-to-last page, face down</i>) 2) N - 1 (<i>last-to-first page, face up</i>)
18) HIGH CAPACITY FEEDER	Adds the high-capacity feeder to the system.
19) RASTER IMAGE PROCESSOR	Select Y to enter appropriate number of RIP devices or N to remove all RIP devices from system.
20) SHARED DISK	Enables the Shared Disk Option.
21) SCSI INTERFACE	Unused.
22) PROGRAMMABLE BYPASS TRANSPORT	Aids in transportation of paper to a unique finishing device.
23) XEROGRAPHIC MODE PERSISTENCE	Select 0) No Change (for no change) 1) Always (to always use Xerographic Mode Persistence) 2) Pages (to enter the number of pages from 51 (default) to 32767.)
24) INK PRIORITY	Select Black, Color, or Last Object.
25) XEROX UNITY OF VIEW	Reserved.

Downloading system files

If your system is an offline only system, you do not have to make any further input to start downloading system files (see "Reading offline system files" in the next section). If your printing system has a tape drive of offline input and a channel-attached host for online input, the following message displays:

```
SHOULD SYSTEM READ FILES FROM HOST OR TAPE 'H' OR 'T'
```

Reading offline system files

Enter **T** (Tape) for an offline sysgen, reading system files from tape, cartridge, or floppy disk.

The message `*READING FILES FROM TAPE*` displays. A list of system files displays as they are written to the system disk from your tape, cartridge, or floppy disks. It takes 15 minutes to read the files from tape and 40 minutes to read the files from floppy disk.

Once all the files are on the system disk, the default values for the number of fonts, forms, and (optionally) graphics allowed per page by the new operating system display. You can modify the default value after the sysgen and patching procedures complete.

Reading online system files

1. Enter **H** for an online sysgen reading system files from the host.

The message `*WAITING TO READ FILES FROM HOST*` displays.

You can now submit a job from the host to transmit the last two system software tape files to the printing system. These files contain the new system processor used to build the new operating system.

Use a host utility program to advance the system software tape to the last two files. The files, consisting of 128-byte and 8192-byte fixed format blocks, must be deblocked to 128-block records (without adding page numbering or reformatting the data) before they are transmitted to the LPS.

As soon as the host receives a valid file header, the message, `*TAPE NOW BEING PROCESSED*` displays. The host operator's console lists each system file as it is read in from the host and written to a system disk.

2. Request the host operator to vary the system offline and enter **C**. You do not have to press <ENTER>.

When the sysgen completes processing, the messages `*TAPE REWINDING*`, `*SYSGEN PROCESS SUCCESSFUL*`, and `SYSGEN PROGRAM OFF*` display, followed by the enter command prompt (>).

Once all the files are on the system disk, the default values for the number of fonts, forms, and (optionally) graphics allowed per page by the new operating system display. You can modify the default value after the sysgen and patching procedures complete.

Booting the system

If your printer is not configured for automatic booting, you must boot the system to load the operating system into main memory.

Press the Boot button. Enter **B** at the sysgen (\$) prompt.

The `LOADING PROGRAM` message displays.

Setting date and time

Set the date and time as follows:

1. Enter the date, using the format, MM/DD/YY. You can separate each date field by a slash, space, or dash.
2. Enter the time, using the 24-hour format, HH:MM:SS.

You can separate each field by a colon or a space. The entry of the seconds field is optional.

The system displays the date and time you entered. The system also displays the following message: `ARE THE DATE AND TIME CORRECT AS DISPLAYED (Y / N)?`

3. Enter **Y** if the date and time are correct.

When you enable this feature through a sysgen, you can enable or disable it using operator commands. If you do not enable this feature now, you can enable it through an update sysgen.

Applying sysgen patches

The automatic sysgen patch process now takes place and a list of optional patch IDs displays.

Enter the ID of any patches you want to apply as shown in the display list. If your system requires it, enter **MER001** to correctly apply the Mergenthaler fonts.

If you do not require any patches, press <ENTER>.

When you have entered your patch IDs, the system responds with the messages `**RESUMING SYSGEN PATCHES**`, `AND **CONTINUING SYSGEN PATCHES**`. The patch process takes about two minutes to complete.

When the messages `**SYSGEN PATCHES COMPLETED**`, and `**DELETED SYSGEN PATCHES**` display, followed by the message `CRASH/REBOOT WILL OCCUR IN 15 SECONDS`, the patch process has run successfully. The patched version of the new system is in main memory from the system disks.

If an error occurs, it is most likely due to an incorrectly entered patch ID. Before trying the sysgen again, make sure you entered the IDs correctly and that they match your configuration.

CAUTION: Do not abort the patching and crash/reboot process.

System checks are performed. If any patch is not available, a message displays. Otherwise, the `LOADING PROGRAM` message displays.

Verifying date and time

The system prompts you with the message, `DATE, TIME POSSIBLY INCORRECT` and then provides the time.

1. Enter **Y** if the date is correct. If the date is incorrect, enter **N** and refer to the "Setting date and time" section.

The system displays the following message: `ARE THE DATE AND TIME CORRECT AS DISPLAYED (Y / N)?`

2. Enter **Y**.

The `INITIALIZING MEMORY FOR THE IMAGING SUBSYSTEMS` message displays. Then the system displays the correct date and time.

Applying OSS patches

After you verify the date and time, a command file applies the OSS patches. Once the patches are applied and you specify that no patch errors have occurred, the system rolls over. The system then displays a crash code and the date and time. A `sysgen` command file completes the `sysgen` process, automatically allocating print files.

Compiling Interpress font mappings

You can then recompile the Interpress font mappings. The system displays the `DO YOU WANT TO RECOMPILE IPFNTS (Y/N)?` message.

Enter **Y** or **N**. If you enter **Y** to recompile Interpress fonts, the process takes about 30 minutes. If you enter **N** and do not recompile Interpress fonts, the system compiles the default font, 10-point Classic.

Note: The font mapping structure is different for each software version. Do not copy the `IPFNTS.SYS` file or mapping files between systems running different software versions.

Enabling a finishing device

The system prompts you with the message `DO YOU HAVE A FINISHING DEVICE?`

Enter **Y** or **N**.

The message, `OS100 READY FOR COMMANDS` displays, indicating that you can begin normal printing system operations.

Running an offline/online update sysgen

Before you perform an update sysgen, use FCHECK to make sure you have enough disk space. Each disk must have a minimum of 3,000 free contiguous sectors available. If the number of available sectors is below 3,000 do the following:

- Save as many files as necessary to tape to obtain the minimum number of free sectors
- Delete the saved files from disk
- Compress the disk.

CAUTION: Do not use <INSERT> if you are using a LINK terminal keyboard. Using <INSERT> causes garbage characters to display on the console, requiring you to reset the

To perform an offline/online update sysgen, use one of three commands: SYSGEN, FLOPPY, OR AUTO. Follow the procedures as necessary for the command you are using.

- SYSGEN** Updates system files from a system software tape or cartridge. Provides the option of making configuration changes, deleting the accounting file, and recompiling the font files.
- FLOPPY** Same as **SYSGEN** command, but from system software floppy disks.
- AUTO** Updates system files from a system software tape or from system software floppy disks. Allows you to recompile the font files. There is no configuration update and the system saves the account file automatically.

CAUTION: If you invoke any of these commands after the FORMAT command, the system performs a full sysgen.

Follow these steps to run an update sysgen:

1. Copy the user files you want to save to a tape, cartridge, or floppy disk.
2. Insert the system software tape, cartridge, or disk 1 of the system software floppy disks (SSF) into the appropriate drive.
3. Press the Boot button. The system displays the `READY` message followed by the sysgen prompt (`$`).
4. Enter **BT** (boot from open-reel tape), **BC** (boot from 1/4 inch cartridge tape), **BX** (boot from 1/2 inch cartridge tape), or **BF** (boot from floppy).

The information on the tape or floppy loads the sysgen processor into main memory. The system displays the Sysgen Command menu followed by the enter command prompt (`>`).

5. Perform one of the following steps:
 - Enter **AUTO** or **SYSGEN**. You can use these commands even if you booted from floppy but want to continue the sysgen on tape or cartridge.

The system displays the `* SYSGEN PROGRAM RUNNING *` message, indicating the sysgen update has begun. Next the system displays the user-assigned name followed by the `DO YOU WANT TO ENTER A NEW SYSTEM ID? 'Y' OR 'NO'` message. Continue with step 7.

- Enter **FLOPPY** if you have booted from a floppy in step 4 and want to continue the sysgen on floppy disk.

You receive this message: `REMOVE FLOPPY VOLUME X. *INSERT FLOPPY VOLUME X.`

6. Remove and insert the floppy disks as prompted.

The system displays the `* SYSGEN PROGRAM RUNNING *` message, indicating the sysgen update has begun. Next the system displays the user-assigned name followed by the `DO YOU WANT TO ENTER A NEW SYSTEM ID? 'Y' OR 'NO'`

7. Enter **N** to retain the existing ID or enter **Y** to enter a new ID.

If you assign a new ID, you can use up to 30 alphanumeric characters, including spaces.

8. Enter **Y** to continue the sysgen.

The system initializes each system disk drive, listing each file as it is written. This process takes about 10 minutes for tape and about 20 minutes for floppy disk.

Once all the files are on the system disk, the default values for the number of fonts, forms, and (optionally) graphics allowed per page by the new operating system display. You can modify the default value after the sysgen and patching procedures complete.

To continue with the update sysgen, follow the steps in the sections that follow the "Running a full sysgen" section. The "Selecting printer speed" section does not apply to an update sysgen.

Running a mini sysgen

Before performing a mini sysgen, make sure the logical options you specify from the Configuration Options Menu match the hardware features of your system. Follow these steps to run a mini sysgen:

1. Press the Boot button.

The system displays the `READY` message followed by the sysgen prompt (`$`).

2. Enter **BD**.

The system displays the Command menu.

3. Enter **MINI** and press `<ENTER>`. The system displays the base configuration options and the message:

```
DO YOU WISH TO MAKE ANY CHANGES? Enter 'Y' OR 'N'
```

4. Enter **Y**.

The Configuration Options menu displays.

5. Enter the number of the option you want to change. To change more than one option or suboption, enter several numbers consecutively, separating each by a comma.

6. Enter the suboption number of the requested parameter.

When you complete your selections, the options you select are put in the base configuration file. The `DO YOU WANT TO MAKE ANY CHANGES? Enter 'Y' OR 'N'` message displays.

7. Enter **N** when you are through making changes.

The system modifies the configuration file and the message, `CREATING FILE DISPCF.SYS` displays.

When sysgen finishes processing, the `*SYSGEN PROGRAM OFF*` message displays, followed by the enter command (`'c'` for Menu)`>` prompt.

8. Enter **C** to display the menu.

9. Enter **BOOT** and press `<ENTER>`.

When you modify system paper size, you must recompile all forms and JDLs on systems that were designed for 8.5 by 14 inch or A4 paper. This is done to make sure diagnostics operate correctly.

Creating a floppy for booting the system

Use the FLF CREATE command to create a bootable floppy disk. This command formats, initializes, and copies the mini-loader and .SAF files to one floppy disk.

1. Enter **FLF** at the system prompt.
2. Enter the following at the FLF> prompt:

```
CREATE [DENSITY=HIGH|LOW]
[SECTORCHECK=YES|NO]
```
3. Insert a floppy and press <ENTER>.
4. If the floppy is formatted, a warning message displays. Press<ENTER> to continue or **A** to abort.
5. If the floppy is unformatted, a message indicates the disk is formatting at either high or low density, and the formatting is in progress.
6. Enter a floppy label of up to 30 characters and press <ENTER>.
7. If the formatting is unsuccessful, an error message displays. Enter **C** to continue or **A** to abort.
8. When the formatting is completed successfully, the system writes the system files to the floppy disk. It then displays the new filename and a message that the process is complete.

Configuring a finishing device

Before you can configure a third-party finishing device, you must create a FCG.LIB text file describing the device. A single profile of this file is loaded into the printer's nonvolatile memory (NVM) during configuration to indicate how the printer should communicate with the finishing device.

Creating an FCG.LIB text file

The FCG.LIB text file must have one profile label for each finishing device. Each entry consists of a label, an equal sign (=) and a set of values.

Output profile syntax	<i>label=OUT480,p1, p2, p3, p4, p5, p6, p7, p8, p9, p10, p11, p12;</i>
Values	<p><i>label</i> The user-specified name attached to the profile entry.</p> <p>OUT480 The name of a finishing device.</p>

- p1* TimeBetweenSheets (0 - 32767ms). Time required by the Third Party Device (TPD) from the Trailing Edge (TE) of one sheet to Leading Edge (LE) of the next sheet.
- p2* SheetJamTime (0 - 13000ms). Maximum time for the LPS to wait for SheetDelivered signal from the TPD after providing SheetExit command. A jam is declared if TPD exceeds this time.
- p3* TimeBetweenSets (0 - 32767ms). Time required by the TPD from the TE of the last sheet in set M to the LE of the first sheet in set n.
- p4* SetJamTime (0 - 20000ms). Maximum time for printer to wait for the SetDelivered signal from the TPD after providing the EndOfSet command. A jam is declared if TPD exceeds this time.
- p5* TimeToCycleUp (0 - 32767ms). Time needed by the TPD to become ready after receipt of the CycleUp command.
- p6* Attributes. d0, d1 Printer Option 1 (spare). d2, d3 Finish Option 1 (control of C6 - Sheetfin1). 0 = Controller control, 1 = Always active, 2 = never active, 3 = spare.
- p7* StatusesSupported (0 - 31), 1 = TPD will provide.
d0 - S0: Not Ready
d1 - S1: Faulted
d2 - S2: Full
d3 - S3: Sheet Delivered
d4 - S4: Set Delivered
d5 - d7: Spare
- p8* DeliverySignalType (0 - 1):
0 = Lead Edge triggered
1 = Trail Edge triggered
- p9* DeliveryStartAdjust (-100 - +300ms). Adjusts the timing for the start of delivery signal.
- p10* DeliveryPulseWidth (0 - 110ms) (LE: N/A; TE: 30 to 110m). Adjusts the timing of the end of delivery signal. For Lead Edge triggered signal, the delivery pulse width corresponds to the sheet width.
- p11* EndOfSetOffset (0 - 255ms). Time required between the EndOfSet and SheetExit signals.

p12

CycleDownDelay (5 - 60sec). Deadcycle time period required for IOT before it cycles down in response to a finishing device full condition.

Input profile syntax *label=IN480,p1, p2, p3, p4, p5;*

Values *label*

The user-specified name attached to the profile entry.

IN480

The name of an input device.

p1

TimeToFeedSheet (0 - 500ms). Time needed by the TPD between the Feed Sheet command and sheet arrival at first printer sensor.

p2

TimeToCycleUp (0 - 32767ms). Time needed by the TPD to become ready after receipt of the CycleUp command.

p3

Attributes (0 - 7). Lists the special stocks supported by TPD:

d0 - Spare

d1 - Drilled paper

d2 - Ordered stock

p4

StatusesSupported (0 - 7).

d0 - S5: Bulk Input Medium Low

d1 - S6: Not Ready

d2 - S7: Sheet Feed

d3 - d7: Spare

p5

FeedSignalAdjust (10 - 100ms). Specifies the duration of the FeedSheet command signal.

Rules to remember

You create the label to identify the finishing device and indicate its configuration, if possible. Make sure the following occurs:

- Each entry must begin with an alpha character A–Z.
- Each entry provides the NVM values for one finishing device.
- Each entry can either have 12 (Finishing device) or 5 (Input device) array values coded.
- Each label is separated by an equal sign from the array values.
- Each array value is separated by a comma.
- Each array value is positional.
- Each entry is terminated by a semicolon.

Creating an FCG.LIB text file

To create an FCG.LIB text file, use the following steps:

1. Enter **EDIT FCG.LIB** at the system prompt.
2. At the prompt, enter a selected profile label. Each label may consist of more than eight characters even though the LPS processes only the first eight characters.
3. Enter either OUT480 (for a finisher) or IN480 (for an input device).
4. Enter the appropriate entries for the device for the "p" parameters.
5. When you are finished, enter **SCE**.

Loading the FCG.LIB text file

To load a specific profile defined in the FCG.LIB text file into NVM, use the FCG *profile label* command.

2. Backing up and restoring files

This chapter provides information and instructions for backing up and restoring system files.

Backing up and restoring system files to tape

The Disk Save and Restore (DSR) utility allows you to create a backup tape of all system files and to restore them back to disk. Restoring the system files erases all previous disk contents.

There are two programs that make up DSR:

DSR.TSK resides in the operating system and executes the save function using the system controller disk, tape, and terminal service tasks.

DSR.SAF executes the restore function, which rebuilds the saved disks. You boot DSR.SAF from the backup tape. DSR.SAF is a byte-by-byte copy program which runs its own disk, tape, and terminal service routines.

The system files you copy from disk to tape are called source disks. The disks to which you restore files are called object disks.

Saving your system files

Enter the DSR [CARTRIDGE|TAPE][1600 6250][disk-id[,disk-id...]][,L] command to save your system files to tape.

If the drive you indicated does not exist, the `DSxxxxINVALID PARAMETER...DSR ABORTED` message displays, and DSR terminates.

Make sure the save tape is mounted and the tape drive is online; otherwise, DSR displays an error message. Once DSR senses the tape drive is online and at the beginning of tape (BOT), it proceeds with the save process.

Restoring your system files

To restore system files, follow these steps:

1. Load the tape.
2. Press the Boot button. The system displays the `READY $` prompt.
3. Enter **BT** (boot from open-reel tape), **BC** (boot from 1/4 inch cartridge tape), or **BX** (boot from 1/2 inch cartridge tape).

The system loads DSR.SAF from the tape and displays the following prompt:

```
DSR Vxx (date of version) DSR RESTORE IN COMPRESS MODE ARE
YOU SURE ('Y' OR 'N')
```

4. Enter **Y** or **N**.

DSR.SAF first compares the source disk ID with the object disk ID. If their disk IDs are different, DSR prompts you to confirm that the object disk files should be overridden by the source disk files.

Figure 2-1. **DSR disk ID prompt**

```
SOURCE DISK ID:  disk-id
OBJECT DISK ID:  disk-id
CONFIRM BEFORE OVERWRITING (Y,N)
```

If the object disk has no ID, DSR prompts you to confirm that the object disk should be overwritten. If you enter **Y**, the restore task executes. DSR reconstructs the file directory chains, loading all directory sectors of the same file type contiguously at the lowest possible disk address.

After the restore process, the REALLOCATE task runs automatically to generate working space for the print file.

Unprinted entries in the queue

Before restoring files, DSR checks to see if there are any unprinted jobs in the print queue. If there are unprinted jobs in the queue, the following message displays:

```
DSR - The Print Queue has unprinted entries.
Do you wish to continue and lose unprinted jobs? [Y/N]
```

Enter **Y** to continue the restore process or **N** to abort the process and exit DSR.

Sufficient disk space for restoring

Once you confirm the restore request, DRS.SAF displays a restore menu from which you select an option.

Figure 2-2. **DSR disk select prompt**

```
SELECT DISK(S) TO RESTORE
0.  RESTORE DP0:
1.  RESTORE DP1:
2.  RESTORE DP2:
3.  RESTORE DP3:
4.  RESTORE ALL THE ABOVE DISKS
5.  ABORT RESTORE PROCESS
ENTER OPTION(S)
```

The number of items that display on the screen is determined by the number of disks on the DSR tape. You can select one of more items by entering the corresponding item numbers separated by a comma and a space.

If you select option 5, DSR displays the `RESTORE PROCESS IS ABORTED DSR EXIT` message and exits.

Since the bad block information on the object disk ultimately dictates where files are (and are not) restored, DSR verifies whether the disk has a file listing its bad block. If no bad block is found, DSR displays: `UNABLE TO LOCATE BAD BLOCK DATA. REFORMAT DISK` and aborts the restore process.

If your LPS runs V3.5, DSR restores files to a disk of the same size as the source disk. If your LPS runs V4.0, the DSR.SAF task allows a DSR restore from tape to a system which is greater than, equal to, or less than the disk size of the target system, for example, a 182-MB drive over 380-MB drive, or a 380-MB drive over a 182-MB drive.

When restoring a larger disk (such as 380-MB drive to a 182-MB drive), one or more files may not be restored due to insufficient disk space. If this occurs, DSR displays the `FILE: filename.ext NOT RESTORED - - INSUFFICIENT DISK SPACE` message.

Once the DSR restoration process completes, the system displays the message, `NOTE: ONE OR MORE FILES(S) WERE NOT RESTORED DUE TO INSUFFICIENT DISK SPACE.`

Multivolume files

Sometimes the data stored on a disk volume does not fit on a single tape reel written at 1600 bits per inch (bpi), so DSR supports multivolume save and restore. DSR writes a volume label containing a sequence number at the beginning of each tape.

If the tape reaches the end of its volume (EOV) during the save process, DSR writes a tape mark, rewinds and unloads the tape, increments the next sequence number, and displays the message, `MOUNT AND READY DSR VOLUME n`, where *n* is the next sequence number.

If DSR encounters EOV and a single tape mark during the restore process, the system rewinds the tape and displays: `DISMOUNT CURRENT VOLUME. MOUNT DSR VOLUME n.`

Device error handling

DSR responds to all device errors encountered during the save and restore processes. The degree of error recovery differs between the save and restore processes. Refer to the *Xerox 4850/4890 HighLight Color LPS* for a complete listing of DSR error and recovery messages.

Abort the save process

If an abnormal device error persists after a number of entries, DSR displays the message, `DISK ERROR xxx...DSR ABORTED OR TAPE ERROR xxx...DSR ABORTED.` In this message, *xxx* is a three-character mnemonic representing the error returned by the device driver to DSR. Since no files are lost by terminating an in-progress save to tape, DSR aborts the save process and exits.

Incomplete restoration

If a file being restored from tape is too large to fit in the largest free contiguous space on the system disk, the following message displays:

```
FILE: <filename.TYP> NOT RESTORED-INSUFFICIENT DISK SPACE.
```

In addition, the following message displays when the restore completes:

```
NOTE: ONE OR MORE FILES WERE NOT RESTORED DUE TO INSUFFICIENT DISK SPACE
```

Abort the restore process

To prevent losing system files, DSR.SAF does not provide you with the option of aborting the restore.

If a tape device error is encountered during the restore process, DSR retries the tape operation several times. If an error is identified as irrecoverable, DSR displays the following message and aborts the restore process:

```
TAPE ERROR XXX ...DSR ABORTED. REFORMAT DISK
```

Special file handling

Licensed fonts and logos

Licensed fonts and logos are encrypted as they are written to tape during the save process and are decrypted as they are restored to disk.

Bad block files

DSR accessed the bad block information resident on the object disk at the time of the restore process to avoid writing files to known corrupted regions on the disk. The bad block files on the object disk are not altered during the restore process and are incorporated into the new file structure.

Print file and its history

The print file and the print file permanent history file are rebuilt after the restore process is complete.

Recovery files

The two recovery files, PFILR\$.SYS and RECTK\$.SYS, are copied to tape and restored by DSR.SAF.

Core image file

The core image file is written to tape by the save process and is transferred to the object disk during the restore process.

Transferring individual files from a DSR tape

The single file transfer (SFT) utility allows the transfer of single files from a DSR tape to a system disk drive. The file control processor (FCP) and disk space availability dictate the destination of the transferred file.

The SFT utility has the following limitations:

- Copies only one file from tape to disk. If two files have the same name on the DSR tape, SFT writes only the first file to disk.
- Writes the file from the DSR tape to the first location on the disk that can accommodate the file's size. If the file already exists on the disk, SFT overwrites the file on the disk with the one on the DSR tape.
- Does not support wildcards. Make sure you specify the full filename.
- Does not copy files with the extensions `.Y`, `.SAF`, `.SYS`, `.TSK`, or `.LOG`.

Restoring a single file to disk

Follow these steps to transfer a single file to disk, using the SFT utility:

1. At the `OS1000 READY FOR COMMANDS PROMPT`, enter **SFT**.

The following screen displays:

```

                SFT VERSION 1.0
Welcome to single file transfer program
    1.) Transfer a single file to disk.
    2.) Exit SFT program
```

As soon as the screen displays, the system prompts you with a `MAKE A SELECTION:` message.

2. Perform one of the following steps:
 - Enter **1** and the system responds with the message, `Mount and Ready DSR tape`.
 If the DSR tape is not mounted and ready, the system responds with the message: `Verify tape is Ready and online and press <Return> to continue or <X> to exit`.
 If you enter `X`, the message `Exit SFT task` appears, the system exits the SFT task and returns the `OS1000 READY FOR COMMANDS` prompt displays.
 - Enter **2** and the tape unloads automatically and the system displays the message, `Exit SFT task...`

Once the tape is mounted and ready, the system displays the message, `Enter file name and file type requested and press <Return> to continue or <X> to exit`.
3. Enter the name and type of the file.

The `Is xxxxxx.xxx the file you requested (Y/N)` message displays.

4. Enter **Y** or **N**.

If you enter **Y**, the system displays the `Searching for xxxxxx.xxx` message. As soon as the system finds the file you want on the DSR tape, you receive a message indicating the system created your file on disk and then exits the SFT task.

If you enter **N**, the system responds with the message, `would you like to continue SFT program (Y/N)`.

If you enter **Y**, the systems prompts you to enter another filename.

If you enter **N**, the system unloads the tape, exits the SFT task, and returns to the system prompt.

Restoring a single file from a multi-volume DSR tape

When you restore a single file from a multi-volume DSR tape to disk and you have reached the end of the first volume, the system prompts you to mount the next volume and press `<Return>`.

If you have mounted an incorrect volume, the system displays a message and prompts you to load the correct tape volume.

3. Downloading host files

This chapter describes downloading host files to your laser printing system (LPS). If you have stored certain types of files, such as forms on the host computer, you can download them to your LPS when a job requires it.

You can download files in two formats: card-image files and LPS-labeled files. Certain destination file types are not accepted for LPS-labeled files or card-image files. The file types that are not accepted are OSD, SAF, SYS, \$Y\$, and TSK. In addition, card-image format files are restricted to destination file types CMD, FSL, JSL, MSC, PCH, TMP, and TPF.

The printing system cannot download host variable data files. You can only download LPS system files, LPS form files, LPS font files, and LPS logo files from the host.

There are two methods for downloading files:

- Using the HOSTCOPY utility
- Using the DJDE FILE command.

Using the HOSTCOPY utility

Receiving files with HOSTCOPY provides a means for accepting files transmitted from the host computer and storing those files on the LPS system disk. You may transmit files in two different formats:

- Card-image files
- LPS-labeled files.

Transmitting card-image files

You transmit card-image format files to the LPS in 80-character EBCDIC records. You can collect a group of records and store them as a data file.

For more information on transmitting card-image files using the HOSTCOPY command, refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference*.

Transmitting LPS-labeled files

Font and logo tapes are LPS-labeled tapes issued by Xerox. The LPS-labeled tapes are structured for use with online systems as well as offline systems. The last physical file on the tape is a concatenation of all previous files on the tape. The last file is in a format that can be transmitted across the host I/O channel to the printing system. You must use a host utility to advance the tape to the beginning of the last file.

