

IPDS Printing Solution

Administrator Guide



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Reference number: 20091215
First edition: December 2009



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January 2009

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Preface

This document provides detailed explanations and procedures for installing, configuring and utilizing the IPDS Printing Solution.

Administrator Guide Overview

This guide is organized into the following sections:

Chapter 1: Introduction to IPDS – Provides an overview of the components and functions of the HP IPDS Printing Solution (IPDS solution, or IPDS).

Chapter 2: Installation – Instructions to install and test the hardware and software components of IPDS.

Chapter 3: IPDS-Host Setup – How to set up the IPDS host.

Chapter 4: IPDS-Printer Setup – Describes the different optional-methods that can be used to setup or re-configure the IPDS printer.

Chapter 5: Troubleshooting – Some common problems and their solution.

Appendix A: IPDS Option Menu – Details for using the IPDS **Option** menu items.

Appendix B: IPDS Input and Output Menus – Details for using PCL values to configure the IPDS **Input** and **Output** menus to re-map IPDS Drawer commands.

Appendix C: IPDS Fonts – Information that shows how IPDS fonts are mapped to HP PCL fonts when the **Font Mapping** parameter is active.

Throughout this guide, the following alerts are used to denote important sections of text:



WARNING: Highlights a specific procedure or practice which, if not followed correctly, could cause personal injury or catastrophic loss of data or equipment.



CAUTION: Highlights procedures which, if not heeded, could damage the product or adversely affect the functionality.

NOTE: Provides useful information relevant to the described feature or procedure.



TIP: Offers a tip, shortcut, or useful information.

Chapter 1: Introduction to IPDS

The IPDS Printing Solution is an in-printer solution that gives HP LaserJet printers and HP Multi-Function Printing devices (MFP) the ability to process standard LaserJet and LaserJet MFP documents and automatically detect and process Intelligent Printer Data Stream (IPDS) documents.

Unpacking

Check the packaging for water or physical damage, and notify the carrier immediately if any damage is evident.

Keep the original packaging in case anything needs to be moved or shipped. The following items are included in the package:

- A USB or CompactFlash card (Flash Device). This hardware component must be installed into the HP LaserJet printer or MFP.
- A CD-ROM containing:
 - Administrator Guide
 - Additional technical information
 - Setup and Troubleshooting tools

Supported Printers

IPDS is currently available for numerous HP printers. To see a list of currently supported printers, go to www.hp.com/go/laserjetfonts and click on **IPDS Emulation**.

Installation Overview

The installation of IPDS onto an HP printer is accomplished by performing the following steps:

1. Physically installing a pre-programmed Flash Device (USB or CompactFlash) in a LaserJet/MFP or using a network to send an IPDS installation file to a printer's existing flash device (Hard Disk, USB, or CompactFlash).
2. Changing a specific Jetdirect setting to significantly improve IPDS performance.
3. Configuring the IPDS Host and the IPDS Printer.
4. Validating the IPDS Installation.

Chapter 2: Installation

This section describes the procedures required to install and perform a basic configuration of the IPDS.

Hardware Installation

Installing the hardware component of IPDS into the HP LaserJet must be done in accordance with HP's written instructions for each printer model. It is important that the USB or CompactFlash (Flash Device) be installed in an appropriate slot. On some printers, there is a reserved slot. Placing the Flash Device in the reserved slot may prevent the printer from initializing.

Refer to your printer's User's Guide for the specific steps of installing optional USB or CompactFlash cards.

 **CAUTION:** Do not put the CompactFlash card into a slot reserved for printer system firmware.

Verifying the Installation

Replace any printer covers that were removed to install the Flash Device.

1. Plug in the printer's power cord.
2. Power on the printer.
3. After the printer has completely booted and is ready, verify the installation was successful by printing an HP configuration page. The **Installed Personalities and Options** section on the Configuration page should contain the following new entries:

```
IOF 8(-):  IPDS(active) . . .  
IOF 15(-): MHP-I(active). . .
```

If these entries are not present on the HP configuration page, then the installation was not successful. This could be due to one or more of the following reasons:

- The CompactFlash or USB was installed incorrectly. Power down the device and assure proper installation of the CompactFlash or USB.