Font and logo files have 128-byte blocks, followed by blocks of multiples of 512 bytes to 8192 bytes. The utility must deblock the files to 128-byte records before transmission to the LPS.

The IEBGENER program, for example, which transmits files to the LPS, does not add page numbers or reformat any of data. In particular, the LPS does not add records between the files.

Follow these steps to ready the LPS to accept files across the channel:

1. Vary the LPS offline IDLE at the host system.
2. Press the Boot button.

A message states you should use sysgen not HOSTCOPY when transmitting a system software tape (SST).

3. Enter **C**.

The `WAITING TO READ FILE FROM HOST` message displays.

4. Notify the host computer operator to vary the printing system online.

The printing system is now ready to receive data in either format. The system ignores any records sent prior to a `$$$START` or LPS tape label. As soon as the system receives any valid `$$$START` record or LPS tape label from the host, the `*TAPE NOW BEING PROCESSED*` message displays.

The LPS system disk stores the data that follows as one or more files. The `CREATING FILE XXXXXX.YYY` message displays for each file.

When HOSTCOPY detects a `$$$Send` record or a Xerox-formatted `ENDFIL.END` logical file, it displays the message `END OF TAPE FOUND. IS ANOTHER TAPE TO BE SENT? Y OR N`

5. Enter **Y** if you need another tape transmitted.

Enter **N** and you receive the message, `VARY OFFLINE AT HOST, THEN ENTER c` displays.

If you enter **C**, HOSTCOPY terminates. Once the operating system reloads after HOSTCOPY completes, the FDL and PDL compilers are invoked.

The editor MERGE command should receive the files loaded onto the system using HOSTCOPY prior to editing. This allows the system to insert valid sequence numbers.

For more information on the HOSTCOPY command, refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference*.

Using the DJDE FILE command

DJDE provides a capability of loading card-image files or LPS-labeled files to the LPS disk while a print job is in progress. You can invoke a print job solely for the purpose of downloading files. In other situations, you can interleave files with variable text data so that the files are available when referenced by input or output data processing.

In either case, a DJDE packet must immediately precede the data for a file or batch of files in order for it to copy to the LPS disk. The DJDE packet must include FILE. FILE signals the start of the file data.

FILE is a record-oriented DJDE. You can include FILE with other record-oriented or page-oriented DJDE commands in a DJDE packet. For further information about FILE, refer to your *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

DJDE FILE does not allow a file replacement or deletion transaction to occur if the file is secured and the logon level is not 5.

Transmitting card-image files

When you process card-image format files, the system checks FILE for valid parameters, and if an appropriate amount of disk space is available for the file as follows:

- If the destination file type is not acceptable for a card-image file, the preceding DJDE packet prints on an OPRINFO page with the message `FILE PROCESSING ERROR - ILLEGAL DESTINATION FILE TYPE`. Input then proceeds to read and discard the extent of the file.
- If the file name is improperly specified, the system prints the preceding DJDE packet on an OPRINFO page with the message `FILE PROCESSING ERROR - INVALID DESTINATION FILE NAME`. Input reads and discards the contents of the file.
- If more card-image records are read than is predicted by the parameter specifying the maximum number of card images, the extra records are read and discarded. The preceding DJDE packet prints on an OPRINFO page with the message, `FILE xxx.yyy OVERFLOW - EXCESS CARD IMAGES LOST`.
- If the system cannot create the file because of insufficient space on the disk, the preceding DJDE packet prints on an OPRINFO page with the message, `NO SPACE ON DISK FOR FILE xxx.yyy`. Input reads and discards the contents of the file.

When the system reads a card-image file, it ignores the PCC byte. Block and record delimiters, if any, are used to determine record length. Records with a length greater than 80 bytes are truncated to 80 bytes. Records with a length less than 80 bytes are padded with ASCII blanks to 80 bytes. The system can perform character translation, depending on the JDE in effect.

The system does not insert sequence numbers into the records prior to storing. The editor Merge must receive the file prior to editing so that the system can enter valid sequence numbers.

Any DJDE record serves to terminate card-image record processing for the downloading file as follows:

- If a DJDE comes upon one or more card-image records that are written in the file, the DJDE is truncated to an appropriate size and closed. If you choose to have the OPRINFO page print, the DJDE prints, along with message, `FILE xxx.yyy CREATED.`
- If a DJDE comes before any card-image records are filed, the preceding DJDE packet prints on the OPRINFO page with the message, `FILE xxx.yyy ERROR - NO CARD IMAGE DATA.` The null file is deleted.

The system concludes file processing and resumes print mode with the DJDE record, unless the DJDE record contains another files command.

Transmitting LPS-labeled files

When you process LPS-labeled files, the system checks FILE for valid parameters, and reads the beginning of the LPS label record. If the destination file type is acceptable, the file size field is obtained from the label record, and calculates the extent of the file. The destination file is not acceptable under the following conditions:

- If the first label record does not meet the requirements of a label record, the preceding DJDE packet prints on an OPRINFO page with the message, `FILE PROCESSING ERROR - NO LABEL RECORD.` Input then proceeds to read and discard the extent of the file.

If the destination file type is `$$`, the preceding DJDE packet prints on an OPRINFO page together with the following messages:

```
0S6700 SYNTAX ERROR IN DJDE.  
0S2006 ENTER CONTINUE I OR ABORT I.  
  
0S6736 FILE PROCESSING ERROR - NO LABEL RECORD.  
0S2006 ENTER CONTINUE I OR ABORT I.
```

- If the system cannot create the file because of insufficient disk space, one of the following occurs:
 - If file space becomes free after output prints a previous report, input displays the message, `DISK FULL INPUT WAITING FOR OUTPUT TO COMPLETE.` Input waits for the report to complete before trying again to create the file.
 - If there is no possibility of disk file space becoming available, the preceding DJDE packet prints on an OPRINFO page with the message, `NO SPACE ON DISK FOR FILE xxx . yyy.` Input then proceeds to read and discard the extent of the file.

The system reads and stores the data records into the appropriately named file. PCC bytes and block and record delimiters are ignored while processing the file data.

- If the DJDE command `FILE = ()` signaled the start of LPS-labeled data, input presumes that more than one LPS-labeled file may be batched together and checks for another label record when it completes processing a file.

- If OPRINFO = YES and the file transfers are successfully concluded, the name and type of each file transferred are listed on the OPRINFO page with a brief message indicating whether the file was newly created or replaces an existing file.

Delimiting records for LPS-labeled files

To prevent loss of data through trailing blank suppression procedures on the host spooler, data records for LPS-labeled files must be delimited by appending an extra nonblank character at the end of each record. The same nonblank character must be used with all records processed in the file processing mode.

If the nonblank character that is appended at the end of the records is not consistently present throughout the file, the preceding DJDE packet is printed on an OPRINFO page with the message `FILE xxx . yyy PROCESSING ABORTED DUE TO DATA ERROR.` Input then deletes the partial file that was created and proceeds to process the data as variable text data.

4. Managing system disk space

This chapter discusses how the system allocates disk file space and disk space requirements.

File space allocation

Depending on the configuration, the LPS has one to four system disks known as DP0, DP1, DP2, and DP3. To optimize file access, the system allocates file space to given file types on a preferred system disk; this file allocation strategy is known as *file biasing*.

File biasing depends on the following factors, which you should consider when you manage the system disk space:

- Number of system disks on an LPS
- EDITOR, FDL, PDL, and SYSGEN tasks
- File class and file type.

Table 4-1 lists the system disks used by each task.

Table 4-1. System disks used by various tasks

Task	File type	Number of system disks			
		One	Two	Three	Four
EDITOR	TMP, FSL, JSL, and CMD	DP0	DP1	DP2	DP3
FDL	FRM	DP0	DP0 DP1	DP2	DP2 DP3
PDL	JDL	DP0	DP0 DP1	DP2	DP2 DP3
SYSGEN	System files	DP0	DP0	DP0	DP0

There are four classes of file types, as shown in table 4-2. The class of a file type also determines the file storage location.

Table 4-2. File types according to file class

Class 1	Class 2	Class 3	Class 4
TSK OSD SAF	LOG SYS \$Y\$	CME FNT ICT IDR IMG IPF IPM JDL LGO PDE STK XCS	CMD DAT FIS FSL ISL JSL LIB MSC PCH TMP TPF TST

The following tables show how the system prioritizes files by class and where it stores them according to the configuration. Use these tables as a guide for allocating disk space on your LPS. An X indicates that the file class cannot reside on a system disk.

Table 4-3. File biasing—4 system disks

File type class	DP3	DP2	DP1	DP0
1	X	X	X	First
2	Last	Third	Second	First
3	Second	First	Last	Third
4	First	Second	Third	Last

Table 4-4. File biasing—3 system disks

File type class	DP2	DP1	DP0
1	X	X	First
2	X	Second	First
3	First	Last	Second
4	First	Second	Last

Table 4-5. File biasing—2 system disks

File type class	DP1	DPO
1	X	First
2	Last	First
3	Last	First
4	First	Last

Table 4-6. File biasing—1 system disk

File type class	DPO
1	First
2	First
3	First
4	First

Disk drive biasing is as documented in the above tables, with file types assigned to the available disk drives, in the order specified. You can override the existing file biasing scheme by using an explicit reference to the drive of choice, as in this example:

```
COPY TAPE READ LABEL DP1:ABC.FNT
```

If space is available, this command places the file ABC.FNT on drive 1 (even though it may normally be assigned to a different drive). If insufficient space is available, the system returns a DEVICE FULL status.

If a file type is not in Class 1, 2, or 3, it is assigned to Class 4 by default. With the exception of the single disk system, the print file (PRFIL1.SYS), is always assigned to disk 1. After installation of an additional drive onto a single disk system, you should always reallocate the print file with the following command:

```
REA !, !
```

This command reallocates the print file to Drive 1.

Note: PRFIL1.SYS is assigned to DPO on single disk systems and to DP1 on multiple disk systems.

File space requirements

Before running a sysgen, make sure there is enough disk space on the various drives. If there is not enough space, the system can abort the sysgen and become unbootable.

You should leave at least 20% of your system disk space capacity free for normal system expansion.

Refer to table 4-7 and find the disk configuration that matches your system.

Table 4-7. **Required disk sectors for update sysgen to V5.0**

Number of system disks	DP0	DP1	DP2	DP3
One	25,000	N/A	N/A	N/A
Two	25,000	50,000	N/A	N/A
Three	25,000	50,000	15,000	N/A
Four	25,000	50,000	15,000	15,000

Reallocating disk space

Use the REALLOCATE command to set the size of the print file on the system disk.

Errors that occur when executing the REALLOCATE command invariably relate to lack of disk space and are manifested by either of the following messages:

- 'Can not create Print file'
- 'Requested Print file is too small'

To recover from this condition, compress the print file disk (using the command COMPRESS) and then reenter the REALLOCATE command (REALLOCATE !,!).

The message, 'Requested Print file is too small' can appear with REALLOCATE command if either the value entered or the largest possible print file size is less than a minimum number of cylinders.

If the former is the case, the REALLOCATE command returns with the error message immediately. Otherwise, it displays a message for a few seconds before displaying the error message.

If the largest possible print file size is less than the number of cylinders, then as a first attempt, enter the COMPRESS command and try the REALLOCATE command again. If this is not successful, you need to run a file check.

Use the FCHECK command to run a file check on the disk that will contain the print file. As shown in the *Xerox 4850/4890 HighLight Color LPS Command Reference*, FCHECK displays the disk addresses and number of blocks of available regions of the disk. Examine the largest number of blocks to determine how much space is available for the print file.

Use FILE/EX DP1: to display files on DP1 you want to delete. You may choose to delete temporary files with the extensions .TMP. After deleting all unnecessary files, run COMPRESS DP1: and FCHECK to check your progress. At this point, FCHECK should reveal a single, large, available disk space. If the space is divided into two large areas, a file remains that COMPRESS was programmed not to move.

The COMPRESS command moves files towards the lower block numbers to group available disk blocks into one large area. COMPRESS has a list of files that it may not move. Most such

files are created early on in the history of the system and fall at the lower block numbers. These are not causing your disk fragmentation. One other file, HIPBF.SYS, is included in the list but in fact may be moved as long as HIP is unloaded. You can delete the file if the HIP job queue is also deletable (jobs will be lost if this is done). You can also move the file by using the following commands:

- COPY HIPBF.SYS X.TMP
- DELETE HIPBF.SYS
- RNA X HIPBF.SYS.

Run a FCHECK to determine if you have reallocated sufficient disk space.

5. Securing files and commands

Securing files and commands includes assigning logon class to user accounts and restricting access to specified files and commands.

Assigning logon class to user accounts

To assign logon class to user accounts, log on to the system at a specified level and change the password. There are five logon levels, each authorized for certain users:

Table 5-1. Logon levels and password requirements

Logon level	Authorized users	Password requirements
1	Operator	None required.
2	Operator Programmer System Administrator	No default assigned at installation.
3	Xerox Systems Analysts Customer Service Representatives	Always required.
4	Xerox Systems Analysts Customer Service Representatives	Always required.
5	System Administrator	Default password is SECURITY. Change to maintain security.

Logging on with a password

To log on to level 2, 3, 4, or 5:

1. Enter **LOGON [2 | 3 | 4 | 5]**.
2. Enter the password at the system prompt.

The password is not displayed on the screen when you enter it. The screen remains blank and does not indicate the length of the password.

CAUTION: For maximum system security, always enter the LOGON command in this format, not in the one-line format. For more information, refer to the "Passwords and Data Capture Utility" in this chapter.

Changing logon levels

You must always use a password to access a logon level higher than the current level or to move from level 5 to level 3 or 4.

You do not need a password, however, to move from a higher level to a lower level, except to levels 3 and 4.

Assigning and changing passwords

To change the password for level 2 or 5:

1. Enter **LOGON [2 5]**.
2. Enter **LOGON**.
3. Enter the new password (up to 15 characters) and press <ENTER>.
4. Answer **Y** or **N** to `IS PASSWORD OK [Y/N]` message.

Although you can create a new password in lowercase or mixed case letters, only passwords in uppercase may be entered using the preferred procedure described in "Logging on with a password" earlier in this chapter, which affords greater system security. All passwords are case sensitive; the system recognizes a password only if you enter it correctly in content and case.

The percent sign (%) is not a valid character in a password.

Passwords and Data Capture Utility

It is possible to enter the LOGON command with the logon level and the password on the same line separated by a comma:

LOGON 2,password

This method is more expedient. However, be aware that if the Data Capture Utility (DCU) log is on, and you enter a LOGON command in this format, the password is captured on the DCU log, making that password accessible to users at all security levels.

For greater system security, always enter the LOGON command in the format:

LOGON *security-level*

When the system prompts you for the password, enter it. In this case, the password is not captured on the DCU log.

Note: Any password you enter in this format must in uppercase letters.

Restricting access to files

Secure a file by entering the following:

SECURE *file-name.file-type*.

You can only access a secured file at logon level 5 or higher. The only exception to this rule is FIX. Fixing fonts and logos is unaffected by security. You can fix a secured font or logo at any log level.

Only user files consisting of file types CMD, CME, FNT, FRM, FSL, IMG, JDL, JSL, LGO, PDE, TST, STK, LIB, FN6, IM6, LG6, and TYPE are secured against unauthorized access.

The following editor commands are affected by the secured file feature: COPY, DELETE, FID, FIX, FLOPPY, GET, MERGE, REVIEW, RNAME, and SAVE.

Purging system or print files

Data from deleted files remains largely intact on the disk until overwritten with new data. Use the PURGE command to overwrite unused disk areas with random bit patterns as an added security measure. To purge system or print files:

1. Enter **LOG 2** or **5** and a system password.
2. Enter **PURGE [D | P | F]**.

Restricting access to commands

To restrict access to particular commands:

1. Enter **LOG 2** or **5** and a system password.
2. Enter **RCU**, the command you want to restrict, and your logon level, for example: **RCU COM 5**.

Tracking console activity with DCU

You can track console activity by using the DCU command at any command level. DCU creates a console log of all LPS console entries and system console messages. To create a console log:

1. Enter **DCU CAP ON** to turn DCU on.
2. Enter **DCU FOR PRI** to print out a log.
3. Enter **DCU CAP OFF** to turn off DCU capture session.

Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for information on other DCU commands.

Limitation during SYSGEN

Every effort is made by DCU to recover completely and gracefully following rollovers, sysgens, and system boots. If you press the Boot button while data capture is active, recovery may not be complete. Scenarios that cause these results are not predictable. Should this be encountered, you must delete the day's capture activity (DCU DEL followed by the current date).

To completely preclude the possibility of corrupting the captured data file, turn data capturing off prior to the sysgen (DCU CAP OFF). Once the sysgen is complete, resume data capturing by entering DCU CAP ON.

Comment capability

By prefacing a text string with the letter X followed by a space, it is possible to enter a free form message or comment, and not receive the message OS2710 Invalid Command Reenter. Coupled with the ability of DCU to play back all keyboard activity, this feature is an invaluable tool in clarifying and explaining what has occurred on the system.

6.

Generating reports

As the laser printing system (LPS) processes print jobs, the system software accumulates and saves status information in a print queue database. From the database, the system can generate three types of reports:

- User Accounting Report
- System Activity Report
- Customer Billing Report.

Accounting data in the print queue database

The LPS automatically updates the print queue database when one of the following occurs:

- When input processing starts a report, the LPS creates an empty entry in the print queue database.
- When you press the <JOBS STATUS> key or enter the JOBS command.
- When the LPS encounters an end-of-report delimiter.

As the LPS processes print jobs, it automatically accumulates report information and saves it into a print queue database on a report basis.

The print queue database also contains information about print jobs by nonprint tasks, such as PDL, FDL, and EDIT.

Creating a print queue database during sysgen

The system automatically creates a print queue database during sysgen. It attempts to create a database for 400 entries with the default warning flag of 40 and a frequency flag of 3. If it cannot create a database of 400 entries, it creates a smaller one, although no smaller than 200 entries.

After creating a database, the system displays a message indicating the number of entries in the database. If you want to change the number of entries in the database or change the warning and frequency flags, use the INITIALIZE QUEUE command (refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for more information). You can specify up to 2,000 entries in the database.

If the system cannot create a database, it displays a message indicating there is insufficient space.

Backup print queue database information

When the print queue database becomes full, the following message appears:

```
PRINT QUEUE DATABASE NEARLY FULL EXECUTE PRINT QUEUE DATABASE  
SAVE PROCEDURE
```

If you ignore the file full warnings, and the number of reports in the system exceeds the print queue database size selected, the status of older reports is lost. Report processing information is then overwritten by newer report data with no further warnings until you reinitialize the print queue database with the INITIALIZE QUEUE or CLEAR QUEUE commands (refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference*).

The QUEUE message appears when you enter the JOBS command. It displays the number of unused queue entries in the print queue database. This allows you to save the print queue database before starting a job that may exceed the number of report entries remaining in the print queue database.

After the print queue database has used the memory allocated to it, the LPS writes each new record over older existing records. Unused entries are existing entries that have not yet been overwritten.

Accounting page caveats

Information appearing on the accounting page and in the print queue database may not reflect abnormal circumstances occurring during the last 16 pages of a report. This is because the LPS may perform accounting for a report before the last data page is printed and assumes that the last few pages will print successfully. Information affected may be: pages to bin, pages to tray, pages with graphics, simplex pages printed, duplex pages printed, number of lines printed, output processing time, and primary and secondary report completion codes.

The LPS automatically produces an accounting page whenever the primary and secondary report completion codes are not zero. However, if the condition causing this completion code occurs within the last 16 pages of a report, the accounting page for the report will have a zero report completion code. The accounting page for the next report will report the error that caused the non-zero completion code.

All non-Interpress system generated pages are printed in the same xerographic mode as the previous page unless the default ink for the previous page used a prime color dry ink. Accounting sheets, however, always print in system default black. The xerographic mode of the previous page and the default ink together determine how the LPS prints non-Interpress system pages.

Entering the system serial number

The first time you enter REPORT ACTIVITY, the system prompts you to enter the 9-character machine serial number. The 9-character machine serial number is located on a silver metal plate inside the front right door of the printer.

Enter the 9-character machine serial number. The system saves the serial number in a file called MCHID\$.SYS.

The system prompts you only once for this serial number. If it cannot find the MCHID\$.SYS file, it prompts you for it every time you run the REPORT utility.

Accounting page fields

The following sections explain the fields within the accounting page.

General print job information

ACCTINFO

The text from the delimiter record when the ACCTINFO command of the RSTACK statement is coded in JDE.

The document name is the source of the ACCTINFO field on the accounting page and the Report Name field in the job status display. These fields are printed without filtering space characters or punctuation. If the document name is all blank characters, '.DFLT.' is substituted and shown in the Report Name field on the accounting sheet, as well as on the job status display. '.DFLT.' shows in the HIP job status display.

If the source of the document name is printing protocol, the ACCTINFO field is truncated to 14 characters when displayed on the accounting page or job status display. If the document name comes from Printing Instructions (Interpress), the ACCTINFO field displays 64 characters on the accounting page and 16 characters on the job status display.

BLOCKS READ

Number of data blocks read from the input source device.

BLOCKS RECEIVED

Number of blocks (512 bytes each) on the LPS disk required for the data file.

BLOCKS SKIPPED

Number of blocks skipped as a result of the OSS command, MOVE *n* BLOCKS.

COLLATE

Entry is YES or NO depending on the COLLATE command of the OUTPUT statement. The default is to collate the output pages. COLLATE may also be modified by a DJDE. COLLATE=YES is forced for any job run in duplex mode.

DATA PAGES PRINTED

The total number of document pages printed. The count does not include the accounting sheet. This value may be 0-0 when an Interpress job has been aborted by the HIP ABORT <HIP job number> or ABORT *jid* command. The value is correct only if RESET is issued after these commands.

DATE

Date job was printed.

DEPARTMENT

This is either the character string entered as part of the ACCT statement (DEPT=) or a system default name. The system default name is the name of the .JDL file under which the job ran with :JDL appended to it. If the requested department name using DEPT= has not been previously set up in the accounting file, the requested name is listed on the accounting page and an asterisk is appended. Refer to the "Maintaining accounting files" section in this chapter.

DJDE RECORDS READ

Number of DJDE records read from input source device.

FILE ID

This is the file identifier field of the HDR1 label if it exists (refer to the *LPS Tape Formats Manual*). This data appears only for tape or cartridge print jobs.

FILE RECEIVE TIME

Time file is received written as *hh:mm:ss*. For Interpress documents, this value is 00:00:00.

SENDER ID

This entry appears only for Interpress or HIP jobs.

Graphic processing data

GRAPHIC COMPLETION CODE

Composite code identifying the types of abnormal graphic processing conditions encountered by the input processing task.

GRAPHIC EXCEPTION CODE

A code defining a graphic processing fault in graphic processing jobs.

GRAPHIC IMAGES READ

A count of all graphics read in the input stream. (Logos are not graphics; they are fonts.)

GRAPHIC IMAGES MOVED

Total count of the times one or more images were copied from one disk location to another (for example, Move mode, page interleaved with Hold).

GRAPHIC IMAGES PRINTED

A count of all pages containing at least one graphic impression delivered to the bin. (Logos are not graphics; they are fonts.)

PDL processing data

INITIAL CME LIST

The names printed are the identifiers of CMEs referenced in a JDE. CMEs are defined with the CME statement (along with an identifier) and referenced in a JDE with the OUTPUT statement (MODIFY command). If CMEs are used in DJDE processing, the DJDE MODIFIED message is printed along with the original list of names.

INITIAL FONT LIST

The names of the fonts referenced in the JDE. Fonts are defined in the PDE statement (FONTS command) and referenced for use in a JDE on the OUTPUT statement (FORMAT command). If the font list is modified by DJDEs, the DJDE MODIFIED message is printed along with the original list of font names.

INITIAL FORM LIST

The names of the forms specified in the JDE on the FORMS command of the OUTPUT statement. The form specified in the BFORM command will not be included in this list. If other forms are invoked using DJDEs, the DJDE MODIFIED message is printed along with the original list of form names.

Basic job processing data

INPUT PROCESSING TIME

The elapsed time for the input processor to process the report from the input source device and pass the results to the output processor. For online systems, this includes any time the input processor is waiting for data because of host-induced data transmittal delays.

JDE, JDL USED

The names of the job descriptor entry and job descriptor library as specified in the START command. These names may have been modified by a DJDE.

JOB ID

This entry is the system-generated identifier of the print job. It is automatically incremented by the system each time a job is run.

LINES PRINTED

A count of lines printed on the pages delivered to the print trays (PAGES TO BIN) and to the sample tray (PAGES TO TRAY). This includes the number of lines on the accounting, RTEXT, DJDE, and OPRINFO pages. The count does not include the lines printed for a user-requested page number. Maximum line count is 999,999,999. The line count may differ significantly for jobs you have also run under V3.5 software on other LPS systems because V3.8 is more accurate.

MAXIMUM COPY COUNT

The maximum number of printed copies requested of the report; however, it may not be the number actually printed if the job was aborted. The number of copies to be printed is defined in the JDE (COPIES command of the OUTPUT statement) and may be overridden by DJDEs or by the COPIES option of the START command.

ONLINE IDLE (SEC)

Measure of LPS idle time while it is waiting for the host system.

OUTPUT PROCESSING TIME

The elapsed time for the output processor to print the report as sent to it by the input processor. This time includes processing time of the report plus any time the output processor is waiting for paper jams to be cleared or other conditions requiring operator intervention.

OVERPRINTS

The number of overprint lines in the report. If the IGNORE command of the LINE statement in the OVERPRINT command is coded in the JDL file, the accounting entry is 0.

PAGES TO BIN

A count of all pages printed and delivered to the print trays. Any sheet of paper going through the duplex paper path counts as two pages to bin even if only one side has printing (this includes OPRINFO, RPAGE, ROFFSET, DJDE, and RTEXT routing pages). Maximum page count is 999,999,999.

PAGES TO TRAY

A count of pages delivered to the sample tray. This includes the printing of tape label (if VOLUME LABEL=YES), as well as sample, accounting, and RSTACK delimiter pages delivered to the sample tray.

PAPER PATH HOLES

A count of paper path holes caused by user job characteristics. For example, a hole may be caused by a disk access required to load a previously unloaded form or font. Another way to cause a hole in the paper path is for a job or an operator to change the output page destination (such as print tray to sample tray or print tray 1 to print tray 2). Holes caused by error recovery (for example, by disk read or CD/IG errors) and those caused by a nonrecoverable error are not included in the hole count printed on the accounting summary.

RECORDS READ

Number of records read from input source device according to a format defined in JDE.

REPORT COMPLETION CODES

Two codes are listed. The first code is the primary report completion code; the second code is the secondary report completion code. These codes indicate the completion status of the report. Refer to tables 6-1 and 6-2.

Report completion codes refer to abnormal events that occur while the LPS prints a report. If an abnormal event occurs during input processing but the report prints without aborting, the report completion code is zero (0).

The system may combine codes and add them together into a unique code that you must decode. For example, a code of 11 indicates that the system combined exception codes 1, 2, and 8.

These codes also appear in the JOBS command display. This is helpful for reports aborted by the user, for which accounting pages are not printed. For more information about the JOBS command, refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference*.

REPORT NO.

The number of the report within the current job.

SENDER ID

The document sender's name as specified by the Ethernet printing protocol. Up to 19 characters are printed with blanks suppressed.

SF/MF

Entry is SINGLE (single report mode) or MULTI (multiple report mode). The default mode is MULTI, which may be overridden with the START command.

SIMPLEX/DUPLEX

Simplex or duplex mode. Simplex mode is the default. Duplex is selected by the PDL DUPLEX command of the OUTPUT statement.

DUPLEX is overridden by a page-oriented DJDE that specifies transparency printing (TRANS=YES). This page is delivered to the sample tray. DUPLEX is also overridden by the OSS command, TRANS YES, if the operator enters this command before the report is processed.

SOURCE FILENAMES

The names of the disk files transmitted from a workstation on a network to the LPS.

TAPE MOUNTS

A count of the tape volumes required to process an offline job.

TONER ID

The toner ID numbers used for the job. Refer to the Pallettes appendix.

WP EXCEPTION CODE

A code defining a text processing fault in word processing jobs.

WP COMPLETION CODE

A code registering input processing faults. An accounting page prints after each report if you request it or if an error occurs.

The system may combine codes and add them together into a unique code that you must decode. For example, a code of 11 indicates that the system combined exception codes 1, 2, and 8.

XEROGRAPHICS MODE PAGES

The number of black executive mode pages printed and highlight color pages printed.

Table 6-1. **Primary (left) report completion code**

Code	Definition
0	Normal completion
1	Operator-issued SPACE PAGES command
2	End-of-report encountered during SPACE PAGES command processing
4	Data on page exceeded page size
8	Graphic memory size exceeded
16	Font memory size exceeded
32	Report too big for available memory
64	Too much data on a page or duplex setup error
128	Irrecoverable graphics imaging error
256	Irrecoverable disk, CD, or IG error
512	Account page not printed because of aborted job
1024	Unable to recover to a page boundary (following a system crash)
2048	Successive page recover used
4096	Secondary report completion code
8192	Operator issued ABORT O command
16384	Operator issued ABORT JOB# command

Table 6-2. **Secondary (right) report completion code**

Code	Definition
0	Normal completion
1	Data stream stock callout was overridden by the operator
2	SIZING option caused the system to abort the report
4	Rasterization was used during printing
8	More than 8 TL/DL blocks were used on one page
16	CODE=NONE error was detected during printing
32	Set integrity problem
64	Graphic shifted off leading edge of page
128	Operator issued SUBSTITUTE INK command
256	IMISMATCH condition caused report to abort

Maintaining accounting files

The PDL ACCT statement allows you to update accounting information under a specific department name. In addition to the PDL command, you must use system ACCOUNT to set up the list of department names under which the system maintains accounting information.

The font-id you specify for ACRPTF determines the font you use for the accounting report. The font-id specified for SARTF determines the font you use for the system activity report. The font you use must be portrait and no larger than 9 points.

Generating the customer billing report

The customer billing report summarizes billing information by retrieving billing meter information from the systems non volatile memory (NVM).

Successful delivery includes any user-specified point of delivery, dynamically diverted sheets (such as sheets diverted to the sample tray because of an output jam and transparencies deliberately diverted to the sample tray). The system does not count sheets purged after restart.

To generate a customer billing report:

Print	REPORT BILLING PRINT
Print and display	REPORT BILLING PRINT, DISPLAY
Display	REPORT BILLING DISPLAY

Generating the system activity report

The system activity report summarizes system activity by retrieving information from the system activity log file.

Print	REPORT ACTIVITY, PRINT
Display	REPORT ACTIVITY, DISPLAY
Print and display	REPORT ACTIVITY, PRINT, DISPLAY or REPORT ACTIVITY, DISPLAY, PRINT
Print and clear values	REPORT ACTIVITY, PRINT, CLEAR
Print, display, and clear values	REPORT ACTIVITY, PRINT, DISPLAY, CLEAR

Generating the user accounting report

	The user accounting report summarizes the user accounting information by retrieving information from the system activity log file.
Print	REPORT USER, PRINT
Display	REPORT USER, DISPLAY
Print and display	REPORT USER, PRINT, DISPLAY or REPORT USER, DISPLAY, PRINT
Print and clear values	REPORT USER, PRINT, CLEAR
Print, display, and clear values	REPORT USER, PRINT, DISPLAY, CLEAR

Creating the status file user form file

A status file user form file is a user-created file containing commands that describe the content and format of a status report. Its filename is from one to six characters; its file type must be .MSC.

Command conventions

The following conventions apply to the commands in a status file form file:

- Keywords (shown in uppercase letters) must be abbreviated to the first three characters or entered in their entirety.
- Single quotes are required where shown.
- There must be at least one blank between the closing single quote of a text string and the opening single quote of the next text string.
- An apostrophe within a text string is denoted by two consecutive single quotes ('').
- An empty string (KEYWORD='') denotes a blank line.

Command statements

The status file user form file consists of the following commands:

- TITLE (optional)
- COLUMN
- END (optional).

Each statement is made up of one or more commands. Commands within a statement are separated by commas (,).

Comments are delimited by slashes (/).

Terminate the form file with a comma (,), a semicolon (;), and END statement, or the physical end-of-file.

Title statement

The title statement, if present, must be the first statement in the file. It can consist of three commands:

TITLE=*'text string'* [*'text string'...*]

Text strings form the title for the print queue database report. The default value for TITLE is a blank line. The number of lines in TITLE should not exceed four. Lines after the fourth one are ignored.

MAX=*integer*

Defines the number of lines in header rows for the status report. The default is 1. The value for max should not exceed 4. If a value greater than 4 is entered, the system assumes 4.

HJUSTIFY={L | R | C}

Specifies justification (left, right, or center) for the TITLE text. The default is C (center).

Column statement

Each column statement consists of up to seven commands:

HEADER=*'text string'* [*'text string'...*]

The strings form the header for the column that contains the command. If a column header is to contain more than one line, the MAX command must be present. If there is no TITLE command, a MAX command may be included in the column command. The number of lines in HEADER should not exceed the MAX value. If it is less than the MAX value, blank lines are provided on top. The default is the MAX value of blank lines.

WIDTH=*integer*

Defines the width for the column that contains the command. A WIDTH command affects the column that contains it and all following columns, until the system encounters another WIDTH command. The first column defined following the title statement should contain a WIDTH command. Columns with an invalid WIDTH command are ignored by the system.

CONTENT=*three-character-string*

Specifies the status file content of the column. Refer to table 6-4 for a list of status fields. The CONTENT command is required for each column. Columns with an unspecified content are ignored.

LENGTH=*integer*

Specifies the number of characters in the CONTENT field that are to be shown on the report. The number of characters actually printed is whichever value is smallest: the LENGTH value, WIDTH value, or the real length of the status file field. Actual field lengths are listed in table 6-4. The default for LENGTH is whichever value is smaller: the WIDTH value or the real length of the status file field.

HJUSTIFY={L | R | C}

Specifies justification (left, right, or center) for the HEADER text, affecting the column that contains the command and all following columns until another HJUSTIFY command is encountered. The default is C (center).

CJUSTIFY={L | R | C}

Specifies justification (left, right, or center) for the CONTENT text, affecting the column that contains the command and all the following columns until another CJUSTIFY command is encountered. The default is C (center).

PART={L | R}

Specifies the portion of the status file field that CONTENT is to show (left or right) when the specified LENGTH is less than the real length of the status file field. PART affects the column that contains the command and all following columns until another PART command is encountered. The default is R (right).

End statement

The end statement specifies the logical end of the status file form file. Whatever follows the END command is discarded. The END command may also be used as the last command of the last column command with the same result.

Generating custom reports from the print queue database file

The print queue database is maintained by the Queue Manager. It contains valuable information on job processing that you can use for accounting purposes.

You can create applications to read the print queue database, extract job information, and report it in a form that is suited exactly to your needs. This section describes the format of the print queue database file (QUE.SYS) and some of the utilities provided with your system to manipulate that file.

Some users of Xerox laser printing systems may have applications already created which read and report on the status file (STAFIL.SYS). The system no longer maintains this file. If you have applications at your site that read the status file format, you must convert the QUE.SYS file to the STAFIL.SYS format using the Status File Converter (SFC) commands. This procedure is described in this section. The structure of the STAFIL.SYS files are also described in this section.

Structure of the print queue database file

The print queue database file (QUE.SYS) has three sections:

- The first block (512 bytes) is the file header. It contains information on the structure of the file, for example:
 - Number of bytes in the header before queue entries
 - Size of a queue entry
 - Version identifier of the queue database structure
 - Scheduling mode
 - Any ink substitutions that are in effect
 - Current ink loaded.

When creating applications to read the QUE.SYS file, use the information in the header to determine the exact format of the queue entries.

- The second block (512 bytes) contains the system job table. This block contains data on the two jobs in the job queue.
This information is not generally relevant to accounting reports, but may be used for diagnostic purposes.
- The third block contains the individual queue entries for this version of the file. The queue entries provide information on report processing that is usually used in accounting and billing reports.

Structure of the file header block

The file header is the first block (512 bytes). The header contains information that may be necessary to read the queue entries in the third logical block (for example, the size of the header block and the size of each queue entry).

Table 6-3. **Print queue database: Header block**

Start	Length	Field value
0	2	DSR flag (system use only)
2	6	Database version number (6 bytes)
8	2	Header size (number of bytes)
10	2	Queue entry size (number of bytes)
12	2	STITCH attribute flag: BIT0 is set for STITCH ON BIT0 is null for STITCH OFF
14	2	Current primary ink ID
16	2	Display mode: 1 = Brief 2 = Full
18	2	Next entry number to be assigned
20	2	Queue database becoming full warning frequency flag
22	2	Output wait flag (system use only)
24	2	QMG state flag: 0 = Active 1 = Stopped 2 = Idle
26	2	Not used

Table 6-3. Print queue database: Header block (continued)

Start	Length	Field value
28	2	RESET flag: 0 = RESET not in progress 1 = RESET in progress
30	2	Queue size (maximum number of queue entries in the database)
32	2	Number of DONE entries to display (default is 100)
34	2	Scheduling mode: 1 = Received 2 = Single 3 = Multiple
36	32	Substitute ink table (contains 32 primary ID numbers)
68	2	Queue database becoming full warning number of entries remaining flag (default is 40).
70	2	Answer flag (system use only)
72	2	Wait report flag (system use only)
74	2	Output ready flag (system use only)
76	2	Non-print task job number (system use only)
78	2	Delete data file flag (for non-print task) (system use only)
80	4	Data file name (for non-print task) (system use only)
84	2	Data file type (for non-print task) (system use only)
86	2	Reload non-print task after printing flag (system use only)
88	4	Non-print task name (system use only)
92	2	Number of jobs in the job queue
94	4	Job numbers of jobs currently in the job queue
98	2	Number of the next available job queue entry
100	2	Number of the next job to start processing
102	2	Number of the next job the input task is processing
104	Varies	The remaining portion of the header block is padded with zeros

Structure of the queue entries

The queue entries contain the information on report processing. The queue entries are located in the QUE.SYST file, starting at the third block and occupying all subsequent blocks in the file. The number of entries stored in the queue is set when the queue is initialized (refer to the "Using the Queue Manager" chapter).

Each queue entry contains the data for one report, and is 346 octal bytes in length. The queue entry is logically divided into three sections:

- The entry control section
- Input accounting data
- Output accounting data.

Tables 6-4 to 6-6 list each value contained in the queue entry and its position in the record.

Table 6-4. **Print queue database: Entry control data**

Start	Length	Field value
0	2	Queue record number
2	2	Queue entry number
4	2	Job number
6	2	Report number
8	1	Queue status flag (bit value): 0 = HIP job 1 = XUV report (HIP XUV job) 2 = Multiple primary report 3 = Requires stitching 4 = (not used) 5 = IN/PRINTING phase 6 = Currently printing 7 = N to 1 report
9	1	Queue state (integer value): 1 = Available for use 2 = Formatting (in INPUT phase) 3 = Active (in OUTPUT phase) 4 = Queued for OUTPUT 5 = Held for printing 6 = Done (report finished printing) 7 = RESET 8 = User aborted the request 9 = INPUT aborted the request 10 = OUTPUT aborted the request

Table 6-4. . **Print queue database: Entry control data**
(continued)

Start	Length	Field value
10	2	Queue status flags (bit value): 0 = Last report scheduled with the SCHEDULE command 1 = Last report of the job that was printed 2 = Warning/frequency flag: almost out of packets 3 = Recovery flag 4 = SDI initiated job 5 = INPUT aborted the request 6 = INPUT declared that the user aborted the request 7 = IMISMATCH = CONTINUE flag 8 = ISUBSTITUTE NONE flag 9 = Non-print task 10 = Do not recover (DNR) Interpress
12	1	Month (integer from 1-12)
13	1	Year (integer offset from year 1900)
14	1	Hour (integer from 1-24)
15	1	Day (integer from 1-31)
16	1	Second (integer from 1-60)
17	1	Minute (integer from 1-60)

Table 6-5. Print queue database: Input accounting data

Start	Length	Field value
18	2	Number of cylinders used by the report
20	8	Customer job number
28	16	Customer report name
44	6	JDE used
50	6	JDL used
56	2	Maximum copy count
58	4	Number of pages written to disk
62	32	Department name
94	2	Report suffix for split reports
96	2	Number of times a tape was mounted
98	4	Number of graphic images read
102	1	Input time (minutes)
103	1	Input time (hours)
104	1	<p>Status flag (bit value):</p> <p>BIT0: 0 = no collate, 1 = collate</p> <p>BIT1: 0 = simplex, 1 = duplex</p> <p>BIT2: 0 = not copy sensitive, 1 = copy sensitive</p> <p>BIT3: 0 = no stitch, 1 = stitch</p> <p>BIT4: 0 = 1-to-N, 1 = N-to-1</p> <p>BIT5: 0 = No end-of-file, 1 = end-of file</p> <p>BIT6: 0 = Single primary report, 1 = multiple primary report</p> <p>BIT7: 1 = primary ID id a hint (taken from the ILIST in a DJDE)</p> <p>If the report has been aborted, the integer value of the status flag has the following meaning:</p> <p>1 = Task initiated abort</p> <p>2 = User initiated abort</p> <p>3 = Not recovered because of the job recovery method selected</p>
105	1	Input time (seconds)
106	2	Abort message or completion code (this is the code that appears on the accounting page; for a description of these codes, refer to tables 6-1 and 6-2).

Table 6-5. **Print queue database: Input data** (continued)

Start	Length	Field value
108	2	Secondary abort message code (this is the code that caused the system to abort the message. Refer to the <i>Xerox 4850/4890 HighLight Color LPS Message Guide</i> for more information on system messages.
110	4	Logical pages written to disk
114	4	Number of INPUT data blocks read
118	4	Number of tape blocks skipped
122	4	Number of records read
126	6	Color primary ID value: 28 = Blue 24 = Cardinal 25 = Cyan 27 = Green 26 = Magenta 29 = Red 23 = Royal For additional primary color values, refer to the <i>4850/4890 HighLight Color LPS Palettes</i> appendix at the end of this document.
132	2	Paper stock name count
134	4	Paper stock name #1 of 8
138	4	Paper stock name #2 of 8
142	4	Paper stock name #3 of 8
146	4	Paper stock name #4 of 8
150	4	Paper stock name #5 of 8
154	4	Paper stock name #6 of 8
158	4	Paper stock name #7 of 8
162	4	Paper stock name #8 of 8

Table 6-5. Print queue database: Output accounting data

Start	Length	Field value
166	2	Number of copies printed
168	4	Number of pages printed this copy
172	4	Output pages to bin
176	2	Output pages to tray
178	4	Number of graphic images printed
182	2	Completion code #1 (this is the code that appears on the accounting page; for a description of these codes, refer to tables 6-1 and 6-2).
184	2	Completion code #2 (see above)
186	4	Number of simplex pages delivered
190	1	Output time (minutes)
191	1	Output time (hours)
192	1	<p>Status flags (bit value):</p> <p>BIT0: 0 = no collate, 1 = collate</p> <p>BIT1: 0 = simplex, 1 = duplex</p> <p>BIT2: 0 = not copy sensitive, 1 = copy sensitive</p> <p>BIT3: 0 = no stitch, 1 = stitch</p> <p>BIT4: 0 = 1-to-N, 1 = N-to-1</p> <p>BIT5: 0 = No end-of-file, 1 = end-of file</p> <p>BIT6: 0 = Single primary report, 1 = multiple primary report</p> <p>BIT7: 1 = primary ID id a hint (taken from the ILIST in a DJDE.</p> <p>If the report has been aborted, the integer value of the status flag has the following meaning:</p> <p>1 = Task initiated abort</p> <p>2 = User initiated abort</p> <p>3 = Not recovered because of the job recovery method selected</p>
193	1	Output time (seconds)
194	4	Number of duplex pages delivered
198	4	Number of lines
202	4	Number of highlight color pages
206	1	Time stamp (minutes)
207	1	Time stamp (hours)
208	1	Not used

Table 6-6. Print queue database: Output data (continued)

Start	Length	Field value
209	1	Time stamp (seconds)
210	2	Abort message (this is the codes that appears on the Accounting page; for a description of these codes, refer to tables 6-1 and 6-2).
212	2	Total number of holes picked
214	2	Number of aborted pages
216	1	Image start time (month)
217	1	Image start time (year)
218	1	Image start time (hour)
219	1	Image start time (day)
220	1	Image start time (second)
221	1	Image start time (minute)
222	1	Image stop time (month)
223	1	Image stop time (year)
224	1	Image stop time (hour)
225	1	Image stop time (day)
226	1	Image stop time (second)
227	1	Image stop time (minute)
228	2	Secondary abort message (this is the system code that caused the system to abort the message. Refer to the <i>4850/4890 Xerox HighLight Color LPS Message Guide</i> for more information on system messages).

The Status File Converter (SFC)

The Status File Converter's software function is to convert the contents of the QUE.SYS file to the format of the STAFIL.SYS file as defined later in this section.

Using the SFC commands

Use the Status File Converter (SFC) commands to:

- convert the QUE.SYS to STAFIL.SYS file with the SFC command,
- save the QUE.SYS file to a specified file using the SFC SAVE command, and
- convert the QUE.SYS to STAFIL.SYS file and to generate reports using the commands listed in table 6-7.

Table 6-7. SFC commands

Command	Purpose
SFC SFS DISPLAY	Converts the QUE.SYS file and displays the status file entries.
SFC SFS <i>file-name</i>	Converts the QUE.SYS file to STAFIL.SYS and prints a status report in a user format specified in <i>file-name</i> .
SFC SFS HARDCOPY	Prints one or more copies of the QUE.SYS file.
SFC SFS HOST	Converts the QUE.SYS file and formats it to transmit to a remote host.
SFC SFS TAPE	Converts the QUE.SYS file and saves it on a tape.

Using the SFC keyword in connection with the SFS keyword results in the conversion of the QUE.SYS file to the STAFIL.SYS file. Then, the resultant STAFIL.SYS file is used by the SFS software to generate the desired report.

Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for more information on using these commands.

Structure of the status file

To accommodate customers who have written their own host/PC based programs that are compatible with the internals of the status file, the structure of the STAFIL.SYS on the software version 4.0 or higher is the same as the one on the earlier software. Remember that the Status File (STAFIL.SYS) is generated by use of the appropriate SFC command.

Status files consist of data blocks of 512 bytes. The number of data blocks in the STAFIL.SYS is dependent on the size of the size of the QUE.SYS file. Each 512-byte data block may contain up to three report entries.

Table 6-8 shows the structure of the STAFIL.SYS 512-byte data blocks.

Table 6-8. **Structure of each block in the status file**

Bytes	Contents
0-167	Report entry
168-335	Report entry
336-503	Report entry
504-505	Unused
506-507	File format ID (internal use only)
508-509	Forward pointer
510-511	Backward pointer

Forward and backward pointers

The STAFIL.SYS is designed to be a circular file. Each record in the STAFIL.SYS contains a set of forward and backward pointers which contain the numbers of the next and previous blocks to be used. The first block is numbered 0, the second block is numbered 1, and so on. The STAFIL.SYS file wraps around. That is, the backward pointer of the first block contains the number of the last block, and the forward pointer of the last block contains the number of the first block.

The content for each report entry is defined in table 6-9.

Table 6-9. **Structure of each report entry in the status file**

Bytes	Report entry contents
0-1	Status message (other bits in this word may be set) 80016 = DONE 50016 = IN/PRNTG 40016 = PRINTING 20016 = QUEUED 10016 = INPUT 2016 = RESET 116 = RCVY N/S
2-3	Job number
4-5	Report number
6-11	Time: current year minus 1900; month; day; hour; minute; second
Bytes	Data from input processing
12-17	Customer job number
18-33	Customer report name
34-39	JDE
40-45	JDL
46-47	Maximum copy count
48-51	Pages written to disk
52-82	Department name
83	Report number suffix
84-85	Tape mounts

Table 6-9. **Structure of each report entry in the status file**
(continued)

Bytes	Data from output processing									
86-89	Graphic images read									
90-92	Input processing time HH/MM/SS									
93	Flag byte: <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 33%;"><u>Bit 0</u></td> <td style="text-align: center; width: 33%;"><u>Bit 1</u></td> <td style="text-align: center; width: 33%;"><u>Bit 2</u></td> </tr> <tr> <td style="text-align: center;">0=noncollate</td> <td style="text-align: center;">0=simplex</td> <td style="text-align: center;">0=not copy sensitive</td> </tr> <tr> <td style="text-align: center;">1=collate</td> <td style="text-align: center;">1=duplex</td> <td style="text-align: center;">1=copy sensitive</td> </tr> </table>	<u>Bit 0</u>	<u>Bit 1</u>	<u>Bit 2</u>	0=noncollate	0=simplex	0=not copy sensitive	1=collate	1=duplex	1=copy sensitive
<u>Bit 0</u>	<u>Bit 1</u>	<u>Bit 2</u>								
0=noncollate	0=simplex	0=not copy sensitive								
1=collate	1=duplex	1=copy sensitive								
94-97	Completion code (in ASCII)/abort message (in ASCII)									
98-99	Customer job number (extension—most significant)									
100-125	Unused									
126-127	Copies printed									
128-131	Pages printed									
132-135	Pages to bin									
136-137	Pages to tray									
138-141	Graphic pages printed									
142-143	Report completion code (binary)									
144-145	Secondary report completion code (binary)									
146-149	Unused									
150-152	Output processing time HH/MM/SS									
153-156	Simplex pages printed									
157-160	Duplex pages printed									
161-164	Lines printed									
165-167	End time stamp									

Printing, saving, and copying the status file

Once you have converted the print queue database to the status file format, use the following SFS commands to print, save, or copy the status file. Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for more detailed information on these commands.

Note: The SFC command must be issued to create a status file (STAFIL.SYS) prior to using any of the commands listed in table 6-10.

Table 6-10. SFS commands

Command	Purpose
SFS <i>file-name</i>	Accesses the status file (STAFIL.SYS) to create and print a user defined file format. See the section Creating the status file user form file on page 6-10 for more information.
SFS HARDCOPY	Accesses the status file (STAFIL.SYS) to print formatted detail description of the contents found in each report entry in the status file.
SFS HOST	Accesses the status file (STAFIL.SYS) to creates a host-formatted file labeled SFASEB.MSC. The file can be transmitted to a remote host using the LPS host file transfer interface. See section 'Structure of the SFS host output file (SFASEB.MSC)'
SFS TAPE	Accesses the status file (STAFIL.SYS) to write formatted report entries to tape.
SFS DISPLAY	Accesses the status file (STAFIL.SYS) to display the content of each report entry to the console. Each displayed report entry is formatted with descriptive fields.

Structure of the host/tape output

To write status file information to tape using the SFS TAP command, the user must first issue an SFC command to create the status file, (STAFIL.SYS). Once the STAFIL.SYS is created, the SFS TAP command accesses it and writes each report entry to tape. The data blocks written to tape are defined as follows:

- First block** Required LPS standard tape label. It contains "STATUS FILE x", where x is the size of each block written to tape using the SFS TAPE command. x can be 80, 256, or 512 bytes.
- Second block** Contains the DISK ID, DATE, and TIME parameters.
- Report entry blocks** Contain formatted report entries. Each report entry written to tape, begin with a three byte field which contains the size in bytes of the entry, including that field.
- The report entries written to tape have the same format as the entries in the SFASEB.MSC file -(See table 6-11).

Structure of Report entries on SFASEB.MSC

Each report entry field has its length specified by three leading bytes to the field. The total length value includes the three leading bytes. Table 6-11 depicts each entry field and their character size. The min and max columns depict the minimum and maximum

For both tape and host formats, each data block contains maximum of two report entries. The first three bytes of each data block contain the data length in this block, including the three-byte length field. Preceding each data field is the three-byte length of that field. For more detailed information about the data fields in each report entry, please refer to the STATUS FILE FORMAT section of the *XEROX Printing systems Technical Bulletin, VOLUME 6, ISSUE 1, 10 January 1990*.

Printing an SFS tape output file

Use the ASCII JDE and the DUMP JDL supplied from the system software tape to obtain a dump of the status file using the SFS TAPE command. lengths for each field written, including the three leading bytes.

Table 6-11. **Structure of each report entry in the SFASEB.MSC**

Field	Report Entry Field	Character Length	Field Byte Length	
			Min	Max
0	Total number of bytes used to write the report entry fields, including this field.	3	3	3
1	Status code	1	4	4
2	Job number	1-5	4	8
3	Report number	1-5	4	8
4	Date:Year	2	5	5
5	Date:month	2	5	5
6	Date:Day	2	5	5
7	Customer job number	6	9	9
8	Customer report name	16	19	19
9	JDE	6	9	9
10	JDL	6	9	9
11	Maximum copy count	1-5	4	8
12	Pages written to disk	1-9	4	8
13	Department name	31	34	34
14	Report number suffix	1	4	4
15	Tape mounts	1-5	4	8
16	Graphic images read	1-9	4	12
17	Input processing time: Hour	2	5	5
18	Input processing time: min	2	5	5
19	Input processing time: sec	2	5	5
20	Flag	3	6	6

Table 6-11. **Structure of each report entry in the SFASEB.MSC (continued)**

Field	Report Entry Field	Character Length	Field Byte Length	
			Min	Max
21	Message completion code	4	7	7
22	Copies printed	1-9	4	12
23	Pages printed	1-9	4	12
24	Pages to bin	1-9	4	12
25	Pages to tray	1-9	4	12
26	Graphic pages printed	1-9	4	12
27	Output processing time: Hour	2	5	5
28	Output processing time: min	2	5	5
29	Output processing time: sec	2	5	5
30	Simplex pages printed	1-9	4	12
31	Duplex pages printed	1-9	4	12
32	Number of lines printed	1-9	4	12
33	Entry number	1-5	4	8

Tracking LPS maintenance calls

Use the PROBLEM command to log system problems and to generate the six-digit dispatch code requested by the LPS service representative. Use this command:

- Before placing a service call
- When the system directs you to enter the PROBLEM command (since it detects a problem it cannot correct).