- The IPDS Flash Device does not support the HP printer model in which it was installed.
- 4. Set the following LaserJet printer options from the printer's Control Panel or by using the printer's Embedded Web Server:
 - Default Personality set to **Auto**.
 - I/O time out value set to **30** (this is a LaserJet setting not an IPDS menu setting)

The Jetdirect network interface must be re-configured to significantly reduce the time that is required to print IPDS jobs.



CAUTION: Though making this change is not difficult, it is suggested that a knowledgeable printer specialist execute this change.

NOTE: This procedure must be repeated any time the Jetdirect firmware is updated or the printer's NVRAM setting are reset to their factory-default values.

The following steps will guide you through the process to enable the Jetdirect interface's **Buffer Packing** option:

1. Start a Telnet session with the HP Jetdirect card (e.g. type **telnet 10.0.0.10** from a command prompt).
2. Type: **menu**; press **Enter**.
3. Select option **2. TCP/IP Menu**; press **Enter**.
4. Select option **2. TCP/IP Print Options**; press **Enter**.
5. Select **Y** to change settings; press **Enter**.
6. Press **Enter** until you locate the **Buffer Packing** setting.
7. Set Buffer Packing to **1**; press **Enter**.

NOTE: Using a **1** value will Disable Buffer Packing even though some older printers *may* display the setting as **Enabled**.

8. Press **Enter** until you locate **Change Settings Y/N**.
9. Select **N**.
10. Select **0** to return to the Main Menu; press **Enter**.
11. Select **0** to Exit Telnet; press **Enter**.
12. Select **Y** to Save Settings; press **Enter**.

After completing these steps, you will need to setup the configuration of the HP printer and the IBM host by following the detailed steps described later in this Administrator Guide and in the Appendices.

Chapter 3: IPDS-Host Setup

In this chapter you will configure the IBM eServer i5, iSeries or AS/400 or mainframe – zSeries host as well as customize the IPDS printer to obtain successful IPDS printing.

IBM Mainframe Configuration

The basic configuration of the printer's Ethernet connection should already have been completed for TCP/IP Printing. The printer's IP address is found on the printer's configuration page. Additional IPDS configuration options for the printer can be set through the printer's front panel, the printer's Web page or by using the IPDS menu-configuration file on the IPDS CD.

Several steps are required to configure the MVS system to print AFP/IPDS files to an HP IPDS printer installed using PPR/PPD (TCP/IP). These steps are as follows:

1. Define the MVS communications control units to MVS.
2. Modify the TCP/IP profile on your MVS system.
3. Ping the printer.
4. Define the printer as a writer-controlled printer to JES.
5. Define the printer to PSF/MVS with PRINTDEV.

NOTE: This section does not provide all the information you need to install and configure TCP/IP on your MVS system.

For more information, refer to IBM publications TCP/IP for MVS: Customization and Administration Guide, or PSF V3R1.0 for OS/390 Customization, or PSF/MVS: System Programming Guide.

Requirements

Make sure that you have at least the following or newer, installed and configured on your system:

- PSF/MVS Version 2.2.0 with APAR OW15599
- MVS Scheduler with APRA 0212236
- TCP/IP Version 3 Release 1 or higher, installed and configured on MVS

To obtain the PTF's associated with these APAR's, contact the IBM Support Center.

Define the Communications Control Unit to MVS

If you have not already done so, define the communications control unit (such as a 3172) on the MVS system. Use either an MVS configuration program (MVSCP) or a hardware configuration definition (HCD), depending on the version of your MVS system:

- When using a version earlier than MVS 4.1.0, use an MVSCP.
- When using a version of MVS 4.1.0 or later, use an HCD or an MVSCP

For more information about using these methods, refer to the IBM publications MVS/ESA Migration Planning: Dynamic I/O Configuration or MVS/ESA Hardware Configuration: Using the Dialog.

Modify the TCP/IP Profile in MVS

The TCP/IP profile contains system configuration statements used to initialize the TCP/IP address space. Some statements require special considerations when you are printing from PSF/MVS. The following example shows the specific statements that require consideration shown in bold:

ACBPOOLSIZE	1000	
ADDRESSTRANSLATIONPOOLSIZE	1500	
CCBPOOLSIZE	150	
DATABUFFERPOOLSIZE	160	32768
ENVELOPEPOOLSIZE	750	
IPROUTEPOOLSIZE	300	
LARGEENVELOPEPOOLSIZE	50	
RCBPOOLSIZE	50	
SCBPOOLSIZE	256	
SKCBPOOLSIZE	256	
SMALLDATABUFFERPOOLSIZE	256	
TCBPOOLSIZE	512	
TINYDATABUFFERPOOLSIZE	256	
UCBPOOLSIZE	100	

KEEPALIVEOPTIONS INTERVAL 10 SENDGARBAGE FALSE

ENDKEEPALIVEOPTIONS GATEWAY

; * Network First hop	Linkname	Packet Size	Subnet mask	Subnet value
9=	BPCLAN	2000	0.255.255.0	0.99.12.0
DEFAULTNET	BPCLAN	2000	0.255.255.0	0
9.99.12.254				

The following is a description of each statement that needs special consideration, the application, and the changes they make necessary.

NOTE: Be aware that if you change any of the values in the TCP/IP profile, you will need to restart TCP/IP in order for the changes to take place.

DATABUFFERPOOLSIZE - defines the number and size of the data buffers. It is recommended that you specify 160 data buffers and a buffer size of 32768.

SMALLDATABUFFERPOOLSIZE - defines the number of small data buffers. It is recommended that you specify at least 256 small data buffers.

TINYDATABUFFERPOOLSIZE - defines the number of tiny data buffers. It is recommended that you specify at least 256 tiny data buffers.

KEEPALIVEOPTIONS - PSF relies on TCP to detect when a connection with a printer is no longer usable. When no data has been exchanged between PSF/MVS and the printer, TCP periodically sends keep-alive probes to the printer. These periodic probes, called keep-alive transmissions, enable TCP to discover when a connection is no longer usable, even if the printer is abruptly powered off or is no longer accessible through the network.

The frequency of keep-alive transmissions is controlled by the INTERVAL parameter on the KEEPALIVEOPTIONS statement. The frequency applies to all TCP applications that direct TCP to send keep-alive transmissions. The default frequency is after about two hours of inactivity.

When printing IPDS on an HP IPDS printer, it is recommended that you specify a shorter interval than the default, such as 10 minutes, for the interval between keep-alive transmissions. Also, if any target host requires that the keep-alive packet contain data, include the statement SENDGARBAGETRUE.

GATEWAY - The Packet_size parameter of the GATEWAY statement defines the maximum transmission unit (MTU) for the MVS host. For network printers, the MTU size is fixed at 1024 bytes. The value cannot be adjusted.

Verify the Printer Connection

Ping the Printer

To verify that the IBM MVS system can establish a connection with the printer, ping the printer from the MVS system.

- From a TSO session, enter the following: **TSO Ping ip_address**
- In JES2, enter the following command from the System Display and Search Facility (SDSF) menu 6: **ping ip_address**

The **ip_address** specifies the IP address of the NIC. The following shows examples of a successful ping and an unsuccessful ping.

Successful ping:

EZA04581 Ping V3R1: Pinging host 9.99.12.33

(Use ATTN to interrupt.)

EZA04631 PING: Ping #1 response took 0.084 seconds. Successes so far = 1.

Unsuccessful ping:

EZA04581 Ping V3R1: Pinging host 9.99.12.33

(Use ATTN to interrupt.)

EZA04631 PING: Ping #1 timed out.

Handling MVS Connectivity Problems

If you encounter problems when pinging the printer from MVS, here is how to resolve them:

Ping is not Successful

If the ping is not successful, verify the following:

- The printer is powered on.
- The IP address is unique in the TCP/IP network.
- The Maximum Transmission Unit (MTU) size of the IP packet for the MVS system is equal to the MTU size of the network printer that is fixed at 1024. To change the MTU size for the MVS system, change the GATEWAY statement in the MVS TCP/IP profile and restart TCP/IP to activate the changes.

Ping is Successful

A successful ping usually indicates that the MVS system can communicate with the printer. However, you might receive a successful ping even though the IP address of

the printer is a duplicate of another IP address. If PSF is unable to establish a network connection with the printer or if PSF output for the printer prints elsewhere, follow these steps to determine whether the IP address of the printer is unique:

1. Turn off the printer.
2. Wait at least 5 minutes for TCP/IP to clear the Address Resolution Protocol (ARP) tables. (If your installation specified a longer interval on the ARPAGE configuration statement in the TCP/IP profile, you may need to wait longer. For information about the ARPAGE statement, refer to the IBM TCP/IP MVS Customization and Administration Guide.)
3. Enter the ping command again from the MVS system. If you receive a successful response to the ping command, there is a duplicate IP address.