Logon level Levels 1 through 5.

Syntax PROBLEM

Respond to the prompts shown in the following figures:

Figure 6-1. **Initial PROBLEM display**

```
PROBLEM C00 PROBLEM ANALYSIS RUNNING
PROBLEM ANALYSIS RESULTS - DISPATCH CODES

##.##.##(message)
1. TO REPORT ADDITIONAL PROBLEMS.
2. NO MORE PROBLEMS TO REPORT.
INDICATE SELECTION BY ENTERING NUMBER.
```

A sample dispatch code is 10.00.18 SYSTEM REPORTED PRINTER PROBLEM.

If you wish to report additional problems, enter the number 1. The system prompts you to identify the type of problem.

Figure 6-2. **Prompt for PROBLEM type**

```
WHICH OF THE FOLLOWING TYPES OF PROBLEMS DO YOU WISH TO
REPORT?
1. COPY QUALITY PROBLEMS
2. FREQUENT JAMS
3. OUTPUT TRAY PROBLEMS
4. PAPER TRAY PROBLEMS
5. TAPE PROBLEMS
6. OTHER SYSTEM PROBLEMS
7. NO OTHER SYSTEM PROBLEMS
INDICATE SELECTION BY ENTERING NUMBER.
```

This prompt repeats until you enter 2, 3, 4, or 7. When you enter 7, the system display provides a code you should record and report to your LPS service representative.

Figure 6-3. **Field service code display**

```
CALL THE FIELD SERVICE DISPATCHER AND REPORT THESE NUMBERS
##.##.##
OPERATOR---INDICATE THE ACTION YOU HAVE TAKEN.
1. SERVICE CALL HAS BEEN PLACED.
WAITING FOR SERVICE.
2. SERVICE CALL HAS BEEN PLACED.
RETURN TO THE OPERATING SYSTEM.
3. SERVICE CALL HAS BEEN COPIED FOR LATER CALL.
RETURN TO THE OPERATING SYSTEM.
4. NONE OF THE ABOVE.
RETURN TO THE OPERATING SYSTEM.
INDICATE SELECTION BY ENTERING NUMBER.
```

Before entering 1, 2, 3, or 4, record the six-digit dispatch code to report it to your LPS service representative.

If you enter 2, 3, or 4, you return to the operating system and may resume printing. If you enter 1, the system cannot be used until it has been repaired.

The LPS editor is a system task that allows you to edit system disk files. You can create or modify files when the system is idle.

This chapter provides background on how to use the editor. Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for detailed information on the separate commands used within an editor session.

Using the editor

The editor allows you to directly access each line of a source file. You enter single string commands to:

- Create a sequenced source file
- Insert, reorder, and replace lines of text
- Selectively print and display files
- Merge files
- Match, move, and substitute character strings within a specified range of text lines
- Copy, rename, and delete files.

Illegal filenames

When creating files, do not choose a filename that closely resembles a system command, especially in the first three characters of the command. For example, do not begin a filename with "TAP" or "CAR" which are similar to the TAPE and CARTRIDGE commands.

Editing session characteristics

When you modify a file, the commands you enter are applied to a temporary file in working storage, not to the permanent file on a system disk. The system saves the changes you made to that file only when you request it.

Each source file has line numbers associated with its data records. These line numbers are supplied by the editor during file creation. Files entered through open reel tape have line numbers added to them at the time they are entered into the system. Source files entered from the online subsystem through the HOSTCOPY utility must have line numbers added through the editor (refer to the MERGE command for more information).

Use only the uppercase letters (A through Z) and the digits 0 through 9 in the source filename.

File directories

You can edit source files which are cataloged in the directories listed in table 7-1.

Table 7-1. **Source file type directories**

File type	Contents
CMD	Command file source files
DAT	Data files
FSL	Form source language files
LIB	Utility files
JSL	Job source language file
MSC	Miscellaneous user files
PCH	Patch files
TMP	Temporary user files

You cannot edit non-source files listed in table 7-2. You can access files within these directories only by a subset of the editor commands: LIST, FILE, DELETE, COPY, and RNAME.

Table 7-2. **Non-source file type directories**

File type	Contents
CME	Copy modification entry object files
FNT	Font data files
FRM	Form object files
ICT	Ink catalog (defined ink data) files
IDR	Ink description data files
IMG	Digitized graphic image files
IPF	Interpress fragment files
IPM	Interpress font mapping files
JDL	Job descriptor library object files
LGO	Logo data files
LOG	System integrity log files
OSD	OSDS diagnostic files
STK	Stockset files
SYS	System data files
\$Y\$	System files
TPF	Temporary patch files
TSK	System task image files
TST	RTEXT object files
XCS	Interpress document files

Examples of editor sessions

The following examples illustrate the use of some editor commands. All commands in these examples are invoked by pressing <ENTER>. Underlined text represents information entered by an operator.

Create and save a JSL file

```

0S1000 READY FOR COMMANDS  08:35:00
EDIT
EDIT>INS 10,10
000010  SYSPDL:SYSTEM;
000020  VOLUME HOST=POWERVS,PLABEL=YES;
000030  BLOCK LENGTH=2048;
000040  ACCT USER=(BIN,TRAY);
000050  21:JOB;
000060  END;
000070  <ENTER>
EDIT>SAVE SYSPDL.JSL
EDIT>CLEAR
WORK FILE CLEARED
EDIT>END

```

Modify and resave a JSL file

```

EDIT
EDIT>GET SYSPDL.JSL
EDIT>INS 11
000011  /*SYS JDL*/
000012  <ENTER>
EDIT>FIND 10-60/JOB/
21:JOB;
EDIT>S/JOB/JDE
21:JDE;
EDIT>DIS 40
ACCT USER=(BIN,TRAY);...000040
EDIT>REMOVE 40
1 RECORD DELETED
EDIT>SAVE
EDIT>DISPLAY
<displays working file>
EDIT>CLEAR
WORK FILE CLEARED
EDIT>END

```

Copy a file, list all files, and delete the old file

```
OS1000 READY FOR COMMANDS 08:35:00
EDIT
EDIT><u>COPY SYSPDL.JSL TSTSYS.JSL</u>
CREATING FILE TSTSYS.JSL
EDIT><u>FILE JSL</u>
<THE SYSTEM LISTS ALL THE FILES IN THE JSL DIRECTORY>
EDIT>
EDIT><u>DELETE SYSPDL.JSL</u>
FILE SYSPDL.JSL DELETED
EDIT><u>END</u>
```

Print a text file

```
OS1000 READY FOR COMMANDS 08:35:00
EDIT
EDIT><u>GET TSTSYS.JSL</u>
EDIT><u>PRINT</u>
Print job queued, must exit to print
EDIT><u>CE</u>
OS1010 STARTING JOB 00003
OS1000 READY FOR COMMANDS 08:36:00
OS1020 JOB 00003 HAS COMPLETED INPUT PHASE
OS0020 RESUMING OUTPUT
OS1030 JOB 00003 HAS COMPLETED PRINTING
OS1000 READY FOR COMMANDS 8:36:30
```

OR

```
OS1000 READY FOR COMMANDS 08:35:00
EDIT TSTSYS.JSL
Editor version xx here
EDIT><u>PCE</u>
OS1010 STARTING JOB 00003
OS1000 READY FOR COMMANDS 08:36:00
OS1020 JOB 00003 HAS COMPLETED INPUT PHASE
OS0020 RESUMING OUTPUT
OS1030 JOB 00003 HAS COMPLETED PRINTING
OS1000 READY FOR COMMANDS 8:36:30
```

8. Creating, editing, and running command files

This chapter provides a general background on creating, editing, and running command files on your laser printing system (LPS). Refer to the *Xerox 4850/4890 Highlight Color LPS Command Reference* for detailed information.

Creating command files

A command file is a set of frequently used commands you create through the editor and store as a .CMD file.

Command file characteristics

Command files can consist of system, editor, or font commands. System commands use all system commands and a subset of editor file operation commands. They are useful for combining and executing frequently used sets of system commands for functions such as system startup and disk initialization, testing, and shift or day initialization. A system command file may contain any of the standard system and command file commands, and may execute an editor command file.

Editor command files use all editor commands. Some editor command files do not run properly as system command files. Others may run slowly due to repeated loading of the editor.

You can also include string substitutions and conditional execution commands in command files to allow interactions between the LPS and an operator while the LPS executes a command file.

If you save a command file with an extension that is not .CMD, you must specify both the filename and file extension to execute the file. For example, if you named a command file TEST.TMP, you must execute it as @TEST.TMP.

Do not abbreviate commands within command files.

File mask conventions

A mask is a way of specifying multiple files. Within the mask, you can substitute one or more question marks (?) or asterisks (*) for valid alphanumeric characters. Existing filenames are compared to the mask. An asterisk or question mark can represent any character. If the last character of the mask is an asterisk, any subsequent position equals the asterisk. If the last character of the mask is a question mark, subsequent positions must be blank.

Using the question mark

File mask AB??.FNT represents all .FNT files. For example, ABxx.FNT. ?s are positional wildcards.

Using the asterisk

File mask AB**.*FNT represents all .FNT files with names such as:

- AB.FNT
- ABx.FNT
- ABxx.FNT.

An asterisk is a nonpositional wildcard.

- ABxxx.FNT
- ABxxxx.FNT.

Program lines

Every program in a command file is made up of program lines containing statements. Each program line must have a number.

Example

```
10 .SETV C=50
20 .BEZ C 0
30 ; YOU DID NOT BRANCH BECAUSE C DOES NOT EQUAL ZERO
40 .EXIT
50 .0
60 ; YOU BRANCHED BECAUSE C DOES EQUAL ZERO
70 .EXIT
```

In the example above, there are seven program lines, one for each statement.

Variables

Variables represent either numeric or string values that are used in the program. Two common variables used in command files are:

- *x*
- *num*.

x *x* is a variable (A-H) that can represent a numeric range of 0 to 255 or it can represent true or false. *x* can be set through program command or by operator input.

num *num* is a label defined in the command file to which branch commands will branch to if the conditions are met.

Exceptions to these common variables, as well as command unique variables, are defined in the individual command descriptions.

Conventions for notes in the command file

The conventions for notes in the command file are identified as:

- Operator notes
- Programmer notes.

Operator notes

To make a note to the operator that will be seen on the screen, you must begin the program line with a semicolon.

Example

```

10 .SETV C=50
20 .BEZ C 0
30 ; YOU DID NOT BRANCH BECAUSE C DOES NOT EQUAL ZERO
40 .EXIT
50 .0
60 ; YOU BRANCHED BECAUSE C DOES EQUAL ZERO
70 .EXIT

```

In the example, program lines 30 and 60 start with a semicolon. The contents of each line display on the screen. If a blank line is needed, just enter a semicolon.

Programmer notes To make programmer notes that only appear in the command file and are not printed, use an asterisk instead of the semicolon. The data entered following the asterisk is only displayed with the command file code.

Example

```

10 .SETV C=50
15 * 50 IS THE VALUE OF COUNTS
20 .BEZ C 0
30 ; YOU DID NOT BRANCH BECAUSE C DOES NOT EQUAL ZERO
40 .EXIT
50 .0
60 ; YOU BRANCHED BECAUSE C DOES EQUAL ZERO
70 .EXIT

```

In the example, the contents of program line 15 is displayed only when looking at the code for the command file.

Building a command file

To build a command file:

1. With the LPS displaying the message `OS1000 READY FOR COMMANDS 04:35:23,enter EDIT and press <ENTER>`.
2. At the `EDIT` prompt, enter the program code starting with the program line number for the first code.
3. When you are finished specifying the code, enter **SCE** and press `<ENTER>`.
4. Enter the name of the newly created command file using the `.CDM` extension and press `<ENTER>`, for example:

WD44.CMD

This stores the name of the command file and places the system back into OSS mode.

Editing command files

To change the command file, enter **EDIT *filename*** and press <ENTER>.

To display the command file, enter **DISPLAY** and press <ENTER>.

The command file is displayed with the line numbers to the left.

Using the Edit commands, add, delete, or change the command file as necessary. When finished, use the SCE command to exit to OSS.

Running sample command files

This section provides sample command files. Bold text represents user-created messages that may be selectively displayed when the command is executing.

Use the following syntax to run command files:

- System command files – *@filename*
- Editor command files – EDI *@filename*.

Using an editor command file to delete files

```

;SAMPLE EDITOR COMMAND FILE
.HOME
.ASK      'ARE YOU LOGGED ON TO LEVEL 2 OR 3'
.BF A 60
;MOUNT TAPE CONTAINING TEST FILES
;AFTER TAPE IS MOUNTED
;ENTER RETURN TO CONTINUE
.PAUSE
.ASKV B   'ENTER NUMBER OF TEST FILES TO BE COPIED (0-3) (Y/N)'
.BX B 60,56,54,52
.52
COPY TAPE LABEL GBAR.FRM
.54
COPY TAPE LABEL ABC.JSL
.56
COPY TAPE LABEL PCHA.TMP
.60
.ASK A    'DO YOU WANT TO DELETE THE TEST FILES FROM DISK (Y/N)'
.BF A 80
DELETE GBAR.FRM,ABC.JSL,PCHA.TMP
; **FILES HAVE BEEN DELETED**
.70
.ASKS I
.BF I 80
DELETE %I
.BR 70
.80
END

```

Using an editor command file to verify processor

```

(FILENAME=RNEDIT.COMD)
*THIS COMMAND FILE MAY BE RUN BY THE EDITOR OR THE
*SYSTEM
*
.BCP EDITOR 100
*EDIT IS NOT THE PROCESSOR
.BCP SYSTEM 20
;THIS COMMAND FILE MUST BE RUN USING THE EDITOR.
;PLEASE RESTART IT WITH THE EDITOR.
.EXIT
.20
EDIT
<BODY OF COMMAND FILE APPEARS>
.EXIT

```


This chapter provides information and instructions for working with font files on your LPS.

Font editor utility

The font editor utility allows you, with logon class 2 or higher, to create font files from existing non-licensed and licensed font source files. You determine what existing source files need accessing, when they need accessing, and which characters need copying.

Font file information is categorized as being either general or specific. General information, such as matrix length, filename in ASCII, program version, header-character width tables, and pitch applies to the entire font file. Font files can also uniquely relate to an individual character, such as a bit map.

Session messages

Messages display during a font editing session when appropriate. These messages may help you with the following:

- Advise you to save the results of a previous editing session before the current font editing session is started.
- Remind you to save the results of the current font editing session before terminating the session.
- Indicate a condition of possible incompatibility, which can occur when selecting characters from several existing font files and adding them to a new font file.
- Indicate the existence of another file with the same name as the one which is about to be stored.
- Advise you that the system has specified a character more than once during the same font editing session.
- Inform you that that new font has exceeded the maximum font file size of one megabit.

Character selection mode

The character selection mode keyword commands are preparatory in nature and work in conjunction with INCLUDE and RECODE. You may specify the character selection mode as HEXADECIMAL, OCTAL, or CHARACTER. When you invoke the font editor, the HEXADECIMAL mode is assumed by default. The assumed or specified character selection mode prevails throughout the current font editing session until you respecify it.

If the HEXADECIMAL mode is in effect, the character code assignments, expressed as hexadecimal values, specify the characters copied into the new font file.

If the OCTAL mode is in effect, the character code assignments, expressed as octal values, specify the characters copied into the new font file.

If the CHARACTER mode is in effect, the character literal specifies the characters copied into the new font file.

When you use the keyboard and display as the input device, both uppercase and lowercase characters are available through the shift key.

The CHARACTER mode is appropriate when you can enter specified characters from the keyboard. You use the HEXADECIMAL or OCTAL modes to specify any character that you cannot enter on the keyboard, including delimiters and non-graphic or nonprinting character or symbols. For example, the system always recognizes the blank, comma, and hyphen characters as delimiters within the font editor.

All characters that you include within a new font file are specified as parameters of INCLUDE or RECODE. The system copies bitmaps of the specified characters from the selected source file into the new font file the system is creating. If you specify a character more than once during a font editing session, the system issues a warning and the specified character obtains the attributes copied from the font file.

Source font file

There are two types of font files: primary and secondary.

Primary source font files

An existing font file is generally selected as the primary source file because it contains one or more characters required by the new font file. It also has the required general and overall font characteristics desired for the new font. You may specify the primary source font file with EDIT or INPUT.

Secondary source font files

You can select a second font file and copy characters from it to the new font file. You can select multiple secondary source font files. Use OPEN to access a secondary source file and CLOSE to remove a secondary source file.

While the secondary source file you specify is open, the following occurs:

- The primary source font file is unavailable until the secondary source font closes. Refer to CLOSE in the your command reference.
- The character selection mode is HEXADECIMAL, OCTAL, or CHARACTER.
- The commands INCLUDE and RECODE are used, as required, to enumerate the characters you want to copy from the secondary source file.

The system monitors the selection of a secondary source font file and issues an appropriate warning message whenever it detects a condition of possible font incompatibility. Make sure you understand the full consequence of any error or warning message before continuing.

If a secondary source font file is the first licensed font selected for this new font file, the general characteristics initially copied from the primary source font file are overwritten with general characteristics and augmented with security information from the licensed font file.

You may close a selected secondary source font file explicitly with the CLOSE command or implicitly with the END command.

Sample font editing session

Each row in table 9-1 corresponds to a procedure step. Follow the steps in table 9-1 to run a sample font editing session. This example creates a new font file, UNEEK, using an existing font file, L05TAB, as the primary font file, and an existing font file, L05TBC, as the secondary source font file.

Table 9-1. Sample font editing session

Step	Keyword command	Function																					
1	FEDIT	Invokes the font editor.																					
2	INPUT L05TAB.FNT	Selects the primary source font file.																					
3	HEXADECIMAL	Specifies character selection mode. You can omit this step because this is the default.																					
4	INCLUDE 20	Copies a blank character with a hexadecimal character code assignment of 20 in both font files.																					
5	RECODE 3A=41-46	Copies and recodes the uppercase characters (A-F) with contiguous character code assignments within the new font file: <table border="1" data-bbox="889 625 1429 835"> <thead> <tr> <th>Letter</th> <th>New CCA</th> <th>Source CCA</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>3A</td> <td>41</td> </tr> <tr> <td>B</td> <td>3B</td> <td>42</td> </tr> <tr> <td>C</td> <td>3C</td> <td>43</td> </tr> <tr> <td>D</td> <td>3D</td> <td>44</td> </tr> <tr> <td>E</td> <td>3E</td> <td>45</td> </tr> <tr> <td>F</td> <td>3F</td> <td>46</td> </tr> </tbody> </table>	Letter	New CCA	Source CCA	A	3A	41	B	3B	42	C	3C	43	D	3D	44	E	3E	45	F	3F	46
Letter	New CCA	Source CCA																					
A	3A	41																					
B	3B	42																					
C	3C	43																					
D	3D	44																					
E	3E	45																					
F	3F	46																					
6	OCTAL	Changes character selection mode.																					
7	RECODE 177=44	Copies the dollar sign (\$) and recodes the corresponding character code assignment from an octal 44 to an octal 177.																					
8	CHARACTER	Changes character selection mode.																					
9	INCLUDE 0-9, a-z, A-Z	Copies these 62 characters (digits 0-9, the lowercase alphabet, and the uppercase alphabet) as expressed literals. Character code assignments will be the same in both font files. For an input device limited to uppercase characters, code this as INCLUDE 0-9, A-Z.																					
10	OPEN L05TBC.FNT	Opens secondary source font file.																					
11	HEXADECIMAL	Changes character selection mode.																					
12	INCLUDE 10-11	Specifies characters to be copied.																					
13	RECODE 12=3D	Copies the equal sign (=) and recodes it from hexadecimal 3D to hexadecimal 12.																					
14	RECODE 13=95	Copies the not equal sign () and recodes it from hexadecimal 95 to hexadecimal 13.																					
15	RECODE 14=3C	Copies the less than character (<) and recodes it from hexadecimal 3C to hexadecimal 14.																					
16	RECODE 15=3E	Copies the greater than character (>) and recodes it from hexadecimal 3E to hexadecimal 15.																					
17	CLOSE	Closes secondary source font file. This step is optional as the file is closed automatically when you use the END command.																					
18	OUTPUT UNEEK.FNT	Assigns unique font filename and saves file.																					
19	END	Terminates font editing session.																					
20	SAMPLE UNEEK.FNT	Obtains copy of new font file.																					

10. Using highlight color

Highlight color is created by printing dots of black dry ink and dots of color dry ink combined with white space to create shades and tints of black or of the highlight primary color. For more information on highlight color, refer to the *Xerox 4890 HighLight Color LPS Product Reference*.

For each shade and tint that can be printed on the LPS, there is a description in a file specifying the unique pattern of black dots and highlight color dots (within a given matrix of dots on the page) to produce that shade or tint.

These shades and tints are referred to as inks. The descriptions are stored in a file known as an ink catalog. For convenience, the inks are collected in logical groupings within the ink catalog file. These groupings are known as palettes.

You reference these defined inks in PDL, FDL, DJDE, and CME language statements and in the FCU command. Each ink can be identified by its long name, which is descriptive, or by its short name, which identifies the percentage of black and highlight color in the ink (refer to the "Referencing inks" section in this chapter).

Ink catalogs and palettes

The LPS provides four ink catalog files which are loaded during the sysgen process. For a printed reference of the inks in each ink catalog, refer to the printed palettes provided with your documentation library, or refer to the "Printing palettes" section in this chapter.

DFAULT ink catalog

This DFAULT ink catalog contains palettes and defined inks for black and primary color dry inks. Use the inks in this catalog when referencing color in PDL, DJDE, and FDL language statements.

The palettes in the DFAULT ink catalog are:

- SIMPLE
- DFAULT
- PICTORIAL
- Palettes for the primary colors
- MONO

The SIMPLE palette contains only solid monochrome inks: solid black and solid primary colors.

Refer to the *4850/4890 Highlight Color LPS Palettes* for a list of the primary colors currently available.

The DFAULT and PICTORIAL palettes contain the same inks.

The palettes for primary colors (named for the specific color) contain inks that use black and a primary color only. The ink names represent the amount of highlight color and black in the ink. For example, B67K22 is 67% blue primary and 22% black primary. The remaining 11% is white (not covered by any dry ink).

Refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference* and the *Xerox 4850/4890 HighLight Color LPS Forms Creation Reference* for guidelines on using these palettes.

XEROX1 ink catalog

The XEROX1 ink catalog contains the SIMPLE, MONO, and palettes for primary colors. Refer to the *4850/4890 Highlight Color LPS Palettes* for a list of the primary colors currently available.

Use the ink names in this catalog for PDL, DJDE, and FDL commands.

The XEROX1 ink catalog uses an ink naming convention such that ink names are consistent across all palettes, which simplifies ink referencing.

For example, in the DFAULT ink catalog, ink name B67K22 is an ink that prints 67% blue dry ink and 22% black dry ink is named. The B indicates that the highlight primary color is blue. In the XEROX1 catalog, the same ink is named H67K22, where H simply indicates that the percentage refers to the highlight primary color. By using this structure, different primary colors having the same shade or tint have the same name.

XEROX ink catalog (Interpress)

The XEROX ink catalog is used by the Interpress decomposer and should not be referenced in PDL, FDL, or DJDE commands.

The XEROX ink catalog contains all the palettes in the DFAULT catalog, plus the following additional palettes which are used only in Interpress:

- DISTINCT
- SOLID.

SDFLT\$ ink catalog

The SDFLT\$ ink catalog contains the default ink used when the system cannot find the ink requested by a job (DFAULT.BLACK). Do not specify this catalog in your print job.

Referencing inks

When referencing inks in the FCU command and in the PDL, DJDE, and FDL commands; the ink would be referenced as follows:

'catalog-name.palette-name.ink-name'

catalog-name

Name of the ink catalog from which the palettes are being taken. If you do not specify an ink catalog, the system uses the DFAULT ink catalog.

palette-name

Name of a palette as defined in the ink catalog from which the specified ink name is to be taken. If you do not specify a palette, the system uses the DFAULT palette for the DFAULT and XEROX ink catalogs. You must specify a palette for the XEROX1 catalog, as it does not have a default palette.

ink-name

Name of an ink as defined in the ink catalog and palette. It represents a specific tone, tint, or shade of the primary color you have selected. Ink name elements may contain an alphanumeric name, such as H38K21, or a long name consisting of one or more words separated by spaces, such as LIGHT GRAYISH RED.

The three elements of an ink name are separated by periods, so the following formats are possible:

- *'ink-name'*
- *'palette-name.ink-name'*
- *'ink-catalog-name.palette-name.ink-name'*
- *'ink-catalog-name..ink-name'*.

catalog and *palette* are optional; *ink* is required. All ink references must be specified within single quotes, for example:

'XEROX.DFAULT.VIVID GREEN'

Inks may be specified fully (*'catalog.palette.ink name'*), or with the palette and color name (*'DFAULT.GREEN'*), or with only the color name (*'GREEN'*).

The DFAULT ink catalog provides white as an ink. The ink name is as follows:

- K0 in the PRIMARY COLORS palettes.
- WHITE in the DFAULT and PICTORIAL palettes.

Color mapping

Some application software packages give you the ability to specify colors based on a red-green-blue model or another standard color definition model such as CMYK or HSB. These applications provide a much larger range of colors than the 4890 and 4850 are capable of printing.

In these cases, and when full-color Interpress or PostScript masters are sent to the printer, colors are automatically mapped to tones of the highlight primary color installed in the printer. This highlight color is defined as an ink in one of the ink catalogs described in this chapter.

The result of color mapping is that the color printed on your LPS may not match the color specified in the application software. In some cases, the best approximation of the color referenced is a shade of gray.

If the result of the color mapping process is not acceptable, you may be able to obtain a palette for your application software package. Using this palette, you can more easily obtain a predictable result.

Palettes for application software packages

You can purchase a palette installation package that includes palettes for many third party application software packages. Refer to the hardcopy palette included in the package to verify how the application colors you choose appear when printed on the LPS.

Some applications present a list of color names (not necessarily 4850 or 4890 names) to select. Other applications provide a palette on the screen from which you choose a color. In general, all 4850 and 4890 LPS colors are not supported by the application software, nor are all application colors supported by the LPS.

Ink substitution

The ink substitution parameter allows the person who programs a job to control the color used to print the job. If the report requires a color other than the color installed in the printer, the ink substitution parameter produces one of the following results:

- The report is printed automatically using the ink installed in the printer. This option is used when the color is not critical.
- The report is held in the queue until the required ink is installed. This option is used when the color is critical.
- The operator is given the option to decide whether the report is held in the queue or printed using the color currently installed or black only.
- The job is aborted.

The dry ink is substituted when:

- The operator overrides the requested dry ink by entering a SUB INK command (provided the ink substitution parameter allows it).
- A report has a page that requires more than one highlight primary color. The printer prints the first color specified where it is referenced and substitutes black for all other colors referenced on that page.
- A report references an undefined ink.
- A report has no ink list in the JDE, and printing starts before the system verifies that the highlight color requested is loaded, resulting in an ink mismatch.