Define the Printer to JES

When IPDS is used with JES, it must be defined for deferred printing mode with JES.

- The JES2 printer definition initialization member, located in the system PARMLIB is shown below:

```
FSS (FSS1), PROC=PSFPROC,HASPFSSM=HASPFSSM
PRT1 FSS=FSS1,MODE=FSS,PRMODE= (LINE,PAGE,SOSI1),
CLASS=C, UCS=0, SEP, NOSPEPDS, CKPTPAGE=100
DRAIN, MARK, TRKCELL=YES
```

The above example is correct for JES2 3.11 and above. For earlier versions of JES2, the statement is FSSDEF and would be stated as FSSDEF FSSNAME=FSS1.

The value specified for the PROC parameter must match the name on the PSF/MVS startup procedure.

- The JES3 printer definition is shown below. This example is not executable, but is intended to help the JES3 systems programmer define the printer to the MVS host.

```
FSSDEF, TYPE=WTR, FSSNAME=FSS1, PNAME=PSFPROC,
SYSTEM=SYS1, TERM=NODEVICE, JNAME=PRT1,
JUNIT=(,SYS1,,OFF), FSSNAME=FSS1, MODE=FSS,
PM=(LINE,PAGE,SOSI1),CHARS=(YES,GT12),
```

The value specified for the JNAME parameter must match the name of the printer in the PSF/MVS startup procedure.

The value specified for the PNAME parameter must match the name on the PSF/MVS startup procedure.

Define the Printer to PSF/MVS

Each printer must be defined to PSF with a PRINTDEV statement in the PSF/MVS startup procedure.

Currently, IBM does not supply a network printer-specific writer procedure. (Remember that the printer appears to the IBM mainframe as a network printer.) However, the APSWPROT sample from the APAR medium (noted above in Section 8.2.1) can be copied and modified for network printers.

Make sure that you specify 300-pel font libraries even though the printer may support higher resolutions. The following is a sample procedure (PSFPROC) that can be modified to suit your installation.

The following is a description of the statements to be used in the PSF Startup Proc:

FAILURE – Specifies the action PFS/MVS to take after a printing failure or a TCP/IP network failure. If FAILURE=WCONNECT and the printer is connected to another host when PSF/MVS attempts to establish a connection on TCP/IP, PSF/MVS continuously retries (up to the limit specified in CONNINTV) until the printer becomes available. FAILURE=STOP stops the attempt to connect the printer.

TIMEOUT – Specifies the action that PSF/MVS takes after a timeout when no output is available on JES. The DISCINTV parameter specifies the timeout interval. TIMEOUT=REDRIVE requests that PSF/MVS redrive the printer FSA using the value of the MGMTMODE parameter. TIMEOUT=STOP requests that PSF/MSV stop the printer FSA, which can then be restarted only by an operator command.

MGMTMODE – Set this parameter to OUTAVAIL. OUTAVAIL requests that PSF start a communications session with the printer only when output is available on the JES spool.

DISCINTV – Specifies the disconnect interval in seconds. The value can range from zero to 86,400. It is suggested that the setting be 15. When no output is available from JES for this time period, PSF/MSV ends the session with the printer. If the value is set to zero, PSF/MSV does not end the session because there is no output.

IPADDR – Specifies the IP address of the printer. Replace the xxx.xxx.xxx.xxx with the IP address of the printer's Ethernet connection.

PORTNO – Specifies the TCP/IP socket that is used for AFP/IPDS printing. This parameter must be 9100.

For more information on the PRINTDEV statement, see the IBM publication PSF/MSV System Programming Guide.

Using the HP IPDS Printing Solution with IPDS

In normal operation, a session with the printer is maintained while there is output on the JES spool and the printer is available. When there is no more output on the spool and the disconnect interval expires, PSF/MVS ends the session with the printer. PSF/MVS attempts to restart the session when there is more work on the spool for the printer. After the session is restarted, PSF/MVS must reload the resources required for the print jobs.