Printing palettes

Two sets of printed palettes are included in your documentation library. You can also print additional palette sets by sampling the palette forms stored in your system.

Refer to the *4850/4890 Highlight Color LPS Palettes* for information on how to print the XEROX1, DFAULT and XEROX ink catalog palettes.

Compatibility with other Xerox laser printing systems

You can print jobs on the 4850 or 4890 which were coded for and compiled by other 300 dots per inch (dpi) Xerox laser printing systems. The 4850 or 4890 HighLight Color LPS print these files in the default ink (black unless you have entered a SUB INK command) because they are not in color format.

You can transfer color files to a black-only Xerox LPS, but these files print with unexpected results on the black-only Xerox printers.

Adding or modifying color

This section describes adding color to existing files and modifying color applications.

Adding color to monochrome files

You can print a monochrome job using color without modifying the application:

- Add Copy Modification Entries (CMEs). Refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference* for more information on CMEs.
- Convert graphic images (.IMG files) to color using the File Conversion Utility (FCU). Refer to the "Converting files to color format" chapter for more information.
- Add color to the form or elements of the form by modifying the FSL and recompiling the form. Refer to the *Xerox 4850/4890 HighLight Color LPS Forms Creation Reference* for more information on FSLs.
- If the application uses a font index byte to change fonts, use the byte as an ink index to change the text color when the font is changed. For more information, refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

Modifying color applications

If you wish to modify the application, the following additional capabilities are available:

- Modify the application to output a separate ink index byte with each record to indicate the color to use to print that record. When combined with overprinting, you can use this feature to highlight a portion of the print line. For more information, refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.
- Use a DJDE to change the color of text, print unconverted graphics files in color, print forms in color, print boxes with colored borders and colored fill, or print horizontal or vertical lines in color. For more information, refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

11. Converting files to color format

You can easily add color information to any compiled form (.FRM), logo (.LGO), or image (.IMG) file with the File Conversion Utility (FCU). FCU allows you to convert files from a noncolor format (pre-V3.7) to a color format (V3.7 or greater). These files print in monochrome in the color you specify.

Using FCU

FCU guidelines are as follows:

- Convert all files to color format or structure print jobs to include only files in color format or only files not in color format.

These options are recommended because a form file can call only logo files in the same format as the form file. You do not have to convert image files to color format.

- Use FCU to convert an .FRM file. Do not convert the .FRM files until after you convert the .LGO files called by the form files. Run FCU on all logo files before you run FCU on the form files.
- FCU is unable to convert form files created under some, older versions (pre-V10, specifically) of the operating system software. If FCU returns an error message, you may need to recompile the form prior to converting it.
- Use FCU to print files in solid monochrome color.
- FCU cannot convert files to monochrome black once they have been converted to monochrome color, nor can FCU unconvert files. If you wish to maintain a monochrome black version of the file, archive a copy of the file before running FCU.

Choose FCU instead of modifying .JSL and .FSL file when the following occurs:

- The .FSL source of an .FRM file no longer exists.
- The file should print in monochrome color, such as solid black, solid red, and solid blue.
- The time to recompile is a factor. Running FCU on an .FRM file takes about 30 seconds; recompiling a complicated form can take 15 minutes.

Using ink lists

Each form, logo, or image file has an internal ink list specifying one or more defined inks. The system uses these defined inks to print the form, logo, or image elements. The ink lists can specify the following:

- Inks with the ink catalog name, the palette name, and the ink name. For example, enter the following:

'XEROX.SIMPLE.RED'

- Inks with the palette name and ink names. For example, enter the following:

'SIMPLE.RED'

- Inks with only the ink name. For example, enter the following:

'RED'

The default ink catalog and palette for FCU are XEROX.SIMPLE. Use the simplest syntax whenever possible.

Overriding ink lists

A form often includes logos, images, or both in addition to its lines, text, and boxes. The GRAPHIC and LOGO commands call images and logos. These commands also override the defined inks specified internally for these files if you code the .IMG or .LGO internal INK parameter without specifying the NOSUB (no substitution) option as follows:

FORM APPLY;	000010
PORTRAIT;	000020
GRID IS 1 INCHES	000030
INK 'BLACK', 'RED';	000040
FONT PO812A;	000050
LOGO OURCO AT 0,1,INK 'RED';	000060
GRAPHIC STAR AT 5,5,INK 2;	000070
TEXT USING FONT 1 AT 1,3 'APPLICATION';	000080
END;	000090

Although LOGO used an ink name and GRAPHIC used an ink reference number, both the OURCO logo and the STAR image print in red monochrome if you do not convert them by FCU using the NOSUB parameter.

Coding the INK statement and referring to each ink with an ink index is recommended to simplify the process of tracing ink overrides.

Refer to the *Xerox 4850/4890 HighLight Color Print Description Language Reference* for more information on using color.

Steps for converting files to color format

You can convert all image, logo, and form files that are on your LPS to color format. This conversion enables you to call any logo or image file into any form file. It also simplifies programming by keeping image requirements consistent with logo and form requirements.

CAUTION: Once a file has been converted using FCU, you cannot convert it back to black monochrome. If you wish to maintain a monochrome black version of the image, form, or logo, archive a copy of the file before running FCU.

Follow these steps to convert your files to color format:

1. Convert all image and logo files to monochrome color format using black. For example, enter the following:

```
FCU * .IMG,'BLACK'
```

```
FCU * .LGO,'BLACK'
```

2. Decide which logos and images you want printed in a particular color.
3. Rerun FCU on each .LGO and each .IMG file using the NOSUB parameter to permanently assign the color to the file. For example, enter the following:

```
FCU OURCO.LGO, 'BLUE',NOSUB
```

```
FCU STAR.LGO, 'RED',NOSUB
```

5. Decide which forms you always want printed in a particular color.
6. Rerun FCU on each .FRM file using the NOSUB parameter to permanently assign the color to the file. For example, enter the following:

```
FCU SUPPLY.FRM, 'GREEN',NOSUB
```

You cannot abort FCU. FCU terminates only when it has completed converting the specified files.

Printing with FCU

The form or logo does not print in the defined ink. It prints in monochrome using the color used in highest percentage to create the defined ink as follows:

- The image or logo files in a print job are in their own internally defined color rather than in the forms color. This occurs unless the FSL, JSL, or DJDE statement invoking the image or logo file includes an ink override and the defined inks are specified in the .IMG or .LGO file without the NOSUB parameter.
- The SAMPLE command with the INK parameter does not print an .FRM or .LGO file in the specified ink unless the file is already in color format. It does, however, print an .IMG file in color whether or not it is in color format.
- If the .FSL file codes ink overrides for the .LGO or .IMG files it calls, then SAMPLE also overrides the internally specified inks for the logos and images in the form, provided that the defined inks are specified without the NOSUB parameter.
- Conversely, if the .FSL file does not code ink overrides for the .LGO or .IMG files it calls, the SAMPLE does not override the internally specified ink for the logos and images in the form.

This chapter discusses how Interpress handles your documents for the laser printing system (LPS) and how to use Interpress options.

How Interpress works

Interpress is a flexible page description language capable of describing two-dimensional images intended for an LPS. Rather than composing images on a page like a page composition language, Interpress describes previously positioned images, such as text, vector graphics, and pixel arrays on a page. With Interpress, you can manage parts of your print job such as paper tray selection, output offsetting, stock selection, copy count, page selection on a copy basis, finishing options, and job security.

You create an Interpress master document using Interpress standards and conventions and transmit it to the LPS. The LPS software interprets the Interpress master document to build and print each page image.

The LPS accepts Interpress files from Ethernet or online channel interfaces and so is compatible with other printers in the LPS family.

The Interpress Decomposer supports previously created .XCS files but does not support linked .XCS files.

Types of Interpress supported

Systems with the raster image processor (RIP) printed wiring board assembly (PWBA) support Publication Set Interpress.

Systems without the RIP PWBA support Commercial Set Interpress. Commercial Set Interpress is a part of the graphics composition capability available with Formatting Print Service (FPS) and supports horizontal and vertical lines and line segments. Systems without a RIP PWBA require FPS to support vector graphics (curved lines, diagonal lines, and filled areas).

RIP and job performance

Jobs not requiring advanced RIP functions may run faster on a system without RIP.

Job performance on systems with RIP depends mostly on job composition. The factors affecting performance include:

- Bitmap images requiring decompression, scaling, or rotation
- Page image size
- Number of vector graphics
- Number of text requiring RIP
- Number of different fonts.

Vector graphics (strokes, underlines, and fills) always use RIP. RIP is invoked for imaging text and pixel array objects when text and pixel arrays meet the following criteria:

Text:

- Non-primary color
- Priority important text (VP graphic frame, for example)
- Number of fonts on page is greater than FONTS key minus one.

Pixel arrays:

- Non-primary color
- Priority important images (VP bitmap or image name frame, for example)
- Number of graphics on page greater than 16
- Desired scale is not an integral number
- Rotation of image is desired.

Text conversion and actual lines printed

When systems with an RIP PWBA convert text to graphics to print a document correctly, the Lines Printed field on the accounting sheet does not accurately reflect the actual number of lines printed.

Gray and textured objects

Gray and textured objects require RIP. Their appearance differs on each LPS system. In addition, the gray patterns used to approximate shades of gray differ from one system to another. This might cause slight variances in print jobs where transparent textured objects overlap shaded objects or where transparent shaded objects overlap textured objects.

Using Interpress options

Interpress allows you to ensure job integrity with continuous printing, and to scale images, reference .FRM files, float accent marks, and specify paper size.

Ensuring Interpress job integrity with assured printing

The assured printing feature of the LPS helps ensure Interpress job integrity even when stress conditions occur. It requires the RIP and the graphics video generator (GVG) or GVG2 options. With assured printing, your print jobs have:

- No missing pages
- No unspecified blank pages
- No unspecified printed pages
- Output pages ordered per input master.

Continuous printing handles the following stress conditions:

- Excessive graphic images per logical page
- Excessive forms per logical page
- Excessive fonts
- Excessive graphic density.

Excessive graphic images per logical page

When images in Interpress documents are invoked with *SequenceInsertFile*, RIP allows the LPS to exceed 16 graphic image files on a single page side.

Excessive forms per logical page

When forms in Interpress documents are invoked with *SequenceInsertFile*, RIP allows the LPS to receive more than one form file on a single logical page.

Excessive fonts

The RIP has a large and dynamic font storage that enables the LPS to overcome excessive font use stress conditions by writing the font specification table (FST) and bitmaps to the RIP. This process merges the bitmap reference tables into the compressed full-page raster delivered at the end of the page.

Excessive graphic density

Several parameters describing the mix of graphics on a page determine whether the GVG2+ can decompose and merge the image data within a page preparation time. Use the following equation to determine whether you can print a particular page:

Syntax
$$S_{4890} = 11700 - 196 \times \sum_{i=1}^n (SF_i - 1)$$

Parameters

- S_{4890} Maximum total number of dots on a scan line.
- S Maximum total number of dots on a scan line.
- n Number of graphic images.
- SF_i Scale factor (2 to 8) of the i th image.

To determine actual performance, compare the total pixel height (PH_T) of all the intersecting images along a common scan line to S_{4890} . If S_{4890} is $\geq PH_T$, then the images should print. If S_{4890} is $< PH_T$, the images do not print.

Double the heights for individual two-color images.

Example

The following calculations are for a page with three graphic images that intersect along a common scan line. Image 1 and 2 are one bit per pixel images. Image 3 is a two-color image. Image details are:

- Image 1, $SF=1$, $PH=1800$, 1 bit/pixel (one-color image)
- Image 2, $SF=3$, $PH=300$, OCI
- Image 3, $SF=1$, $PH=600$, 2 bit/pixel (two-color image)

$PH_{total} = PH_1 + PH_2 + 2 \times PH_3 = 1800 + 900 + 2(600) = 3900$

$S = 11700 - 196(3) - 31(0+2+0) = 11050$

$S \geq PHT$, therefore, this page should print.

Ignoring or overriding printing instructions

If the Interpress master does not contain a printing instruction body, then all content instruction bodies are ignored.

Any external or protocol instructions specified from the printing protocol or ENET.JSL, such as *plex* or *copySelect*, take priority over instructions specified in the Interpress master.

Scaling images

RIP allows precise scaling of images. Documents printed on a printer with RIP may be scaled differently from a printer without RIP. For example, images referenced from VP and GLOBALVIEW Image Name frames will be scaled to the size of the frame, so modifications to the frame size will change the size of the resulting image. .IMG compressed images are always scaled integrally.

You can invoke scaling with the PDL INTERPRESS=FRACTIONAL option. Refer to the *Xerox 4850/4890 HighLight Color Print Description Language Reference* for more information.

Referencing .FRM files

Because VP and GLOBALVIEW images a white rectangle of the Image Name frame before calling out a .FRM file, this can cause overlap problems. To avoid this, position and size the Image Name frame to the size and position of the form you are referencing.

Systems without RIP do not support multiple .FRM callouts.

Substituting font characters

If a character code called out is less than the highest character code, the space character is substituted.

Floating accent marks

Interpress and the Xerox character code standard (XCCS) use two methods for floating accent marks.

In the first method, XCCS defines accent marks with zero escapement. For example, if a base character follows a character with an escapement value of zero, the two characters are imaged on top of each other. This method does not guarantee, however, that the two characters are positioned correctly. You must include relative positioning information in the Interpress master.

The second method is rendering, which is a single character composed from other characters positioned relative to each other. These are combined and stored as one character in the LPS font file.

Specifying paper size

There are three methods for specifying the paper size of an Interpress job:

- Media printing instruction
- Printing protocol associated with document transmission
- Sysgened paper size.

Media printing instruction

You define each unique stock in a job with a *mediumDescriptor*. The set of *mediumDescriptors* forms the media instruction. Select stock for pages with the *mediaSelect* and *pageMediaSelect* instructions.

Clusters and stocksets

Each *mediumDescriptor* is assigned a cluster name so you can use the print CLUSTER and STOCKSET features. You create STOCKSETS from the selected clusters defined in the media instruction and select them with *mediaSelect*. The maximum size of the stockset is limited to the number of input trays specified. At page level, if the medium selected is not in the stockset list, the stockset list is updated with the new cluster name corresponding to the selected medium.

Cluster names are in the format CL nnn where nnn is assigned at run time and corresponds to the element position of the *mediumDescriptor* within the media set. An optional property, *cluster*, in the *mediumDescriptor* allows the override of this automatic assignment. The value of the cluster property is an identifier no longer than six alphanumeric characters.

OTEXT messages

At the start of an Interpress job, OTEXT and OTEXT, WAIT messages prompt you:

```
Please define clusters and load papers as follows:
Cluster: _____ Paper: _____.
```

In this message, the cluster name is assigned as above and paper specification is defined in each *mediumDescriptor*, specifically when the *mediumMessage* or *name* property is used as the paper specification.

At page level, if there is any change in the stockset, the OTEXT and OTEXT, WAIT messages are also updated. If a print job requires more stocks than the number of input trays on the printer, throughput decreases significantly, because each time the operator switches the stock in trays, printing stops.

Paper size

The *MediumXSize* and *mediumYSize* properties of a *mediumDescriptor* are used to find an exact match among the 14 system paper sizes. If an exact match is not found, a range check is made for specified sizes from Printing Protocol Version 3 (PP3). If the range check fails, 8.5 x 11 inches is the default.

Duplex page

You can use the *MediaSelect* instruction to select a new media on the backside of a duplex page, although no error message will be generated.

Printing protocol

Printing Protocol Version 3 supports two methods of requesting media size, known and specified sizes. The VP or GLOBALVIEW paper size print option is a known paper size.

To support selection of multiple sizes, load the desired stocks in separate input trays and set the feed source to FEED AUTO.

PP3 supports the following known sizes:

- USLETTER (1)
- USLEGAL (2)
- A4 (7).

PP3 supports specified sizes in the range 8.0 inches (203 mm) \leq x Dimension (short edge) \leq 8.5 inches (216 mm) and 10.0 inches (254mm) \leq y Dimension (long edge) \leq 14.02 inches (356 mm). Refer to the *Xerox 4850/4890 Highlight Color LPS Print Description Language Reference* for system operability when the specified size is not an exact match of a printer supported size.

Sizes not supported by the printer are ignored and the effective size becomes the sysgened paper size.

Sysgened paper size

For Interpress masters without media printing instructions, or a protocol specified size, you must specify a paper size on the printer with a mini sysgen.

Interpress Font Utility

The Interpress Font Utility (IFU) is a utility for managing fonts that are used with Interpress masters. The IFU commands are described in detail in the *Xerox 4850/4890 HighLight Color LPS Command Reference*.

Color in Interpress

Interpress supports full color specification, that is, you can specify any color in the printable spectrum in an Interpress master. How you select colors depends on the application software package you are using to create the document.

Because the 4850 and 4890 are highlight color printers, the system can print Interpress documents using tones of a single highlight primary color and black only, regardless of how many different colors are specified in the document.

If you specify multiple colors in the document, the system determines which one highlight primary color is most appropriate for the document as follows:

- In some application software packages, for example, GLOBALVIEW, you can select the highlight primary color at the workstation. This information is communicated to the printer through the "printing instructions" in the header of the Interpress master.

- If the color of the document is not communicated to the printer by the application which created it, the system selects the highlight primary color based on the first color encountered in the document.

Once the system determines the highlight primary color, all colors are printed in a tone of that color or black according to the color mapping algorithm in the operating system software.

Example

The document contains shades of both red and green.

- In your application, you choose green as the highlight primary color. All the shades of red are printed in a tone of green or a tone of black, whichever is more in keeping with the aesthetic appearance of the color.
- You are unable to specify that you want the document printed using the green highlight primary. If green is the first color in the document, it prints in green. If red is encountered first, it prints in red.

For best results, documents prepared for printing on the 4850 and 4890 laser printing systems should contain specifications for tones of only one of the highlight primary colors currently available. This ensures that your document prints as you intended.

Effect on queue management

The highlight primary color chosen for the job (refer to the previous section) is communicated to the Queue Manager by the Interpress decomposer.

- If the highlight primary color is not included in the printing instructions, the Queue Manager cannot determine the color requirements until the job has been processed by the Input task. When the Input processor encounters the first color specification, that color is chosen as the highlight primary color. The job is held until it can be processed for printing.
- If the highlight primary color is included in the printing instructions, the Queue Manager can determine the color requirements of the job without processing it first.

Color mismatch parameters

In some application software packages, you can also pass ink substitution instructions to the printer in an Interpress document. These are known as color mismatch parameters. You have the following options:

- Hold a document in the queue until the specified color is loaded in the printer
- Print the document in the currently loaded color
- Cancel the job if a color mismatch occurs.

You can also pass a color mismatch parameter to the printer through the JSL used to print Interpress jobs. For more information on JSLs, refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

13. Using the Queue Manager

Overview

This section on the Queue Manager (QMG) contains an overview of how the system holds reports and schedules them for printing based on the highlight color and stitching attributes of each report and the resources currently available on the printer.

The Queue Manager facilitates the efficient printing of reports having different resource requirements.

When set up in the "schedule by resources" mode, the system queues any report that cannot be printed because it requires a resource (color or stitching) that is not available. Reports that can be printed with the current printer resources are scheduled for printing in the order received.

Under some conditions, when all the jobs in the queue that can be printed are done, the printer stops and requests operator intervention. The operator either changes the dry ink installed in the printer or enters a SUB INK command for selected reports.

The Queue Manager provides reports showing the status of entries in the queue, and provides many features for managing those entries, including moving, scheduling and canceling.

You can save the queue database file for billing or accounting purposes.

Scheduling modes

The Queue Manager operates in one of three scheduling modes, which define how the QMG processes reports:

- Received mode. This is the traditional mode that all previous versions of printer software utilize. In this mode, the system does not hold reports in the queue, but prints them in the order received. If a report requires a color other than the color installed in the printer, the system must substitute inks or wait for the operator to install the required color before printing can resume.
- Schedule Single mode. The Queue Manager schedules reports that require a single color that matches the color currently loaded. For example, if you have red ink loaded, the Queue Manager schedules all reports requiring red, and holds all reports requiring more than one color and all reports requiring any color other than red.

- Schedule multiple. The Queue Manager schedules only reports that require more than one color within a report. When all the multiple primary reports have been scheduled, and no more multiple primary reports are being input, the single primary reports that match the currently loaded color housing are scheduled.

Initializing the print queue database

Initializing the queue creates or recreates the print queue database file (QUE.SYS), deleting all entries in the queue in the process. Use this command when setting up your system for the first time, changing the size of the report queue, or if the QUE.SYS file becomes corrupted.

Refer to the "Maintaining the queue database file" section in this chapter for instructions on saving the queue database file.

To initialize the queue, enter the INITIALIZE QUEUE command:

INITIALIZE QUEUE [*entries*] [NOF | OWF | DWF | NWF:*n.m*]

[*entries*]

Specifies the number of entries in the queue. Must be a number between 200 and 2000. 400 is the default warning threshold and three is the default message frequency.

[NOF|OWF|DWF|NWF:*n.m*]

Specifies the conditions for displaying warning messages to alert the user when the queue file is becoming full.

NOF

Do not display a warning message.

OWF

Display a warning message based on the warning threshold and message frequency values set for the existing print queue database.

40 is the default warning threshold and 3 is the default message frequency.

DWF

Display a warning message based on the default warning threshold (40) and message frequency (3).

[NWF:*n.m*]

Display a warning message based on the *n*, the warning threshold, and *m*, the desired frequency.

Setting up the scheduling mode

To set up the scheduling mode, enter the SCHEDULE command:

SCHEDULE [RECEIVED | SINGLE | MULTIPLE]

You can enter the SCHEDULE command with no parameters to display the current scheduling mode.

The scheduling mode remains in effect until you enter the SCHEDULE command again or until the next sysgen. After a sysgen, the default scheduling mode is Received.

Displaying the queue status

To display the status of the report queue, enter SHOW QUEUE STATUS command:

SHOW QUEUE STATUS

The system displays the following information about the system status and about the report queue:

- Queue manager status (stopped or active)
- Scheduling mode (RECEIVED, SINGLE or MULTIPLE)
- System status (idle, online or offline)
- INPUT and OUTPUT status (stopped or active)
- STITCH status (off or on)
- The number of jobs being held in the queue listed by the resource requiring them to be held.

Setting the queue display format

When you list jobs in the queue, you can choose from three formats for the display. You can set a default for the display format using the SET QUEUE DISPLAY command. The value you set for the default remains in effect until you enter this command again with a new value.

The default format can be overridden by specifying the display parameter in the JOBS command.

To set the queue display format, enter the SET QUEUE DISPLAY command:

SET QUEUE DISPLAY {BRIEF | CLASSIC | FULL}

The three display formats provide the following information:

- The brief format lists each report on one line in an abbreviated display. This format lists the entry number and job number, but not the report number.
- The classic format provides more detailed information, but does not list the queue entry number or the resources required by the report.
- The full format displays all pertinent information about each entry in the queue. In this display format, an asterisk appears next to the attribute of the job that is causing the job to be held in the queue. Each queue entry is displayed on three lines.

Managing entries in the queue

The Queue Manager provides many functions for managing reports in the queue.

The **MOVE #** command allows you to move a queue entry to any position in the queue.

The **SCHEDULE #** command allows you to move one or more queue entries to the top of the queue. This feature is used to print reports that must be printed immediately.

With the **MOVE #** command, a report that is moved to the top of the queue does not print unless the resources are available to print it, or unless an appropriate ink substitution is in effect. With the **SCHEDULE #** command, the report prints regardless of the resources required, and if the correct color or stitching is not available, printing is suspended pending an operator intervention.

In schedule resource mode (**SCHEDULE SINGLE** or **SCHEDULE MULTIPLE**) while online, using the **MOVE** command on the last report received may only have temporary results. Even though the **MOVE** command can move the last report received, subsequent commands (such as the **JOB** command) may move the report back to its original position (at the end of its queue). This is because when the system is online, the last report received (if it has **QUEUED** or **HELD** status) may still be in the input phase, and some user commands automatically move reports that are in the input phase to the end of its (**QUEUED** or **HELD**) queue.

To prevent this automatic requeuing, you can put the system offline and then back online (either immediately after or preferably before the **MOVE** command), which removes the last report from the input phase. Make sure no data is being received when taking the system offline.

You can also remove entries from the queue using the **ABORT** or **CANCEL** commands. These commands give you the capability to select multiple entries in a single command by their entry numbers or by their resource requirements.

For more detailed information on these commands, refer to the *Xerox 4890 HighLight Color LPS Operator Guide*.

Stopping and restarting the Queue Manager

Stop the Queue Manager to prevent it from scheduling any more entries. For instance, you should stop the Queue Manager prior to changing the dry ink installed and before entering the **SUB INK** command.

Enter the **STOP Q** to stop the Queue Manager.

Enter **CONTINUE Q** to restart the Queue Manager after stopping it. Pressing <CONTINUE> achieves the same result. If you neglect to continue the queue after stopping it, the system will eventually print all the jobs in the queue that can be printed and processing will stop.

Managing Interpress reports

Interpress reports may contain multiple color specifications. However, Interpress documents print in only one color plus black; all other colors specified are printed as a tone of the chosen highlight primary color. Some applications allow the user who created the document to choose the highlight primary color. Otherwise, the highlight primary color chosen is based on the first color encountered in the document.

This affects how the Interpress report is handled in the queue when the Queue Manager is in schedule by resources mode:

- If application does not communicate the color requirements to the printer, the job is initially held as a multiple highlight color report until it can be processed by the Input task. At that point, the highlight color is chosen based on the first color encountered, and the reports are then held or printed depending on their resource requirements.
- If the highlight primary color is chosen by the user, the report is handled without prior processing.

For more information about color in Interpress documents, refer to the "Using Interpress" chapter.

Color mismatch options

How the Queue Manager handles an Interpress report depends on the color mismatch option specified. This option can be communicated to the printer by the application software through the printing instructions in the Interpress master, or through the JSL used to print Interpress reports on your system. The options are as follows:

- Hold the report until the chosen highlight primary color is loaded in the printer
- Print the report using whatever color is currently loaded
- Cancel the report if a mismatch is encountered.

In the absence of a color mismatch specification, the Interpress report is held in the queue according to its resource requirements until it can be printed.

Running utilities

If reports are being held in the queue, do not enter STOP before attempting to run one of the allowed system utilities. If the system is in a stopped state, enter **CONTINUE** before running the utility.

Recovering from a system rollover

If the 4890 LPS rolls over or experiences a system failure, you have four options for recovering the jobs in the queue:

- Full Recovery. After rebooting, the system begins processing the report that was printing when the system crashed.
- Partial Recovery. The system aborts the job or report that was printing when the system crashed and begins printing the next job in the queue.
- Reset Queue. Clears all jobs in the queue, but maintains the queue history files. All jobs in the queue must be sent again.
- Clear Queue. Clears the queue and all history files as well.

Always attempt a full recovery first. If the job is the cause of the fault, the system will probably roll over again. If the full recovery fails, attempt a partial recovery. Do not select the Reset Queue or Clear Queue options until you have attempted at least a partial recovery.

The recovery procedure and the recovery options are described in detail in the *Xerox 4890 HighLight Color LPS Operator Guide*.

Maintaining the queue database file

The queue database file (QUE.SYS) contains the attributes and states for every report in the queue, including those that are done and have been printed. This file is useful for billing and accounting purposes (refer to the "Generating Reports" chapter for more information).

<p>CAUTION: Do not under any circumstances delete the QUE.SYS file. Doing so can cause unpredictable and undesirable consequences.</p>

The queue file can hold up to 2,000 entries. You specify how many entries the file holds when you initialize the queue. If you do not specify a value for the number of entries, the default is 400.

When it becomes nearly full, the system displays warning messages. In the queue initialization process, you also set the parameters for the display of warning messages and their frequency.

When the queue file reaches its capacity, it begins overwriting itself. If you use this information for record keeping of any kind, it is very important that you collect this data before the file becomes full.

You have three options for collecting the report data in the queue database:

- Save the queue database file (QUE.SYS) to another name on the system disk (or directly to another medium) and process the data in that format using whatever application you wish.
- Convert the file to the STAFIL.SYS format saved as a different name and process the data in that format using whatever application you wish.
- Convert the QUE.SYS file to the STAFIL.SYS format and print an SFS report.

Saving the queue database file

The queue database file is called QUE.SYS, and is stored on your system disk. You can copy the file to a different name on the system disk. To save the file to another name, use the Status File Converter utility (SFC). The SFC SAVE command copies the QUE.SYS file to a temporary file for storage or archival.

SFC SAVE cannot be performed when there are unprinted entries in the queue. It is solely to preserve the information of a job after it printed.

For more information on copying files, refer to your *Xerox 4850/4890 HighLight Color LPS Command Reference*.

Converting the queue database file to STAFIL.SYS format

To convert the queue database file (QUE.SYS) to the status file (STAFIL.SYS) format, use the Status File Conversion (SFC) utility. SFC saves the QUE.SYS file and converts it to the traditional STAFIL.SYS format, thus allowing the SFS report to be used. Use the SFC command. This automatically converts the QUE.SYS file and creates a new file on your system disk called STAFIL.SYS.

Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for additional information on these commands.

Converting to STAFIL.SYS format and using SFS

To convert the queue database file to STAFIL.SYS (thus allowing SFS to be used), enter the SFC SFS HARDCOPY command. This command first converts the QUE.SYS file to STAFIL.SYS, and then invokes and runs SFS.

Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for additional information on this command.

Printing the queue database file

To print the queue database file, enter the SFC SFS HARDCOPY command. Refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference* for additional information on this command.

Clearing the queue database

Once you have collected the important data in the queue database file, you should clear the file. Clearing the file erases all record of entries in the queue database.

To clear the queue, enter the CLEAR QUEUE command:

CLEAR QUEUE [NOF | OWF | DWF | NWF:*n.m*]

[NOF|OWF|DWF|NWF:*n.m*]

Specifies the conditions for displaying warning messages that alert the user when the queue file is becoming full.

NOF

Do not display a warning message.

OWF

Display a warning message based on the warning and frequency flags set for the existing print queue database.

DWF

Display a warning message based on the default warning threshold (40) and message frequency (3).

[NWF:*n.m*]

Display a warning message based on the *n*, the warning threshold, and *m*, the message frequency.

This chapter provides information and instructions for setting up clusters. Clusters are a systematic method for feeding specific paper stock to print jobs. The following are the most important characteristics of clusters:

- One or more feeder trays are identified as a single logical group called a cluster.
- Each cluster feeds one stock type to the LPS. The system automatically selects between the cluster's trays as they become empty or as page size requirements change.
- A cluster can have stock in different sizes.
- One or more trays in the cluster may be preferred. Preferred trays are trays recommended by the application programmer or by the site supervisor for the operator to load the stock.
- The trays loaded with the specified stock are the current trays.
- The operator can override the preferred tray recommendation.
- The data stream can specify the stock used to feed a page.
- The operator can override the data stream instructions by selecting a specific cluster or tray.

Displaying cluster status

The programmer creates applications indicating the system controller the stock to use to print the jobs. One of the operator jobs is to load the stock and specify the contents of each tray. The system controller then selects the stock as required by the application, selecting a feeder tray for each page by checking the cluster name and paper size associated with the page.

Enter **CLU** to display cluster status, as shown in figure 14-1.

Figure 14-1. Cluster status display

CLUSTER	ASIZ	----PREFER----	----CURRENT----	----STATUS----
MAIN	A	1	1	HAS TRAYS
AUX	A	2	2	HAS TRAYS
AUTO		1 2 3 4	1 2 3 4	HAS TRAYS
WHITE	A	1 2		Is Defined
RED		3		Is Defined

Setting up cluster information

The programmer sets up the information in the CLUSTER, ASIZ, AND PREFER columns. The operator sets up the CURRENT column information.

CLUSTER column

Displays the name of the cluster.

ASIZ column

Indicates with an A that the cluster may have multiple sizes of paper.

PREFER column

Indicates in which tray the programmer recommends that the operator loads the stock for greatest efficiency.

CURRENT column

List which trays, if any, contain the cluster's stock.

STATUS column

Displays "Has Trays" for clusters with loaded stock and "Is Defined" for clusters without loaded stock.

Defining cluster status

Clusters are defined in the STATUS column as follows:

Undefined

The cluster is not in the printer's cluster database. Until the cluster is defined, it is not available to use.

Is defined (inactive)

The cluster is in the printer's cluster database and has defined preferred trays, but the clusters stock is not loaded.

Has Trays (active)

The cluster is in the printer's cluster database and has defined current trays. At least one tray contains the stock specified for the cluster.

In Use

The cluster is active or inactive. It was called by stock name by the most recent STOCKSET command in the job's data stream.

Missing

The cluster is undefined. It was called by stock name by the most recent STOCKSET command in the job's data stream.

Using clusters

You can group any combination of trays into a cluster. The trays are grouped together because they hold the same stock, or they hold stock that differs only in size. You specify the cluster's paper stock by any combination of weight, color, size, and so on. Clusters include instructions with a report identifying:

- The clusters needed by the report, such as stockset
- The cluster you want to use to print each particular page
- The recommended trays for loading the stock.

You store the defined clusters in the CLUSTR.LIB file using CLP or CLU. CLUSTR.LIB, the printer's cluster database, stores up to 159 clusters. Any job that runs on the printer can call clusters.

Since jobs often require various stocks, you can also define cluster groups as stocksets. Any job can call a stockset to run on the system. Use clusters to decrease how often you load different stocks. Verify job and cluster status using the CLU commands. The cluster definitions specify the stock to load and the trays to use for queued jobs.

When cluster trays are loaded without entering the CLU commands, the system assumes that the trays have been refilled and no cluster changes have occurred.

Storing clusters

The CLUSTR.LIB file is the cluster database for the LPS. Each cluster definition is a record in the file. The system creates the file when a print job is run and no CLUSTR.LIB exists.

CLUSTR.LIB is a user file you can copy from one system to another even if the first LPS has trays the second LPS does not have. The trays not in the second system are deleted from the cluster definitions that reference them. When copying the CLUSTR.LIB file from one system to another, it is necessary to reboot the system for the clusters in the new file to be accessible. Furthermore, if the new cluster file is a previous version, it will be automatically upgraded. When the upgrade takes place, an informative message is displayed. No clusters are lost in the upgrade process.

The default CLUSTR.LIB contains definitions for the MAIN, AUX, and AUTO clusters. You can store these clusters as they are or modify them before you use the clusters. The trays are defined as follows:

- MAIN is defined as tray 1
- AUX is defined as tray 2
- AUTO is defined as trays 1, 2, 3, 4.

The OUTPUT FEED= statement is valid with FEED=MAIN and FEED=AUX because the system defines the MAIN and AUX trays as clusters in order to support backwards compatibility. Both clusters are always active regardless of whether they are specified in the active stockset.

Do not use FEED=MAIN and FEED=AUX in conjunction with stocksets.

You cannot edit CLUSTER.LIB. It is automatically updated by the CLU and CLP commands which enter clusters in the database or modify cluster definitions.

How applications use clusters

This section describes using clusters with four types of applications:

- Simple
- OTEXT
- Stockset
- Mixed.

Simple and OTEXT applications

Simple applications use the MAIN and AUX clusters.

OTEXT applications use the MAIN and AUX clusters, but also allow you to load special paper stocks or forms manually.

Stockset applications

Each page has a particular stockset and a particular cluster associated with it. The cluster is always verified because it determines the trays from which a page may feed. The stockset is verified only if the current page calls a different stockset than the previous page called.

Stockset changes require the following cluster error checks:

- Missing—Is the cluster defined in the CLUSTER.LIB?
- No Trays—Does the cluster have current trays?
- Tray Overlap—Do any of the clusters have the same current trays.
- Sizing Error—Are all trays the same size? If not, is autosize set?

A cluster without these errors has an "in use" status. For instance, a cluster has trays and is in the stockset the job last called.

If there is an error in any clusters in the stockset, the system gives an "in error" status to the stockset. Tray Overlap and Sizing Error are fatal errors. The printer does not cycle down if it is active and it does not cycle up if it is inactive. The printer cycles up only if you remedy the problem. Tray Overlap and Sizing Error are the only errors the printer detects.

Missing and No Trays are not fatal errors. The printer cycles down only if the cluster in error is called by a report in the job.

The system displays the following errors only the first time they are encountered in the stockset:

`Sizing error`

Paper is too large for data (requires OUTPUT SIZING = SEMIAUTO) D

`Data off Page error`

Operator FEED command overrides.

As jobs print, the output task uses the application's specified cluster to choose a tray for each page. Occasionally, it provides a cluster status display. If you enter FEED commands that override the data, for example, FEED=DJDE, then the printer cycles down and displays the following message:

```
OS2289 Warning: Current FEED command overrides data
FEED=value.
```

The system issues the confirmation once per stockset. To respond, enter **FEED**, which allows the LPS to select the feeder tray (refer to the FEED override matrix) or enter **CONTINUE O**. If stockset or cluster problems are found, appropriate messages and blinking status values for the problem clusters display. Once you correct the error or decide to override the status, enter **CONTINUE O**.

Mixed applications

When a site runs simple and OTEXT applications with stockset applications, the LPS assumes a stockset change:

- When the report has no stockset information
- At each job boundary.

To run simple or OTEXT applications correctly after a stockset application while avoiding printer cycle downs, ensure that the current trays are always in the MAIN and AUX clusters.

A stockset application that runs after a simple or OTEXT application always causes a printer cycle down, allowing you to load the correct trays, if necessary, before continuing.

Guidelines for creating clusters

Assign each cluster a unique logical name beginning with a letter and consisting of one to six alphanumeric characters. Do not use a keyword, parameter, or LPS option as a name. Group the clusters each application uses into a stockset.

Stocksets convert cluster references to cluster names. Cluster references are recommended, but not required. The cluster name first appears in quotes, followed by its cluster reference. The cluster name is identified to the operator by cluster name.

Try to define stocksets with a maximum of one cluster for each feeder tray on the LPS since the printer often cycles down when a report calls a stockset with more clusters than the number of feeder trays on the system.

You can define stocksets within JDLs or catalog stocksets separately in an .STK file. Like .PDE files, .STK files are accessible to all .JDL files. If you define the stockset in the .JSL files which use it, you must recompile all .JSL file to effect a stock change.

Avoid using stocksets with the cover and RAUX options. Cover pages and pages which meet the RAUX criteria are fed from the AUX cluster, overriding the FEED= option or any other option specified for these pages

Use the RFEED command to select a cluster for a page on the basis of record content.

Steps for creating clusters

Follow these steps to create clusters:

1. Determine the stocks your application uses.
2. Create a .JSL file and compile it to produce an .STK file.
3. Define a logical name, a cluster reference, for each stock. For instance, refer to the example after step 4 using COVER.
4. Associate each cluster reference with a cluster name easily recognized by the operator as a particular stock, as shown in the following example:

```
BILLS: STOCKSET      ASSIGN=( 'CV102, ' COVER),
                    ASSIGN=( 'BL231, ' BILPAG),
                    ASSIGN=( 'SM233, ' SUMMARY);
```

5. Use the cluster reference rather than the cluster name in .JSL files and DJDEs. This way you can make cluster stock changes by modifying the cluster name in the STOCKSET command and recompiling it, rather than modifying the data stream or the application. The cluster reference in .JDL and .PDE files remains valid.
6. Use DJDE FEED parameter in the .JSL file in order to specify the stock you want to use, as shown in the following example:

```
OUTPUT STOCKS=BILLS, FEED=COVER;
...use the DJDE FEED option to change STOCKS
...data for cover letter...
DJDE FEED=BILPAG,END;
...data for bill...
DJDE FEED=SUMMARY, END;
...data for summary sheet
(AND IN THE JSL)
```

You must identify the active cluster in the specified cluster.

The OUTPUT statement requires the STOCKS option; the FEED option is optional. The INFEEED option of the stockset takes effect when no FEED option is coded. If the stockset has no INFEEED option, then the first cluster specified in the stockset is used.

The following example produces the same results as the previous example, but the DJDE STOCKS makes the stockset INFEEED option take effect and cancels the previous FEED option.

```
BILLS: STOCKSET      ASSIGN=( 'CV102, ' COVER),
                    ASSIGN=( 'BL231, ' BILPAG),
                    ASSIGN=( 'SM233, ' SUMMARY);

                    INFEEED=COVER;

OUTPUT              STOCKS=BILLS;
```

The STOCKSET statement has an optional SYSPAGE option. It feeds the system pages, such as the PLABEL, OPRINFO, rollover marker pages, and accounting pages, from the specified stock, as shown in the following example:

```
BILLS:STOCKSET      ASSIGN=('CV102,' COVER),
                   ASSIGN=('BL231,' BILPAG),
                   ASSIGN=('SM233,' SUMMARY);
                   ASSIGN=('RED00', RED);
                   INIFEED=COVER, SYSPAGE=RED;
OUTPUT             STOCKS=BILLS;
```

Keeping stockset changes to a minimum

Each formatted page is associated with the active stockset and the active FEED OPTION STOCK identified by INIFEED FEED in JSL, or the DJDE FEED. A stockset change causes the LPS output task to make additional checks when a page is ready to print. Because these checks can result in a printer cycle down if any stock in the new stockset presents a tray overlap or sizing problem, you should keep stockset changes within applications to a minimum, as shown in the following example:

```
DJDE STOCKS=BILLS1, END;
...data...
DJDE STOCKS=Bills1, END;
...data...
DJDE STOCKS=Bills2, END;
...data...
```

This data stream has three STOCKSET callouts, but only one stockset change. Report boundaries are not treated as stockset changes unless use of the stockset specified by JDE/JDL makes a page print on another stockset, as shown in the following example:

```
DJDE STOCKS=BILLS1, END;
...data...
DJDE STOCKS=Bills2, END;
...data...
```

The data following the report boundary is printed using the JDE/JDL of the START command. If it does not specify OUTPUT STOCKS=BILLS1, the stockset changes.

If the stockset changes, but the second stockset consists of the same stocks as the first stockset, no cycle down occurs since, for printing purposes, the stockset has not changed.

Using clusters with ordered or tab stocks

Ordered stocks consist of any repeating sequence of paper stock types stacked in a tray. These clusters function in the same way other clusters function. A special case of ordered stock is a tab cluster: the tab positions of the tab stock are stacked in a repeating sequence. Refer to the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference* for further information.

Using cluster commands

You use cluster references only to set up print jobs, since all the commands you issue to the LPS refer to cluster names. You define clusters and enter them into the cluster database with CLU and CLP. First determine each cluster's preferred tray settings and its auto sizing attribute as follows:

1. Consider the characteristics of the jobs printed at your site, then assign preferred trays to clusters to establish a standard loading pattern across all printers. Assign larger and more trays to heavily used clusters. Avoid assigning the same trays to clusters often used together.

For example, if clusters RED, WHITE, and BLUE are often called for by a job, and WHITE is used most often, and RED least often, enter the following:

CLP WHITE 1, 3

CLP BLUE 4

CLP RED 2

After each command above, the LPS displays the status of the modified cluster. If you enter CLP after all these commands, the system displays the following screen:

CLUSTER	ASIZ	----PREFER----	----CURRENT----	----STATUS----
MAIN	A	1	1	HAS TRAYS
AUX	A	2	2	HAS TRAYS
AUTO		1 2 3 4	1 2 3 4	HAS TRAYS
WHITE	A	1 2		Is Defined
RED		3		Is Defined

If you enter CLU after all these commands, the system displays the first three lines in the screen above.

- Set the autosize attribute for the cluster if the cluster has multiple paper sizes, and the LPS assigns the stock to each page after evaluating its size. /A in the CLP command sets the autosize attribute; /-A turns the autosize attribute off as the following screen displays:

```

CLP WHITE /A, 2
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE    A      2                                Is Defined

CLP WHITE >3
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE    A      2 3                                Is Defined

CLP WHITE /-A, -2
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE                                3                                Is Defined

```

Cluster command examples

The following example shows the commands you enter in bold type. The example also shows that cluster White has preferred trays, trays 1 and 3.

```

CLP WHITE >4
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE                                1  3  4                                Is Defined

CLP WHITE -3, 4
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE                                1                                Is Defined

CLP WHITE -ALL
OS 1291 Cluster WHITE now deleted

CLP WHITE
OS 1291 Cluster name not defined

CLP WHITE ALL
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE                                1  3  4                                Is Defined

CLP WHITE 1 ,3
CLUSTER  ASIZ  ----PREFER----  ----CURRENT----  ----STATUS----
WHITE                                1                                Is Defined

```

Clusters in the database

A cluster is deleted from the cluster database when CLU or CLP deletes all trays (current and preferred) assigned to it. You keep a cluster in the database by assigning it one or more preferred trays and using only CLU for operator tasks.

15. Editing the HIP.LIB file

The Host Interface Processor (HIP) software stores system defaults in a file called HIP.LIB. You can edit this file to change option parameters, such as host types, file types, spooling size, buffer size, and JDE/JDL specifications.

Accessing the HIP.LIB file

Perform the following steps to edit the HIP.LIB file:

1. At the console, enter **HIP END**. Make sure the system is idle.
2. Enter **EDI**.
3. Use the options and their parameters listed in the following section to edit the HIP.LIB file according to your requirements.
4. After you edit the HIP.LIB file, you must unload HIP and then reload it for the changes to take effect. Enter the following:

HIP END
HIP ONL.

Changing HIP.LIB file option parameters

You can change the following options and their parameters listed in the HIP.LIB file to suit your printing environment.

ACCEPT

Lists the file types that HIP accepts for permanent storage. You can list up to 12 file types. If this parameter is missing, the system uses the default ACCEPT=CMD, FSL, JSL, TMP, MSC, XCS.

Syntax	ACCEPT <i>file type</i> ₁ , <i>file type</i> ₂ ...
Parameters	<i>file type</i> Must be CMD, CME, FIS, FNT, FRM, FSL, HST, IMG, IPF, JDL, JSL, LIB, MSC, LGO, PDE, STK, TMP, TST, or XCS.
Limitations	Do not specify the following file types: SYS, \$\$, TSK, SAF, OSD, TPF, and LOG. If the system receives a file type not listed under this parameter, it rejects the file and displays the following message:

HP2200 REJECTED NON-PRINT FILE TRANSFER

ACFILES

To configure the number of XPS accounting files that can be stored on the printer, the following entry must be made in the printer-resident HIP.LIB file:

Syntax	ACFILES = <i>number</i>
Parameters	<i>number</i> The decimal number (minimum of 1, default of 32, and maximum of 64) of accounting reports to be stored in each accounting file.
Limitations	If the number entered is less than the minimum or greater than the maximum, the default of 32 will be enforced. One accounting report (entry) requires 512 bytes (one sector), therefore, the number of reports per file also specifies the file size (in sectors).

ACTREPORTS

To configure the number of XPS accounting reports (entries) per accounting file, the following entry must be made in the printer-resident HIP.LIB file:

Syntax	ACTREPORTS = <i>number</i>
Parameters	<i>number</i> The decimal number (minimum of 1, default of 16, and maximum of 32) of accounting reports to be stored in each accounting file.
Limitations	If the number entered is less than the minimum or greater than the maximum, the default of 16 will be enforced. One accounting report (entry) requires 512 bytes (one sector), therefore, the number of reports per file also specifies the file size (in sectors).

BLOCKSIZE

Defines the maximum amount of data the host can transfer to the LPS in 512 byte disk sectors. One block equals 512 bytes. This parameter should be set to 1 for 871 hosts and 3 (or 4) for XPF or XPS hosts. XNS hosts ignore this parameter.

Syntax BLOCKSIZE=*n*

Parameters

- 1 (the default)
512 byte buffer
- 2
1024 byte buffer
- 3
2048 byte buffer
- 4
4096 byte buffer

BUFFERSIZE

Defines the size of the file HIP uses to spool files to be printed.

Syntax BUFFERSIZE=*n*

Parameters *n*

Use numbers that are multiples of 32. The range is 1024 to 65504. The default is 2048 if this line is missing in the HIP.LIB file or if *n* is less than 1024.

HIP may allocate a file smaller than the one specified in *n* if there is insufficient free space in the system; it allocates to the largest possible file and displays the following message:

```
HP1130 BUFFER FILE ALLOCATION LESS THAN SPECIFIED.
```

If there is insufficient disk space for even the minimum size spooling file, HIP cannot run; the system displays the following message:

```
HP2120 INSUFFICIENT DISK SPACE FOR HOST BUFFERING
```

End HIP immediately and make more disk space available.

If you encounter errors indicating that the spool file is full, you may wish to increase the size of the file using this parameter. However, making this file larger reduces the amount of disk space available for other printer functions.

DUPLICATEFILE

Specifies how HIP stores a file with the same name as an existing file on the hard disk.

Syntax DUPLICATEFILE={ACCEPT | REJECT | VERIFY}

Parameters ACCEPT
Overwrites the existing file.

REJECT
Aborts the file storage process.

VERIFY
Asks you if it should overwrite the existing file and displays the following message:

```
HP 2130 OVERWRITE File name.type:CONFIRM WITH 'Y'
```

You must respond to this message within 30 seconds or the system displays the HP1300 ASSUMING NEGATIVE CONFIRMATION message and does not overwrite the file.

ECHOSERVER

Identifies one or more echoservers for testing server reception. Use in conjunction with the ECHO START command.

Syntax ECHOSERVER=xxxxxx:nnnnnnnnnnnn

Parameters xxxxxx
Specifies a mnemonic name between 1 and 16 alphanumeric characters. A longer name is truncated.

nnnnnnnnnnnn
Specifies the 48-bit physical Ethernet address of an echoserver, expressed as a 12-digit hexadecimal number. Use leading zeros if necessary to make the address 12 digits.

ENETMAXCONS

Limits the number of XNS sessions that can run concurrently.

Syntax ENETMAXCONS=*nn*

Parameters *nn*
Specifies a decimal integer between 1 and 8 inclusive. Defaults to 8 if you specify an invalid number.

HOST

Specifies the default host system. The default is HOST=871.

Syntax HOST={871 | DMR | XNS | XPF|XPS}

LOGENTRIES

Specifies the maximum number of entries in a log file. The last entry of the log file marks the end of the file.

Syntax LOGENTRIES=*n*

Parameters *n*

Specifies the number of entries between the range of 16¹⁰ through 4992¹⁰. Specify this number as a multiple of 16.

If there is insufficient disk space, the system displays the following message and creates a smaller log file less than the one specified:

```
HP1170 LOG FILE ALLOCATION LESS THAN SPECIFIED
```

MAXXNSPKTSIZE

Limits the size of the data packets transmitted to the LPS by XNS.

Syntax MAXXNSPKTSIZE=*nnn*

Parameters *nnn*

Specifies a decimal integer between 576 and 1500, inclusive. Defaults to 576 if you specify an invalid number.

NAME

Specifies the name of your LPS. The default is NAME=XEROX.

Syntax NAME=*printer name*

PACKETCOUNT

Identifies how many packets are sent to echoserver during the echoserver test.

Syntax MAXXNSPKTSIZE=*nnn*

Parameters *nnn*

Specifies a decimal integer between 1 and 100, inclusive. Defaults to 20 if you specify an invalid number.

QUEUESIZE

Specifies the size of the internal job queue maintained by HIP. The default is QUEUESIZE=20.

Syntax QUEUESIZE=*n*

Parameters *n*

Specifies the queue size as an increment of 20 within the range of 20 through 120.

REPORTSTATUS

Informs the host of the status of a new job when the LPS defines it and every time it changes states (such as received, pending, or queued).

Syntax	REPORTSTATUS={YES NO}
Parameters	YES The default for DMR-11 hosts.
	NO The default for all other hosts.

STARTCOMMANDS

Specifies one to 16 pairs of JDE/JDLs. Each pair is defined by a START command index number, which is then used by other commands in the HIP.LIB file. Table 15-1 lists the index numbers.

Syntax	STARTCOMMANDS= <i>sci</i> ₁ : <i>jde</i> ₁ : <i>jdl</i> ₁ ; <i>sci</i> ₂ : <i>jde</i> ₂ : <i>jdl</i> ₂ ;...
Parameters	<i>sci</i> Specifies an index number from 1 to 16.
	<i>jde</i> Specifies the job descriptor entry filename.
	<i>jdl</i> Specifies the job description library filename.
Default	STARTCOMMANDS=1:HIP,HIP;5:PUNCH,HIP; STARTCOMMANDS=7:IP,ENET;8:,ONLINE;9:DMR11,DMR; STARTCOMMANDS=13:EBCDIC,HIP;14:ASCII,HIP;15:HEXDMP,HIP;
Restrictions	<ul style="list-style-type: none"> • Use only documented HIP START commands to start an Ethernet job. • Do not use HIP file types HST and XDP to start jobs with the ENET JDL. • To selectively start jobs in the HIP queue, list the jobs in the queue and manually start the desired jobs with the HIP START <i>jid</i>,...,<i>jid</i> command. • Multiple command lines can reside in a file. • If you specify a <i>sci</i> (start command index) more than once, the LPS uses the last one. • The default JDE/JDL for XPAF pass-through jobs is DEFAULT. To use the correct JDE/JDL for the current version of XPAF, you may have to edit the HIP.LIB file from ONLINE to DEFAULT in the STARTCOMMANDS index. • The default JDE/JDL for XPS pass-through jobs is DFLT, XPSM. To use the correct JDE/JDL for the current version of XPS, you may have to edit the HIP.LIB file from ONLINE to XPSM in the STARTCOMMANDS index.

Table 15-1. **START command index number defaults and their corresponding hosts**

Start command index number default	Host
871JOB=1 (use this for 871 print port jobs)	871
PUNCHJOB=5 (use this for 871 punch port jobs)	871
DMRJOB=9 (use this with the DEC interface)	DMR
XNSJOB=7	XNS
XPFJOB=7	XPF
PASSTHROUGHJOB=8	XPF
DUMPJOB=15 (use this for hex dumps)	All
XPSJOB=1	XPS

XOPERATIONS

Defines the XNS remote filing and printing procedures logged in the HIP log. If you enter this command incorrectly, the LPS does not send a message to the console and uses the default parameters DELETE, RETRIEVE, and STORE.