To use an HP IPDS printer with your MVS system, use the following JES operator commands:

Starting the HP IPDS Printer

To start the printer on MVS, do the following:

1. Start TCP/IP.
2. Power on the printer.
3. Start the printer FSA.
 - For JES2:
\$Sprinter-name
 - For JES3:
VARY printer-name, ON

Stopping the HP IPDS Printer

You can stop the printer on MVS in the following ways:

The preferred method is to first stop the PSF FSA for the printer by entering the following command from the MVS console:

- For JES2:
\$Printer-name
 - For JES3:
VARY printer-name, OFF
- CANCEL printer-name where printer-name specifies the name of the printer FSA. The printer can then be turned off.
- To end the PSF FSA for the printer, use the JES commands. If you are unable to purge or cancel the printer using the JES commands, enter the following command:
MODIFY FFSname, FORCE, printer-name

eServer i5, iSeries or AS/400 Configuration

The basic configuration of the printer's Ethernet connection should already have been completed for TCP/IP Printing. The printer's IP address is found on the printer's configuration page. Configuration options for IPDS can be set through either the printer's front panel, the printer's Web page, or by using a menu-configuration file.

Several steps are required to configure the IBM host system to enable IPDS printing to a an HP printer with IPDS installed. These include ensuring that PSF/400 is installed, that your eServer i5, iSeries or AS/400 has the required PTF's installed and configured properly to support TCP/IP printing, verifying that line descriptions and host TCP/IP table entries are made, configuring printer devices for use with PSF/400, and configuring the data area that is used by AFP.

Requirements

Make sure that the eServer i5, iSeries or AS/400 host is running a version of OS/400 that supports TCP/IP, has PSF/400 installed, and that you have the most recent PTF's installed and configured.

The PTF information presented below may have been superseded with more recent releases. For versions not shown below, check with IBM for the appropriate PTF information. Additional information about PTF's to use can be obtained from IBM's eServer i5, iSeries or AS/400 service Web site. <http://as400service.rochester.ibm.com>

OS/400 V3R1

General	C6198310 Cumulative tape or later SF35164 TCP/IP for PSF/400 (order cover letter only) SF24140 IPDS pass through (order cover letter only)
Sockets	SF30018
WRKAFP2	SF40039
PSF/400	APAR SA44304

OS/400 V3R2

PSF/400	APAR SA44304
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OS/400 V3R6

General	C5346360 Cumulative tape or later SF45620 TCP/IP for PSF/400 (order cover letter only) SF45624 IPDS pass through
Sockets	SF30508
WRKAFP2	SF31461

Creating a Line Description on the eServer i5, iSeries or AS/400

If the HP IPDS printer and the eServer i5, iSeries or AS/400 host are not on the same LAN segment, verify that there is a route defined in the TCP/IP route List. If there is not a route defined, use the eServer i5, iSeries or AS/400 **ADDTCPRTE** COMMAND to create a route definition.

Also, verify if a line description has been created for the line to which the IPDS printer will be attached. If there is not a line description, use the eServer i5, iSeries or AS/400 **CRTLINETH** to create an Ethernet line description.

Configuring a TCP/IP Host Table Entry

This step is optional – IBM suggests that a host entry may be created in the TCP/IP table. Use the eServer i5, iSeries or AS/400 **CFGTCPIP** command to add the host name and TCP/IP address of the printer's Ethernet connection.

Configuring V3R1 or V3R6

PSF/400 for V3R1 or V3R6

Use the following instructions to create a printer device description:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the **F11** key to display the keywords.
3. In the Device Description (**DEV**D) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9. It must begin with a letter, and a maximum of 10 characters is allowed.
4. In the Device Class (**DEV**CLS) field, enter ***RMT**.
5. In the Device Type (**TYPE**) field, enter ***IPDS**.
6. In the Device Model (**MODEL**) field, enter **0**.
7. In the Advanced Function Printing (**AFP**) field, enter ***YES**.
8. In the AFP Attachment (**AFP**ATTACH) field, enter ***APPC**.
9. In the Font (**FONT**) field, enter an appropriate value such as **11**.

10. In the Form Feed (**FORMFEED**) field, enter ***AUTOCUT**.
11. In the Remote Location (**RMTLOCNAME**) field, enter **TCPIP**.