Syntax

XOPERATIONS={ALL | NONE | OPR[,OPR[,...]]}

Parameters

ALL

Logs all XNS operations.

NONE

Disables all HIP logging.

OPR

Logs on one of the following operations: CLOSE, CONTINUE, DELETE, LGN, LGF, LIST, OPEN, PRINT, RETRIEVE, or STORE.

CLOSE

Logs each file closure.

CONTINUE

Allows logging to continue across periods of inactive file service.

DELETE

Logs each file deletion.

LGN

Logs each logon to the LPS filing service.

LGF

Logs each logoff from the LPS filing service.

LIST

Logs each time files in an LPS directory are listed at a workstation.

OPEN

Logs each file opened.

PRINT

Logs each file printed.

RETRIEVE

Logs each file retrieved.

STORE

Logs each file stored.

16.

Communicating with an online host

A channel-attached LPS can receive input from the host computer in online 3211 or 4245 mode. In online mode, the data stream emulates IBM 3211 or 4245 line printer format, with or without embedded DJDEs. All commands coded for the 3211 may be coded for the 4245.

3211 and 4245 processing mode functions

While there are certain minor differences between the IBM 3211 and 4245 and the Xerox LPS online system emulation of these printers, the LPS responses are appropriate and require no programming modifications to the job stream created on an IBM host. The emulated codes are listed in the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

The following functions for online mode operation enhance basic LPS input processing functions:

- Handles interactions with the online interface (OLI) hardware
- Builds translation tables based on the present contents of the universal character set buffer (UCSB) and the current FOLD or UNFOLD command in effect. UCSBs are used only by the 3211.
- Processes forms control buffers (FCBs) received from the host to redefine channel-to-line number assignments and to set margins based on the print position indexing byte.

Similarities between LPS and 3211/4245

The following processes are performed in the same manner on the LPS as on the 3211 or 4245:

- All write commands perform the appropriate carriage functions after the line is printed.
- Carriage control commands are processed exactly as the 3211 does, including the overprint function which results in overprinted characters. When processing a skip command, if the channel to be skipped to is assigned to the current line, no skip occurs unless the preceding command was printed without spacing.
- The 150 character-per-line option is supported. You specify appropriate fonts in the PDE command, discussed in the *Xerox 4850/4890 HighLight Color LPS Print Description Language Reference*.

- The following commands are supported:
 - ALLOW DATA CHECK
 - BLOCK (disallow) DATA CHECK
 - FOLD and UNFOLD
 - NO-OP
 - TEST I/O.

Differences between LPS and 3211/4245

- LOAD FCB is processed as follows:
 - The print position indexing (PPI) byte is processed the same as on the 3211. The line spacing control bit at FCB address 1 is ignored. Both 6 and 8 LPI are supported as a function of the fonts specified in the PDE command.
 - The current channel assignment (VFU) table is released and a new one is built.
- LOAD UCSB is processed as follows (3211 only):
 - The train-image field is used in responding to a CHECK READ command that is not preceded by a DIAGNOSTIC GATE command.
 - The associative field is used to build the translate table based upon the FOLD or UNFOLD command in effect. The default is an UNFOLDED translation table.
 - The 3211 dualing feature is not supported. The bits, if set, are ignored. Characters to be printed by the LPS are defined within the fonts.
- UCSBs are not supported on the 4245.

Xerox LPS processing of 3211/4245 diagnostic commands

The Xerox LPS has these common diagnostic processing and results as the 3211 and 4245:

- DIAGNOSTIC WRITE
- READ PLB
- READ UCSB (3211 only)
- SENSE.

LPS processing is different than the 3211 and 4245 in that the CHECK READ command is processed as on the 3211 and 4245, except that if parity errors occur, all bytes in the PLB are flagged as having bad parity. This has no effect on the operational software because this command is used only in IBM diagnostics.

The LPS and the 3211 and 4245 use the same processing but get different results with the following commands:

- DIAGNOSTIC GATE is functionally equivalent to the 3211 and 4245. A flag is set for use during the processing of other commands (in particular, CHECK READ). This flag is cleared at the completion of the command following the DIAGNOSTIC GATE command.
- RAISE COVER is accepted but is functionally ignored.
- READ FCB is processed as on the 3211 and 4245, but does not result in forms misalignment.

4245 processing mode features

The 4245 processing mode allows your LPS to correctly execute the printing instructions coded within the job stream for the IBM 4245 printer.

The 4245 is identical to the 3211 in that all 3211 commands can also be coded for the 4245.

4245 and 3211 differences

- The 4245 has two new commands that are accepted by your LPS when sysgened to 4245 mode:
 - CLEAR PRINTER
 - SENSE ID. The SENSE ID command transfers 24 bytes of sense information to the channel (versus six bytes for the 3211).
- The LOAD UCSB and READ UCSB commands are supported but ignored for compatibility with the 3211.
- The DIAGNOSTIC WRITE and READ PLB commands are supported for compatibility with the 3211.
- The READ PLB command causes the transfer of up to 132 zero bytes from the printer to the channel.
- A CHECK PLB command not preceded by a DIAGNOSTIC GATE command causes the transfer of up to 132 zero bytes from the printer to the channel.

17. SDI Option administration

The Xerox Shared Disk Interface (SDI) Option or allow workstation and mainframe users on a variety of computer networks to access the Xerox 4890 Laser Printing System.

The SDI option solutions accept document files in a number of different formats (such as PostScript, HP/PCL 4/5, Interpress, ASCII text, CCITT G3, and TIFF) and converts the files to Xerox printer formats. The converted files are printed according to the printing and finishing requirements you select.

For more information on HSPP solutions, contact your sales representative or refer to the *Xerox Shared Disk Interface Option Operations Guide* and other user documentation included with your SDI system.

4890 palette	A predefined set of colors or inks provided with the 4890 HighLight Color LPS. Different versions are provided with the printer and with host- or PC-based application software.
A3	International paper size measuring 297 mm by 420 mm or 11.69 by 16.54 inches.
A4	International paper size measuring 210 by 297 mm or 8.27 by 11.69 inches.
additive primary color	There are five additive primary colors: red, green, blue, magenta and cyan. When light of these five colors is combined in equal amounts, the result is white light.
American Standard Code for Information Interchange (ASCII)	Standard 7-bit code that represents alphanumeric information. Each alphanumeric character and several nonprinting characters are assigned a binary number, covering 128 possible characters. It is used for information interchange among data processing systems, data communication systems, and associated equipment.
ANSI	American National Standards Institute.
application software	Host- or LPS-resident software that directs the computer to perform specific tasks or functions. Common business applications include payroll, accounting, and inventory.
argument	Independent variable of a function, such as a parameter.
ascender	Portion of a lowercase alphabetic character that extends above the main body of characters such as b, d, or h. See also <i>descender</i> .
asynchronous	Transmission in data communications controlled by start and stop characters; thus, time intervals between transmitted data blocks may be unequal in length.
ASCII	American Standard Code for Information Interchange. Standard 7 or 8-bit code that represents alphanumeric characters and several nonprinting characters by assigning each a binary number covering 128 possible characters. It is a common standard for information interchange among data processing systems, data communication systems, and associated equipment.
B4	International paper size measuring 250 mm by 353 mm or 9.84 by 13.9 inches.

batch processing	Process that allows for repetitive operations to be performed sequentially on batched data without much involvement from the computer operator.
background job	Low-priority job, usually batched, which is executed automatically as system resources become available.
baud	Measurement of data flow between devices in bits per second. Common baud rates are 110, 300, 1200, 2400, 4800, and 9600.
BCD	Binary coded decimal.
binary	Numbering system with a base of 2. All numbers are represented by combinations of 1 and 0.
binary synchronous communication	See <i>BSC</i> .
binary synchronous transmission	Data transmission where synchronization of characters is controlled by timing signals generated at the sending and receiving stations.
bit	Abbreviation for binary digit, the smallest unit of information recognized by a computer.
bitmap	Visual representation of graphic images in which a bit defines a picture element (pixel) and a matrix of bits defines an image. For example, if a bit is 1, the corresponding pixel is printed.
bitmapped	Display image generated bit by bit for each point or dot. A software-driven scanner is used to create characters and/or graphics.
bits per second	See <i>bps</i> .
block length	Number of characters or bytes contained in a block of data (the block is treated as a unit within the computer). Block length is usually invariable within a system and may be specified in units such as records, words, computer words, or characters.
blocking	Process of combining two or more records into a single block of data which can moved, operated upon, stored, and so on, as a single unit by the computer.
BOF	Bottom of form.
boot	To load the initial instructions of a program into memory. These instructions direct the loading of the operating system and application software.
BOT	Beginning of tape.

bpi	Bits per inch.
bps	Bits per second. In serial communication, the instantaneous bit speed a device or channel transmits a character.
BSC	Binary synchronous communications. 1. Data transmission in which synchronization of characters is controlled by timing signals generated at the sending and receiving stations. 2. Communication using binary synchronous line discipline. 3. Uniform procedure using a standardized set of control characters and control character sequences for synchronous transmission of binary-coded data between stations.
buffer	Area of memory in which data is stored during transfer from one device to another. Used for: 1. Accumulating data into blocks before storage or processing. 2. Adjusting differences of speed between devices, or between a device and a communicating facility.
byte	Fixed number of bits (in data processing, usually 8) processed as a single binary value.
cache memory	A fast, small memory used to enhance CPU performance, separate from the main processor memory.
CCID	Character code identifier. Code associated with the universal identifier "Xerox" to indicate the version of the Xerox character code standard used to code Interpress strings.
CCU	Customer Changeable Unit. The color housing that fits inside the printer.
central processing unit	Interprets and executes instructions, performs all operations and calculations, and controls input and output units and auxiliary attachments.
channel	1. In data communications, a path or line that enables two or more devices to communicate (sometimes called a circuit, facility, or link). 2. In computers, a path for communication between the central processing unit (CPU) and input and output units, or between the CPU and peripheral devices.
character cell	Area defined by the outside dimensions of a character plus all horizontal and vertical spacing. In electronic printing, the character cell is defined by a bitmap of dots.
character code identifier	See <i>CCID</i> .
character set	Set of all characters defined in a font, including alphabetic, numeric, and special characters such as symbols.
characters per inch	See <i>cpi</i> .

clearing house service	Directory of registered users, services, and other resources, allowing relevant information about each item to be retrieved by name.
clocking	A method of synchronizing sending and receiving data communications devices. Clocking allows synchronous transmission at high speeds.
cluster	Group of related feeder trays, usually containing the same size and type of paper (stock). Each cluster has a name, consisting of one to six alphanumeric characters.
CME	Entry modifying the output printing characteristics of a report on a copy-to-copy basis.
CMT	Character mapping table.
CMYK	A printing industry standard color definition model where all colors are defined in terms of values for the four-color process primary colors: cyan, magenta, yellow, and black. Refer to color definition model.
Code	1. A set of symbols representing data or instructions to a computer. 2. To write a program or routine that instructs a computer to perform specified operations.
code conversion	Translation of one type of character or symbol code to another.
color definition model	A standardized format for defining colors using quantifiable values. The most popular such models are RGB, CMYK, and HSB.
color substitution	The 4890 HighLight Color LPS uses an algorithm to translate a color specified in a printing industry standard color definition model to a tone of the Highlight primary color using a 4890 palette.
command language	A language used to instruct an operating system.
communication line	Telecommunication line connecting devices at one location with devices at other locations in order to transmit and receive information.
communication link	Physical means connecting one location to another to transmit and receive information, such as a data link
compiler	Software that translates instructions written in high-level language into machine language for execution by a system.
composite character	Character that has multiple bitmap references combined into one and stored on disk in font memory.

continuous printing	Refers to Interpress job integrity under any of the following conditions: excessive graphics, forms, or font use problems.
continuous tone	A photograph, rendering, or other similar image that is made of blended gray tones or values that flow into each other gradually and without hard edges.
control program	An operating system program that manages job flow, input/output processing, and other overall system functions and resources.
Copy Modification Entry	See <i>CME</i> .
copy-sensitive	Job in which multiple copies of a report contain different data, such as paychecks and banking statements.
cpi	Characters per inch. Measure of the size of a fixed-pitch font expressed as the number of characters of the font that can be set in one horizontal inch. See also <i>pitch</i> .
CSI	Command status interface.
Data Capture Utility	See <i>DCU</i> .
data communications	Transmission and reception of encoded information over telecommunication lines.
data file	Collection of related data records organized in a specific manner so that each record is similarly structured. An example of this would be a payroll file set up with one record for each employee, last name first, indicating the rate of pay and all deductions.
data link	Physical means of connecting one location with another for communication. This might include the communications lines, modems, and controls that transmit information between two or more stations.
DCU	Data capture utility. LPS function that saves and prints all system controller activity and provides tracing and event logging facilities.
DDCMP	Digital Data Communication Message Protocol.
default	Value assigned to a field by the system if no input is received from the operator.
defined ink	The tone (defined in the ink catalog file and reproduced for your reference on the printed samples of 4890 HighLight Color LPS palettes) as it is applied to the page.

descender	Portion of the lowercase alphabetic character that extends below the main body of characters such as g, p, or y. See also <i>ascender</i> .
DEC	Digital Equipment Corporation.
device	Any piece of hardware other than the CPU (Central Processing Unit).
digitize	To express or represent data in digital (binary) form so that it can be processed electronically.
DJDE	Dynamic job descriptor entry. Command within an input data stream used to modify the printing environment dynamically.
DMA	Direct memory access.
DMR	Data mode ready. Command parameter that designates a Digital Equipment Corporation host system.
document	1. Data medium and the data recorded on it, usually permanent, which can be read by you or a computer. 2. Collection of information pertaining to a specific subject or related subjects.
dot	Picture element (pixel) imaged by a printer. The number of dots imaged per inch measures printer resolution, for example, 300 dots per inch (dpi). See also <i>spot</i> .
dpi	Dots per inch. Indicates the number of dots per inch displayed on a terminal screen or printed to form a character or graphic.
dry ink	Minute particles of resin and carbon black that can accept an electrical charge and create images. Resin and carbon black or color pigment toner are combined with developer to form the dry ink.
DSDD	Double sided double density.
DSSD	Double sided single density.
DSU	Digital signal unit.
duplex	1. Ability of a data communications system to send and receive information simultaneously. 2. In printing, duplex means printing on both sides of the paper.
dynamic Job descriptor entry	See <i>DJDE</i> .
EBCDIC	Extended binary coded decimal interchange code. Coded character set consisting of up to 256 8-bit coded characters.

edge marking	Use of graphic objects (usually lines or boxes) that bleed off the edge of the physical page. See also <i>physical page</i> .
electronic publishing	The integrated production of documents on demand, using digitally stored documents, computerized composition, and electronic printing systems.
elite	Smallest size standard typewriter type which is 12 characters per horizontal inch.
embedded blanks	Blank spaces within a command line.
EMT	Emulator trap. Language instruction.
enabler	Hardware devices or software packages that come with the printer and allow it to perform as specified.
ENET	Ethernet network.
EOF	End of file.
EOT	End of tape.
escapement	Lateral positioning of characters or font families.
Ethernet	Xerox developed local area network (LAN) that allows transmission of data by cable from one device to another. A modified version of the Ethernet specification has been approved as IEEE standard 802.3.
Extended binary coded decimal interchange code	See <i>EBCDIC</i> .
extended metrics	Measurements used in Interpress to alter the size of fonts, allowing more precision with character escapement. Used for rendered characters.
FCB	Forms control buffer. Controls the vertical format of printed output.
FCP	File control parameter.
FCG	Finishing Configuration Utility.
FCU	File Conversion Utility.
FDL	Forms description language. LPS-resident source language used to design electronic forms. See also <i>FSL</i> and <i>form</i> .

FDR	File directory.
feedback	Portion of an output signal that is returned, directly or indirectly, to be compared to a reference signal to maintain the quality of the output signal.
FFM	Font file management.
firmware	Permanent programs stored in read-only memory (ROM).
fixed font	Font containing characters with fixed spacing.
fixed pitch	Font set with every character cell having the same width. In reference to character sets, this term describes typefaces with all character cells having equal width. Monospaced as opposed to proportional spaced.
fixed spacing	Arrangement of characters on a line so that all characters occupy the same amount of horizontal space.
flag	Small indicator marking the occurrence of an event or the existence of a certain condition while the program is executing.
floating accent	Nonspacing accent characters that can be combined with characters and printed as a composite.
font	Complete set of characters of a particular font family having the same point size, weight, stress, and orientation.
Font Interchange Standard (FIS)	A standard that defines the digital representation of fonts and character metrics for the generation of an entire series of Interpress fonts.
form	1. Compiled .FSL file. 2. Specific arrangement of lines, text, and graphics stored in an electronic version. Forms can be printed without variable data or merged with variable data during the printing process. See also <i>FDL</i> and <i>FSL</i> .
format	1. Layout of a document, including margins, page length, line spacing, and typeface. 2. In data storage, the way the surface of a disk is organized to store data. 3. To prepare the surface of a disk for acceptance of data.
format line	Line preceding the message text in a formatted message display.
form feed	Keyboard and printer control character that causes the printer to skip to the top of the next page.
forms control buffer	See <i>FCB</i> .

forms description language	See <i>FDL</i> .
forms source library	See <i>FSL</i> .
FPS	Formatting print service.
FSL	Forms source library. Uncompiled collection of user-created files containing FDL commands. See also <i>FDL</i> and <i>form</i> .
FST	Font specification table.
fuse	To affix dry ink to paper by heat or pressure or a combination of both.
GB	Gigabyte. Unit of approximately one billion bytes.
GCR	Group code recording.
GHO	Graphics handling option.
gigabyte	See <i>GB</i> .
group code recording (GCR) mode	Refers to the specific density of data (such as 6250 bpi) as it is recorded on tape, which is measured in bits per inch (bpi).
gsm	Grams per square meter.
GVG	Graphics video generator.
halftone screen	A tool used in offset printing, typesetting, and laser printing to convert a continuous tone (such as photographic) image to dots, which allows the image to be rendered accurately in these printing processes.
hardcopy	Machine output in permanent form, such as printed reports and listings. Output in a permanent form (usually on paper or paper tape) rather than in temporary form, as on a display. Contains readable printed copy of machine (such as computer) output.
hardware	Physical components (mechanical, magnetic, electronic, and so on) of a system, as opposed to programs, procedures, rules, and associated documentation. The hardware is operated by software and firmware.
HCF	High-capacity feeder.
HCSS	High-capacity stitcher/stacker; also referred to as stitcher/stacker.

hexadecimal	Numbering system with a base of 16. The numbers 10 through 15 are represented by A through F.
HFDL	Host forms description language.
hierarchy	Relative priority assigned to arithmetic or logical operations that must be performed.
high-level language	Programming language consisting of words and symbols that are close to normal English and, also readily understandable by the user. High-level source languages are used for most commercial programs.
highlight color	Printing with black plus another color. A range of colors, tints, and shades is printed by varying the percentage of black dots, colored dots, and the white space between the dots.
HIP	Host interface processor.
host	Computer accessed by users that serves as a source of high-speed data processing for workstations with less computer power. Commonly referred to as mainframe.
host interface	Connection between network and host computer.
HSB	A printing industry standard color definition model in which all colors are defined in terms of values for hue, saturation, and brightness. Refer to <i>color definition model</i> .
hue	The name that describes a color's general appearance, such as red, green, and blue.
identifier (id)	Character(s) used to identify or name data and possibly to indicate certain properties of that data image area on a physical page that may contain text or graphics.
IFU	Interpress font utility. A utility for managing Interpress fonts.
image area	Area on a physical page that may contain text or graphics.
initialize	1. To prepare a blank diskette so it can accept data. This is usually accomplished when a program is booted. 2. To set all information in a computer system to its starting values.
initial program load	See <i>IPL</i> .
ink catalog	File containing inks that is referenced by all software for color information. The ink catalog file has the extension <i>.ICT</i> .

ink referencing	Process by which inks within the ink catalog are referenced in PDL and FDL commands, and by page description language interpreters.
ink substitution	Option of aborting the printing process or continuing with a substitute ink if the referenced ink is not found.
input devices	Keyboards, magnetic media, or any device used to give a system information.
input/output	General term encompassing the flow of data into and out of a system. Also referred to as I/O.
interface	The device that connects two systems to allow them to communicate.
Interpress	Industry-standard page description language developed by Xerox. Interpress documents can be printed on any sufficiently powerful printer equipped with Interpress print software.
Interpress font utility (IFU)	Utility for managing fonts.
Interpress font utility (IFU) program	Program used to convert FIS fonts to LPS fonts.
Interpress master	File written according to the Interpress standard.
IPD	Interpress decomposer.
IPL	Initial program load. For the optional 9-track magnetic tape drive, the internal initialization sequence whereby certain functions are loaded into random access memory (RAM).
IPM	Interpress mapping.
ips	Inches per second.
JCB	Job control block.
JCL	Job control language.
JDE	Job descriptor entry. Collection of job descriptions.
JDL	Job description library. Collection of compiled job descriptions. See also <i>JSL</i> .
JID	Job identifier.
job descriptor entry	See <i>JDE</i> .

job descriptor library	See <i>JDL</i> .
job source library	See <i>JSL</i> .
JSL	Job source library. Collection of uncompiled job descriptions. See also <i>JDE</i> and <i>JDL</i> .
keyword	Required part of a command.
label	Reference to a file saved on tape or disk, a record indicating the file name or date created, or other control information.
LAN	Local area network. LAN is the lower two layers of the network architecture: the physical layer and the data link layer
landscape	Orientation in which text and images are positioned parallel to the long edge of the paper.
laser printing	Technology that uses a laser to transfer character forms to a page by direct or indirect means.
latent image	Static charge present on the photo conductor before contact with dry ink particles.
leading	(pronounced <i>ledding</i>) Vertical distance between lines of type (also called line space), measured from a baseline of one line to the baseline of the next.
legal size	Paper size measuring 8.5 by 14 inches or 216 by 356 mm.
letter size	Paper size measuring 8.5 by 11 inches or 216 by 279 mm.
light emitting diode (LED)	Solid substance that glows when a current is passed through it. Often used for indicator lights on disk drives or modems, as well as for displays on other electronic equipment.
LF	Line feed character.
line feed	Control character that (unless set to be interpreted as a line end) causes the printing system to begin printing in the current character position of the next line.
literal	Alphanumeric character beginning with a letter, including an asterisk, period, colon, or slash, and not enclosed in single quotes.
logical page	In Xerox printing systems, a logical page is a formatted page that is smaller than the physical page. A logical page is defined by an origin, thus allowing more than one logical page to be placed on a physical page.

logo	Small illustration or design, usually simple, typically used to identify a company.
long-edge feed	See <i>LEF</i> .
lpi	Lines per inch.
LPS	Laser printing system.
LUN	Logical unit number. A number that identifies a peripheral device to the OSS.
magnetic media	Term for all storage devices (disks, tape, and so on) on which data is stored in magnetic form.
map	To establish a set of values having a defined correspondence with the quantities or values of another set.
mask	Selection of bits from a storage unit by use of an instruction that eliminates the other bits in the unit. In accessing files, a file name mask is used to reference one or more files with similar file-id (identifier) syntax. In Interpress, a mask serves as a template, indicating the shape and position of an object on a page.
master file	File serving as a general reference point for a particular application system and providing information to be used by the program. It is usually updated and maintained to reflect the results of current or daily processing operations.
MB	Megabyte. Unit of approximately one million bytes.
metacode	Method of controlling the image generator. The character dispatcher uses these codes to generate scan line information. This information is sent in the form of character specifications to the image generator, which uses it to compose the bit stream that modulates the laser. Also called native mode.
MHz	Megahertz. One million cycles per second. Used to measure electromagnetic waves.
mixed environment	Multiple printers or printing systems in the same location.
modem	Device that converts digital information into an analog signal suitable for sending over analog telecommunication lines. Also converts an analog signal from telecommunication lines into digital information.
monochrome	Printing in one color only.

nesting	Subroutine or set of data, such as a comment, contained sequentially within another set of data.
network	System of hardware and software that manages communication and sharing of common resources (such as printers) between computers and terminals for multiple users at once.
node	Station, terminal or computer operating in a network environment.
object file	Source file converted into machine language (binary code).
octal	System of representing numbers based on 8.
offline	Devices not under the active control of a central processing unit. For example, a computer makes output to a magnetic tape. The tape is then used by an offline printing system to produce printed data. Offline operations are much slower than online operations. Refer to <i>online</i> .
offset	To place printed output sets in slightly different positions from each other in an output bin for easy separation of collated sets.
offset printing	Widely-used method of commercial and corporate printing, in which ink is picked up by a metal or paper plate, passed to an offset drum, then passed to the paper.
online	Devices under the direct control of a central processing unit, such as a printing system in interactive communication with a mainframe. Refer to <i>offline</i> .
operand	That which is acted upon, for example, data, in an operation or process.
operating system	Software that controls the low-level tasks in a computer system, such as input or output and memory management. The operating system is always running when the computer is active.
orientation	In reference to image area, describes whether the printed lines are parallel to the long edge of the paper (landscape) or the short edge of the paper (portrait).
origin	In reference to image area, the upper left corner of a sheet.
output	1. Material produced by a peripheral device of a computer, such as a printout or a magnetic tape. 2. The result of completed operations.
overprint lines	Print lines whose carriage control specifies printing with no line spacing after the last printed line.

overprint ratio	Maximum number of variable data and form characters that can be intersected by a single scan line.
page end	Command character (form feed) to terminate the current page.
page orientation	Direction that data is printed on a report. Refer to <i>landscape page orientation</i> and <i>portrait page orientation</i> .
pagination	Process of separating text into pages.
palette	Predefined set of colors or inks. Different versions are provided with the printer and with some application software packages.
parameter	Part of a command, other than the keyword. See <i>keyword</i> .
pass-through job	On systems with XPAF, a job that is sent directly from a host to a Xerox printer through XPAF without undergoing XPAF processing.
parse	To read or interpret a command; to build up a parameter list from information within a command.
PCC	Printer carriage control.
PDE	Page description entry.
PDL	Print description language. Language used to describe printing jobs to a laser printing system. PDL describes the input (type, format, characteristics), performs the processing functions (logical processing), and describes the output (type, format, font selection, accounting options).
PE	Phase encoded.
physical page	Actual page size your printer uses to print a form.
pica	1. Unit of measurement equal to twelve points or approximately 1/6 inch. 2. A 10-pitch typeface having ten characters per inch and 12 points in height. See also <i>point</i> .
pitch	Width of a fixed-pitch font expressed in characters per horizontal inch.
pixel	Acronym for picture element. Smallest addressable point of a bitmapped screen that can be independently assigned color and intensity.
point	In Xerox laser printing systems, a unit of measurement equal to 0.0139 inch. Points are always used to express type, size, and leading. There are 12 points to a pica and about 72 points to an inch. See also <i>pica</i> .