AFP for V3R1 or V3R6

Use the following instructions to create a data area that is used by PSF/400:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **WRKAFP2**.
2. Press the **F11** key to display the keywords, then press F10 to display additional values.
3. In the Printer Device Name (**DEVN**) field, enter the name of the printer. This name must be identical to the name entered for the device name in the DEVN field in the CRTDEVPRN command.
4. In the IPDS Pass Through (**IPDSPASTHR**) field, enter ***NO**.
You may set this value to ***YES** if you have applications that generate IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's Printer Device Programming Version 5 (SC41-5713-05) publication.
5. In the TCP/IP Support (**TCPIP**) field, enter ***YES**.
6. In the Remote System (**RMTSYS**) field, enter the TCP/IP address of the printer.
You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
7. In the Port (**PORT**) field, enter **9100**.
8. In the Activation Timer (**ACTTMR**) field, enter ***NOMAX**. This will cause PSF/400 to wait indefinitely for a response to an activation request.
9. In the Inactivity Timer (**INACTTMR**) field for V3R1, or Release Timer (**RLSTMR**) field for V3R6, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the IPDS Printer while there are no spooled files with a status of RDY.

Configuring V3R2

PSF/400 for V3R2

Use the following instructions to create a printer device description:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the **F11** key to display the keywords.
3. In the Device Description (**DEV**D) field, enter the name of the HP IPDS printer. The name may be comprised of the letters AZ and numerals 0-9. It must begin with a letter, and a maximum of 10 characters is allowed.
4. In the Device Class (**DEV**CLS) field, enter ***RMT**.
5. In the Device Type (**TYPE**) field, enter ***IPDS**.
6. In the Device Model (**MODEL**) field, enter **0**.
7. In the Advanced Function Printing (**AFP**) field, enter ***YES**.
8. In the AFP Attachment (**AFP**ATTACH) field, enter ***APPC**.
9. In the Font (**FONT**) field, enter an appropriate value such as **11**.
10. In the Form Feed (**FORM**FEED) field, enter ***AUTOCUT**.
11. In the Remote Location (**RMT**LOCNAME) field, enter **TCPIP**.

AFP for V3R2

Use the following instructions to create a data area that is used by PSF/400:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTPSFCFG**.
2. Press **F11** to display the keywords, and then press **F10** to display additional values.
3. In the PSF Configuration (**PSF**CFG) field, enter the name of the printer.
4. In the Library field, enter **QGPL**.
5. In the IPDS Pass Through (**IPDS**PASTHR) field, ***NO**.
You may set this value to ***YES** if you have applications that generate IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations

and other configuration considerations are discussed in IBM's Printer Device Programming Version 5 (SC41-5713-05) publication.

6. In the Activation Release Timer (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
7. In the Release Timer (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.
8. In the Remote Location Name or Address (**RMTLOCNAME**) field, enter the TCP/IP address of the printer. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
9. In the Port (**PORT**) field, enter **9100**.
10. In the TCP/IP Activation Timer (**ACTTMR**) field, enter ***NOMAX**. This will cause PSF/400 to wait indefinitely for a response to an activation request.

Configuring V3R7 or V4R1

AFP for V3R7 or V4R1

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTPSFCFG**.
2. Press **Enter** or **F4** to display the keywords.
3. In the PSF Configuration (**PSFCFG**) field, enter the name of the printer. Remember this name as it will also be entered in the User-Defined Object (**USRDFNOBJ**) field in the printer device description that will be created in the next section.
4. In the IPDS Pass Through (**IPDSPASTHR**) field, enter ***NO**.
You may set this value to ***YES** if you have applications that generate IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's Printer Device Programming Version 5 (SC41-5713-05) publication.

5. In the Activation Release Timer (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
6. In the Release Timer (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.

PSF/400 for V3R7 or V4R1

Use the following instructions to create a printer device description:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the **F4** key to display the keywords.
3. In the Device Description (**DEVDD**) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9, must begin with a letter, with a maximum of 10 characters allowed.
4. In the Device Class (**DEVCLS**) field, enter ***LAN**.
5. In the Device Type (**TYPE**) field, enter ***IPDS**.
6. In the Device Model (**MODEL**) field, enter **0**.
7. In the LAN Attachment (**LANATTACH**) field, enter ***IP**. Then press F10.
8. In the Advanced Function Printing field, enter ***YES**.
9. In the Port Number (**PORT**) field, enter **9100**.
10. In the Font (**FONT**) field, enter an appropriate value such as **11**.
11. In the Form Feed (**FORMFEED**) field, enter ***AUTOCUT**.
12. In the Activation Timer (**ACTTMR**) field, enter ***NOMAX**. This will cause the eServer i5, iSeries or AS/400 host to wait indefinitely for a response to an activation request.
13. In the Remote Location (**RMTLOCNAME**) field, enter the TCP/IP address of the printer. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
14. In the User-Defined Object (**USRDFNOBJ**) field enter the printer name that you entered in the PSF Configuration (**PSFCFG**) field when setting up AFP (section

3.1.6.1, step 3 above). This is the PSF configuration object that is used internally by the eServer i5, iSeries or AS/400 when referring the IPDS Printer Emulation.

Leave the Library blank unless you know its name.

Enter ***PSFCFG** as the Object Type.

Configuring V4R2 and Above

AFP for V4R2 and Above

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTPSFCFG**.
2. Press **Enter** or **F4** to display the keywords.
3. In the PSF Configuration (**PSFCFG**) field, enter the name of the printer. Remember this name as it will also be entered in the User-Defined Object (**USRDFNOBJ**) field in the printer device description that will be created in the next section.
4. In the IPDS Pass Through (**IPDSPASTHR**) field, enter ***NO**.
You may set this value to ***YES** if you have applications that generate IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's *Printer Device Programming Version 5* (SC41-5713-05) publication.
5. In the Activation Release Timer (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
6. In the Release Timer (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.
7. In the **Automatic Session Recovery** field, enter ***YES**. This causes the PSF/400 to automatically attempt to resume printing when a session has been unexpectedly ended.
8. In the **Acknowledgement Frequency** field, enter **10**. This value is the frequency, in number of pages that the eServer i5, iSeries or AS/400 sends an

acknowledgement request to the printer for status of pages printed. This value is used to determine where to restart printing after a connection has been lost and re-established. However, if acknowledgement frequency requests are made with great frequency, such as once per page, performance degradation may be noticed.

9. Optional selection – In the Page Size Control field, enter *YES. This causes PSF/400 to set the page size (forms) in lieu of using the printer's default size. Generally this parameter is used when 4028 printer emulation is selected.
10. Optional Selection – In the Edge Orien, enter *YES. When the page rotation value of a spooled file is *COR or *AUTO and the system rotates the output, 90 degree rotation is normally used. When this parameter is *Yes, PSF/400 rotates the output 270 degrees instead of 90 degrees.

PSF/400 for V4R2 and Above

Use the following instructions to create a printer device description:

1. At the eServer i5, iSeries or AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the **F4** key to display the keywords.
3. In the Device Description (**DEV**D) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9, must begin with a letter, with a maximum of 10 characters allowed.
4. In the Device Class (**DEV**CLS) field, enter *LAN.
5. In the Device Type (**TYPE**) field, enter *IPDS.
6. In the Device Model (**MODEL**) field, enter 0.
7. In the LAN Attachment (**LAN**ATTACH) field, enter *IP. Then press F10.
8. In the Advanced Function Printing field, enter *YES.
9. In the Port Number (**PORT**) field, enter 9100.
10. In the Font (**FONT**) field, enter an appropriate value such as 11.
11. In the Form Feed (**FORM**FEED) field, enter *AUTOCUT.
12. In the Activation Timer (**ACT**TMR) field, enter *NOMAX. This will cause the eServer i5, iSeries or AS/400 host to wait indefinitely for a response to an activation request.

13. In the Remote Location (**RMTLOCNAME**) field, enter the TCP/IP address of the printer. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
14. In the User-Defined Object (**USRDFNOBJ**) field, enter the printer name that you entered in the PSF Configuration (PSFCFG) field when setting up AFP (section 3.1.7.1, step 3 above). This is the PSF configuration object that is used internally by the eServer i5, iSeries or AS/400 when referring the IPDS Printer Emulation.

Leave the Library blank unless you know its name.

Enter *PSFCFG as the Object Type.