point size	Height of character set from the top of its ascenders to the bottom of its descenders in units (points). Point size does not always include leading.
portrait	Orientation in which text and images are positioned parallel to the short edge of the paper.
PostScript	Proprietary page definition language, compatible with the Xerox 4890 Highlight Color LPS when a front-end conversion utility is installed.
ppm	Pages per minute.
print quality adjustment	See <i>PQA</i> .
primary color	A color that, when combined with one or more other primary colors in a color model system in varying quantities, produces the palette of colors described by that model.
print description language	See <i>PDL</i> .
print ratio	The maximum number of variable data and form characters that may be intersected by a single scan line.
printer subsystem controller	See <i>PSC</i> .
print file	Portion of the system disk memory (up to 4 MB) reserved for temporary storage of formatted pages for printing. Pages are retained until they are delivered to the output tray.
PQA	The process the 4890 HighLight Color LPS uses to maintain the electrostatic state of the xerographic subsystem to ensure optimal print quality.
printout	Informal expression referring to almost anything printed by a computer peripheral device.
PROM	Programmable read-only memory.
prompt	Message or symbol displayed on a system console requiring the operator to take action.
process color printing	In process color printing, every color in the spectrum is printed by combining various percentages of the four-color process primary colors—cyan, magenta, yellow, and black.
processor	Applies to any system that is capable of receiving and performing operations upon data and supplying the results of those operations.

protocol	Formal set of conventions governing format of data and control of information exchange between two communication devices.
proportional font	Font containing characters that vary in width.
proportional spacing	Text where each alphanumeric character is given a weighted amount of space. Such output has print-like appearance. Proportional spacing allows more space for wide characters and less space for narrow characters.
proportional type	Characters that vary in width.
PSC	Printer subsystem controller. Command and task that download the printer and/or raster image processor (RIP) software if selected.
query	Request for data or other information, entered by an operator while the system is processing.
queue	Managed database of documents waiting to be processed.
RAM	Random access memory.
raster data	Binary data, usually consisting of dots arranged in scan lines, according to the print order.
raster image processor	See <i>RIP</i> .
rasterization	The creation of a bitmap image on a page for printing.
read-only memory	See <i>ROM</i> .
read/write head	A small electromagnet that reads, writes, and erases data in the form of magnetic dots on the surface of an external storage medium, such as a magnetic disk.
real time	To process transactions as they are entered into a system. User and system interchange allow transactions to be processed and the results returned to the user.
remote access	Access to a central computer by terminals or devices geographically separated from that computer.
RGB	A printing industry standard color definition model where all colors are defined in terms of values for the three additive primary colors: red, green and blue. Refer to <i>color definition model</i> .
ROM	Solid-state memory for programs. It cannot be rewritten.

rendered character	Character whose bitmap is a combination of other bitmaps positioned relative to each other, such as accented characters and single characters consisting of two or more characters. A rendered character does not require additional disk space or font memory.
report	In setting a separation boundary, report refers to a subset of a job. A job may consist of one or more reports.
resolution	Number of dots per inch (dpi) or spots per inch (spi). The greater the number of dots, the higher the resolution and the clearer the image. The terms dots, spots, and pixels are synonymous.
RIP	Raster image processor. LPS option that supports the Interpress V3.0 Publications Set.
scale	To adjust font or image size according to given proportions.
sci	START command index.
scroll	Manipulation of a display to bring upper or lower portions of a document page into view when available space is insufficient to view the entire document at once.
SCSI	Small computer system interface. Common standard for connecting devices to computers.
SDI	System diagnostics interface. OSS task used by service personnel to diagnose system problems.
secondary storage	Form of storage external to a system, such as magnetic tapes or floppy disks.
security	1. Procedure for limiting access to the system's resources, programs, or files, to authorized personnel. 2. Protecting programs and files from unintentional or undesired modification.
SEF	See <i>short-edge feed</i> .
sequential	1. In numeric sequence, usually in ascending order. 2. A file structure in which records are written one after another and cannot be randomly accessed.
set	Multiple copies of the same report.
SFC	Status file converter.
SFS	Status file service.

shade	Color resulting from adding black to a pure hue. See also <i>tint</i> and <i>tone</i> .
short-edge feed	Movement of paper through the printer in the direction of the paper width (the shorter side of a sheet of paper).
SIF	Sequence insert file.
simplex printing	Printing on one side of the page.
small computer system interface	See <i>SCSI</i> .
SNA	System network architecture. Total description of logical structure, formats, and protocols of operation sequences for transmitting an information unit through the communication system.
special processing	Commands allowing the user to process special reports such as printing certain records, and printing on special paper
spi	Spots per inch. See <i>resolution</i> .
spooling	Process of releasing data from main memory and storing it temporarily until a peripheral device is ready to accept it, for example, storing print data before sending it to a printer.
spot	A picture element imaged by the printer. Synonymous with <i>dot</i> and <i>pixel</i> .
statement	Detailed instructions in a program step, written according to specific rules called syntax.
static data	Information usually found on preprinted forms or overlays.
station	1. In data communications, a terminal device connected to a data link. 2. In computer networks, any of the numerous terminal devices that form a network.
stock	User-defined name in the JSL that specifies a certain type of paper for printing a job.
stock descriptor	A stock reference or a stock name.
stock name	The name of a cluster as defined by a system command.
stock reference	An application specific pseudonym for a cluster.
stockset	Collection of stocks to be used on a print job. See also <i>stock</i> .

string	Connected sequence of alphanumeric characters treated as one unit of data by a program.
symbiont	Device which shares a common purpose and close association with other devices. This term is used to identify the Xerox print software which resides in the Digital host system as part of the XPMF-VMS communications link.
symbol	Character used in a computer language to specify a particular function.
synchronous	Efficient encoding of data suitable for high-speed, block-oriented data transmission by using equal time elements.
syntax	Rules governing the structure of expressions in a programming language.
syntax error	System response to a mistake in a command's entry.
sysgen	Abbreviated form of system generation.
System	1. In data processing, a collection of computer components and procedures organized to accomplish a set of specific functions. 2. Assembly of components united by some form of regulated interaction to form an organized whole. 3. Operations or procedures used to accomplish a business activity.
System controller	The part of the LPS that provides interfacing capability, data handling, formatting, buffering, and operator control for the system. Also called the system controller.
system disk	Magnetic disk storage medium, usually of large capacity, that is not removable as opposed to floppy disk or disk packs.
system file	Master software program that keeps all components working together.
system generation	Process whereby the system is made ready to operate. Typically involves selecting the operative parameters and activating the relevant software.
System Network Architecture	See <i>SNA</i> .
system page	Maximum area in which text and graphics can be imaged on a printing system.
tape density	Expression of the format of a magnetic tape measured in number of bytes that can be stored per inch of tape.

tape drive	Input/output device that controls the movement of magnetic storage tape past the read/write head while data is accessed or stored.
telecommunications	The transfer of data through telephone lines.
teleprocessing	Data transfer through telecommunication lines for processing among various remote terminals and the central processing unit (CPU).
templates	1. Preset document formats, usually furnished along with application software, such as electronic spreadsheets or data base programs. 2. Also applies to keyboard overlays showing function keys for particular software packages.
temporary storage	Main memory locations reserved for intermediate results of processing, control values, or other information that needs to be kept on hand as a program proceeds.
terminal	Interface device connected to a computer or network. A terminal has no processing capability of its own.
throughput	Measure of the number of pages printed during a given unit of time, usually expressed as pages per minute.
tint	Color resulting from adding white to a pure hue. See also <i>shade</i> and <i>tone</i> .
TOF	Top of form.
toggle	In an LPS system, to switch (alternate) from one tray to another. The system will switch from an active feeder or stacker tray to an inactive one to allow continuous printing when the proper commands are invoked.
token	A coded character representing a word used in programs. For instance STOP is a word and the one-byte token for it in a BASIC dialect is 250.
tone	Primary color in its pure form, or mixed with black or white to create a lighter tint or darker shade of the primary color. See also <i>shade</i> and <i>tone</i> .
total xerographic convergence (TXC)	For the 4890 HighLight Color LPS, a function of the operating system software (OSS) that monitors the state of the color and black developer housings. If TXC detects a condition that may affect print quality, TXC requests that the operator initiate Print Quality Adjustment (PQA) to adjust the xerographic subsystem. Refer to <i>print quality adjustment</i> .
tpi	Tracks per inch.

transaction processing	Method of data processing that updates files and results are generated immediately after data entry.
translation	1. In data communications, the conversion of one code to another on a character-by-character basis. 2. In programming, the function of a language processor that converts a source program from one programming language to another.
transmission speed	In data communications, the rate data is passed through communication lines, usually measured in bits per inch (bpi).
Tri-level xerography	The feature of the 4890 HighLight Color LPS that enables the rasterization of both the black and the color images in a single pass by the creation of a third charge state.
truncated	Cut off before completion, as when data transfer from a host to a printer is cut off before all data has been transmitted.
two-up	Printing two logical pages on one side of a physical page.
TXC	Total xerographic convergence.
type style	Italic, condensed, bold, and other variations of typeface that form a type family.
typeface	Set of fonts having identical design features that give the type a uniform appearance.
UCS	Universal Character Set. Printer feature that permits the use of a variety of character arrays.
UCSB	Universal Character Set Buffer.
UI	User interface.
Universal Character Set	See <i>UCS</i> .
utility program	General-purpose program that performs activities, such as initializing a disk or sorting, which are not specific to any application.
validation	Process of testing a system's ability to meet performance objectives by measuring or monitoring its performance in a live environment.
variable data	Changeable information which is merged with a standard document to create specialized or personalized versions of that document. Variable data is not a part of a form design, but varies from page to page.

variable text	Text of changing nature (such as names and addresses) combined with a form letter to make a complete document.
verification	Process of testing a system's ability to meet performance objectives by running programs in a simulated environment.
virtual page	Page area selected by a forms designer for printing.
vpos	Vertical positioning.
WAN	Wide area network.
weight	Perceived blackness of a character affected by varying the width of the stroke. Weight is expressed in general terms as either bold or roman.
wildcard	Character (usually an asterisk *) which can be inserted into a command string to indicate that it may represent one or more characters in that position.
write protection	Data protection feature implemented on magnetic media (for example, floppy disk, 9-track tape) to prevent stored data from being modified, written over, or erased.
x axis	Horizontal axis on a forms grid.
x height	Height of lowercase letters without their ascenders or descenders (height of letter "x").
xdot	Unit of measurement representing a fraction of an inch. May also be referred to as a picture element (pixel) or spot; for example, 1/600 spots per inch (spi).
xerographic engine	Component of a printer that develops an image, transfers it to paper, and fuses it for output as hardcopy.
xerographic mode	Either of two possible printer configurations: 1. Black mode which allows printing with black dry ink only. 2. Highlight mode which enables both highlight color and black printing.
xerographic mode persistence (XMP)	For the 4890 HighLight Color LPS, a value specified during sysgen, in JDL or in DJDE code that specifies on what basis xerographic mode switching (XMS) may take place. Refer to <i>xerographic mode switching</i> .
xerographic mode switching (XMS)	A function of the operating system software (OSS) that controls the xerographic mode of the 4890 HighLight Color LPS. The operator or programmer controls XMS through the xerographic mode persistence (XMP) setting. Refer to <i>xerographic mode</i> .
XICS	Xerox Integrated Composition System.

XJCF	Xerox Job Control Facility.
XNS	Xerox Network Systems is the network architecture and protocol used with Xerox equipment.
XPAF, XPF	Xerox Printer Access Facility.
XPPI	Xerox Pen Plotter Interface.
XPS (Xerox Print Service)	Xerox Print Service (XPS) Manager is a printer front end to other hosts. XPS Manager server communicates with the printer via a layered communication protocol, based on the XNS protocol suite but enhanced with "online" capability.
XPS (Xerox Publishing System)	Xerox Publishing System.
XPMF-VMS	Xerox Print Management Facility-VMS Version.
y axis	Vertical axis on a forms grid.

Numerals

871-CM (configuration option), 1-10

A

accent marks, 12-5

see also *Interpress*

ACCEPT (HIP.LIB parameter), 15-1

accounting page

erroneous, 6-2

print/processing error codes, 6-6

report completion codes, 6-6

WP completion codes, 6-7

xerographic mode, 6-2

accounts (customer), maintaining, 6-9

ALLOW DATA CHECK command, 16-2

see also *host computer, channel-attached*

APA2 command (SYSGEN), 1-4

AUTO command (SYSGEN), 1-4

B

backing up files, 2-1

BLOCK DATA CHECK command, 16-2

see also *host computer, channel-attached*

BLOCKSIZE (HIP.LIB parameter), 15-2

BOOT command (SYSGEN), 1-4

booting

BOOT command, 1-4

create a boot floppy, 1-18

full sysgen, 1-7

system prompt, 1-3

when formatting, 1-5

BUFFERSIZE (HIP.LIB parameter), 15-2

C

card-image files

downloading

DJDE FILE, 3-3

HOSTCOPY, 3-1

CLEAR PRINTER command, 16-3

CLEAR QUEUE command, 13-8

CLP command, examples, 14-9

CLU command, 14-1

examples, 14-9

CLUSTER.LIB, see *clusters*

clusters

applications, 14-4

CLUSTER.LIB, 14-3

commands, 14-8

creating, 14-5

displaying status, 14-1

ordered stocks, 14-8

OTEXT applications, 14-4

setting up, 14-2

status, 14-1

stockset applications, 14-4

storing, 14-3

tab stocks, 14-8

color, adding to files, 10-6

see also *FCU*

color jobs, compatibility, 10-5

color mapping, 10-4

Interpress, 12-7

color mismatch parameters, 12-8

see also *Interpress*

command files

creating, 8-1

editing, 8-4

running samples, 8-4

commands

CLEAR QUEUE, 13-8

CLP, examples, 14-9

CLU, 14-1

examples, 14-9

DJDE FILE, 3-3

DSR, 2-1

FCU, 10-6, 11-1

FEED, 14-3, 14-5

FLF, 1-18

HOSTCOPY, 1-4, 3-1, 7-1

IBM online

ALLOW DATA CHECK, 16-2

BLOCK DATA CHECK, 16-2

CLEAR PRINTER, 16-3

FOLD, 16-2

NO-OP, 16-2

SENSE ID, 16-3

TEST I/O, 16-2

UNFOLD, 16-2

IFU, 12-7

INITIALIZE QUEUE, 13-2

MERGE, 7-1

MOVE #, 13-4

PROBLEM, 6-28

PURGE, 5-3

RCU, 5-3

restricting access to, 5-3

SCHEDULE, 13-2

SCHEDULE #, 13-4

SECURE, 5-3

SFC, 6-21, 13-6

SFS, 6-21, 13-7

SHOW QUEUE STATUS, 13-3

START, 15-6

sysgen

APA2, 1-4

AUTO, 1-4

- BOOT, 1-4
- ERASE, 1-4
- FLOPPY, 1-4
- FORMAT, 1-4, 1-5
- HOSTCOPY, 1-4
- menu, 1-3
- MINI, 1-4
- SYSGEN, 1-4
- configuration options, see *sysgen*
- console activity, tracking, 5-3
- tracking, see also *DCU*
- customer billing report, see *reports*

D

- Data Capture Utility, see *DCU*
- date
 - setting, 1-13
 - verifying, 1-14
- DCU
 - commands, 5-3
 - logon, 5-1
- DEFAULT PRINTER RESOLUTION (configuration option), 1-11
- DEFAULT PRINTING ORDER (configuration option), 1-11
- departments (billing), 6-9
- DFAULT ink catalog, 10-1
- see also *ink catalogs*
- disk, see *system disk*
- DJDE FILE command, 3-3
- DSR command, 2-1
- dual stacker, *sysgen* option, 1-11
- DUPLICATEFILE (HIP.LIB parameter), 15-4

E

- ECHOSERVER (HIP.LIB parameter), 15-4
- editor
 - HIP.LIB file, 15-1
 - using, 7-1
- ENET.JSL, 12-4
- see also *Interpress*
- ENETMAXCONS (HIP.LIB parameter), 15-4
- ERASE command (SYSGEN), 1-4
- erasing files, when to, 1-6
- ETHERNET (configuration option), 1-9
- Ethernet, see *XNS connections*

F

- FCU command, 10-6, 11-1
- FEED command, 14-3
- see also *clusters*
- feeder trays, see *clusters*
- field service code, 6-29
- file
 - backup, 2-1
 - biasing, 4-1
 - class, 4-2
 - converting to color, 1-3, 10-6, 11-1
 - directories, 7-2
 - editable, 7-2
 - fonts, 9-3
 - mask, 8-1

- names, illegal, 7-1
- non-editable, 7-2
- restricting access, 5-3
- special, backing up, 2-4
- types, 4-2
 - securing, 5-3
- FINISHER (configuration option), 1-11
- finishing devices
 - configuration options, 1-11
 - configuring, 1-18
 - enabling, 1-14
 - FINISHER (configuration option), 1-11
 - HIGH CAPACITY FEEDER (configuration option), 1-11
 - stitcher/stacker, 1-11
- FLF command, 1-18
- floating accents, see *Interpress*
- FLOPPY command (SYSGEN), 1-4
- FOLD command, 16-2
- see also *host computer, channel-attached*
- fonts
 - character selection mode, 9-2
 - downloading from host, 3-2
 - editing, 9-1
 - file types, 9-3
 - floating accents, 12-5
 - Interpress, 12-3
 - mappings, 1-14
- FORMAT command (SYSGEN), 1-4
- formatting, see *system disk, formatting*
- forms, converting to color, 10-5, 11-1
- full color applications, 10-4, 13-5
- Interpress, 12-7
- full *sysgen*, see *sysgen*

G

- GRAPHICS (configuration option), 1-9

H

- hard disk, see *system disk*
- HIGH CAPACITY FEEDER (configuration option), 1-11
- highlight color
 - ink catalogs, 10-1
 - overview, 10-1
 - palettes, 10-1
- HIP.LIB file, 15-1
- host computer
 - block size (HIP.LIB), 15-3
 - channel-attached
 - ALLOW DATA CHECK, 16-2
 - BLOCK DATA CHECK, 16-2
 - carriage control commands, 16-1
 - CLEAR PRINTER, 16-3
 - diagnostics, 16-2
 - FOLD, 16-2
 - LOAD FCB, 16-2
 - LOAD UCSB, 16-2
 - NO-OP, 16-2
 - overview, 16-1
 - print position index, 16-2
 - processing mode, 16-1
 - SENSE ID, 16-3

- TEST I/O, 16-2
- train-image field, 16-2
- UCSB, 16-1
- UNFOLD, 16-2
- downloading from
 - DJDE FILE command, 3-3
 - HOSTCOPY command, 1-4, 3-1
- HOST (HIP.LIB parameter), 15-4
- Host Interface Processor, see *HIP*
- HOSTCOPY command
 - card-image files, 3-1
 - files to edit, 7-1
 - LPS-labeled files, 3-2
 - sysgen, 1-4
- I**
- IBM 3211, see *host computer, channel-attached*
- IBM 4245, see *host computer, channel-attached*
- IBM online interface, see *host computer, channel-attached*
- IEBGENER, 3-2
- IFU commands, 12-7
- illegal file names, 7-1
- image files, converting to color, 11-1
- INITIALIZE QUEUE command, 6-1, 13-2
- ink catalogs
 - DFAULT, 10-1
 - referencing inks, 10-3
 - SDFLT\$, 10-2
 - XEROX1, 10-2
 - XEROX, 10-2
 - see also *highlight color*
- ink lists, 11-2
- INK PRIORITY (configuration option), 1-11
- ink substitution, 10-5
- inks, referencing, 10-3
- Interpress
 - accents, 12-5
 - color mapping, 10-4, 12-7
 - ENET.JSL, 12-4
 - errors, 12-3
 - floating accents, 12-5
 - font mappings, 1-14
 - full color documents, 12-7
 - graphic density, 12-4
 - overview, 12-1
 - paper size, 12-6
 - performance, 12-2
 - printing instructions, 12-4
 - color, 12-7
 - color mismatch, 12-8, 13-5
 - queue manager, 12-8
 - scaling, 12-5
 - XEROX ink catalog, 10-2
- Interpress Font Utility, see *IFU commands*
- L**
- LANGUAGE (configuration option), 1-10
- line printer format, see *host computer, channel-attached*
- LOGENTRIES (HIP.LIB parameter), 15-5
- logon
 - assigning passwords, 5-2
 - changing levels, 5-2
 - class levels, 5-1
 - Data Capture Utility, 5-1
 - how to, 5-1
 - maximum security, 5-1
 - procedure, SA 5-1
- logos, downloading from host, 3-2
- LPS editor, see *editor*
- M**
- masks, see *file, mask*
- MAXXNSPKTSIZE (HIP.LIB parameter), 15-5
- MCHID\$.SYS file, 6-3
- media printing instruction, 12-6
- MERGE command, 7-1
- Mergenthaler fonts, see *sysgen*
- MINI command, 1-4
- mini sysgen, see *sysgen*
- MOVE # command, 13-4
- N**
- NAME (HIP.LIB parameter), 15-5
- NO-OP command, 16-2
 - see also *host computer, channel-attached*
- O**
- ONLINE INTERFACE MODE (configuration option), 1-9
- operating system software, see *OSS*
- ordered stocks, 14-8
- OSS
 - installing, 1-5
 - patches, applying, 1-14
- OTEXT applications, 14-4 and see *clusters*
- P**
- PACKETCOUNT (HIP.LIB parameter), 15-5
- palettes
 - DFAULT ink catalog, 10-1
 - overview, 10-1
 - printing, 10-5
 - SDFLT\$ ink catalog, 10-2
 - workstation software, 10-3
 - XEROX1 ink catalog, 10-2
 - XEROX ink catalog, 10-2
- paper size, Interpress, 12-6
- PAPER SIZE (configuration option), 1-10
- paper stocks, see *clusters*
- passwords
 - assigning, 5-2
 - requirements, 5-1
- patches, see *sysgen, patches*
- PDL
 - ACCT statement, 6-9
 - clusters, 14-3
 - STOCKSET, 14-2, 14-4
- PostScript, color mapping, 10-4
- Print Description Language, see *PDL*
- print position index (ppi), see *host computer, channel-attached*
- print queue database

- converting to status file, 6-21, 13-6
 - creating, 6-1, 13-2
 - full
 - backing up, 6-1
 - warning flags, 6-1, 13-2
 - initializing, 6-1, 13-2
 - printing, 13-7
 - saving, 13-7
 - structure, 6-12
 - updating, 6-1
 - print queue, see *queue manager*
 - PRINTER SPEED (configuration option), 1-8
 - printing instructions, see *Interpress*
 - printing protocol (Interpress), 12-6
 - PROBLEM command, 6-28
 - field service code, 6-29
 - PROGRAMMABLE BYPASS TRANSPORT (configuration option), 1-11
 - PURGE command, 5-3
- Q**
- QUE.SYS, see *print queue database*
 - queue manager
 - Interpress, 12-7
 - managing entries, 13-4
 - MOVE # command, 13-4
 - print queue database, 13-2
 - queue display format, 13-3
 - queue status, 13-3
 - rollover recovery, 13-6
 - SCHEDULE # command, 13-4
 - scheduling mode, 13-1
 - QUEUESIZE (HIP.LIB parameter), 15-5
- R**
- RASTER IMAGE PROCESSOR (configuration option), 1-11
 - raster image processor, see *RIP*
 - RCU command, 5-3
 - recovery procedure, 13-6
 - referencing inks, 10-3
 - report completion codes, see *accounting page reports*
 - reports
 - custom, 6-12
 - customer billing, 6-9
 - system activity, 6-9
 - user accounting, 6-10
 - REPORTSTATUS (HIP.LIB parameter), 15-6
 - restoring files, 2-1, 2-5
 - RIP
 - Interpress, 12-1
 - performance, 12-2
 - RASTER IMAGE PROCESSOR (configuration option), 1-11
 - rollover, recovery, 13-6
- S**
- scaling images (Interpress), 12-5
 - SCHEDULE # command, 13-4
 - SCHEDULE command, 13-2
 - scheduling mode, see *queue manager*
 - SDFLT ink catalog, 10-2
 - see also *ink catalogs*
 - SDI, see *Shared Disk Interface*
 - SECURE command, 5-3
 - SENSE ID command, 16-3
 - service
 - calling for, 6-28
 - field service code, 6-29
 - SFC command, 6-21
 - SFS command, 6-21, 13-7
 - Shared Disk Interface, 17-1
 - SHOW QUEUE STATUS command, 13-3
 - special files, backing up, 2-4
 - spool file size (HIP.LIB), 15-2
 - SST, sysgen, 1-3
 - STAFIL.SYS, see *status file*
 - START command, default in HIP.LIB, 15-6
 - STARTCOMMANDS (HIP.LIB parameter), 15-6
 - status file
 - print queue database (converting), 6-21, 13-6
 - printing, 6-21, 13-7
 - report, 6-9
 - saving, 6-21, 13-7
 - structure, 6-22
 - user form file
 - commands, 6-10
 - creating, 6-10
 - stitcher/stacker
 - sysgen option, 1-11
 - see also *finishing devices*
 - stockset applications, see *clusters*
 - sysgen
 - commands
 - how to use, 1-3
 - menu, 1-3
 - configuration options, 1-8
 - disk space requirements, 1-2, 4-3
 - font requirements, 1-2
 - Mergenthaler fonts, 1-2, 1-13
 - patches
 - applying, 1-13
 - Mergenthaler fonts, 1-13
 - print queue database, creating, 6-1
 - types, 1-1
 - when to run, 1-1, 1-7
 - SYSGEN command, 1-4
 - system activity report, see *reports*
 - system disk
 - configuration, 4-1
 - erasing files
 - ERASE command, 1-4
 - how to, 1-6
 - when to, 1-6
 - file
 - biasing, 4-1
 - classes, 4-2
 - space requirements, 4-3
 - types, 4-2
 - formatting
 - FORMAT command, 1-4
 - how to, 1-5
 - system files, downloading, 1-12

system ID, entering during sysgen, 1-8
system prompt, identifying, 1-3
system serial number, 6-3
system software tape, see *SST*

T

tab stocks, 14-8
TAPE DRIVE (configuration option), 1-9
TERMINAL TYPE (configuration option), 1-11
TEST I/O, 16-2
 see also *host computer, channel-attached*
time
 setting, 1-13
 verifying, 1-14
train-image field (ppi), see *host computer, channel-attached*

U

UCSB, 16-1
UNFOLD command, 16-2
 see also *host computer, channel-attached*
universal character set buffer, see *UCSB*
update sysgen, see *sysgen*
user accounting report, see *reports*
utilities, restrictions, 13-5

X

XEROGRAPHIC MODE PERSISTENCE (configuration option), 1-11
XEROX1 ink catalog, 10-2
 see also *ink catalogs*
XEROX ink catalog, 10-2
 see also *ink catalogs*
Xerox Printer Access Facility, see *XPAF connection*
XNS connection
 maximum packet size (HIP.LIB), 15-5
 maximum sessions (HIP.LIB), 15-4
 remote filing and printing (HIP.LIB), 15-7
 sysgen, 1-2
XOPERATIONS (HIP.LIB parameter), 15-7
XPAF (configuration option), 1-11
XPAF connection
 sysgen, 1-2
 XPAF (configuration option), 1-11