Verifying the IPDS Configuration on the eServer i5, iSeries or AS/400

To test that the eServer i5, iSeries or AS/400 and the printer are connected and communicating, ping the printer from an eServer i5, iSeries or AS/400 workstation with the following command:

PING 'TCP/IP ADDRESS' or PING HOST NAME

'TCP/IP Address' is the address of the printer (be sure to include the single quote marks around the address). Host name is the optional name you may have defined for the printer if you created an optional TCP/IP Host Table entry. If the pings are successful, vary on the printer's device description by typing this command (all on one line):

**VRYCFG(printer device name)
CFGTYPE(*DEV) STATUS(*ON)**

To use PSF/400 to send IPDS files to the printer, start the writer by typing this command:

STRPRTWTR DEV(printer device name)

Chapter 4: IPDS-Printer Setup

In this chapter we will be discussing the three optional-methods that can be used to setup or change the configuration of the IPDS printer. The full details and procedure for setting up the IPDS printer menus are contained in [APPENDIX A: IPDS Option Menu](#) and [APPENDIX B: IPDS Input and Output Menus](#).

NOTE: For most IPDS printing applications it is not necessary to change the factory-default settings used in the IPDS Option, Input, and Output menus.

Optional Setup Procedures

The IPDS Printing Solution has three non-volatile menus that store all of the printer settings used to configure the IPDS printer: The factory-default configuration settings can be changed from the printer's Front Panel; from the printer's Embedded Web Server interface (EWS); or, through the use of an IPDS Menu-Configuration file.

All of the methods described below access and modify the same IPDS menu parameters. You can use whichever method or combination of methods you prefer to use configure the IPDS printer.

Using the printer's Front Panel

After installing the IPDS solution, additional selections become accessible on the printer's front panel. Using the printer's front panel, you can select and control such functions as the type of IPDS emulation, page setup features such as text compression, paper handling support, and initiating troubleshooting features such as EDCDIC and ASCII dumps, etc.

To configure IPDS using the front panel, press the main menu button until you reach the sections to configure IPDS. There can be as many as three different menu options for IPDS. These may vary depending upon the LaserJet model. Prior to changing any options using the front panel, it is recommended that you print a Menu Map. The Menu Map shows all menu settings, including the sections for IPDS and the current settings.

After you reach any of the IPDS setup menus, you may step through the different settings by using the **item** button. Individual selections within each menu item can be addressed with the **value** button. Active menu selections are noted by an asterisk (*). To select a different setting than the active one, use the value button until your desired option is displayed and save it using the **select** button.

After you have selected all front panel options, it is recommended that you print a copy of the Menu Map of front panel settings. This shows all front panel settings (standard LaserJet/MFP options and IPDS options).

Using the printer's Web Page

To configure the IPDS using the printer's internal Web server, using the Web browser on a PC navigate to the printer's URL (the printer's IP address). Generally you will find the IPDS menus under the Settings section. However, because the Web pages differ from printer model to printer model, you may need to search around on the printer's Web pages until you locate the area where all the printer's menus are displayed. You can then customize the IPDS configuration values right on the browser screen.

After you have selected all menu options, it is recommended that you print a copy of the Menu Map of all printer settings. This shows all of the printer's options including the IPDS configuration settings.

The following are samples of the Web Configuration pages:

Figure 1: Web Page Configuration – Configuration Menu

Configure Device

You may configure your device by selecting a configuration menu from the navigation tree below. Once you have selected a configuration menu, you may configure its settings at the bottom of the page.

Select A Menu

- I-O IPDS MENUS
 - IPDS OPTION MENU
 - IPDS INPUT MENU
 - IPDS OUTPUT MENU
- Information
- Default Job Options
- Time/Scheduling
- Management
- Initial Setup
- Device Behavior
- Print Quality
- Troubleshooting
- Resets

Figure 2: Web Page Configuration – Option Menu

IPDS OPTION MENU

IPDS MODE	Enabled	
IPDS EMULATION	4028	
OVERLAYS	IPDS Memory	
CODE PAGE	US/Canada	
CODE PAGE VER	Version 0	
DEFAULT FONT	Cour 10 CPI	
FONT MAP	4028/43xx Comp	
TEXT COMPRESSION	No Compress	
COMPRESS RATIO	0	(0 - 99)
HORIZ OFFSET	0	(-127 - 127)
VERT OFFSET	0	(-127 - 127)
COMMAND DUMP	OFF	
ASCII DUMP	OFF	
600 DPI GRAPHICS	Convert to 300	
EDGE TO EDGE	None	

Apply Cancel

Figure 3: Web Page Configuration – Input Menu

IPDS INPUT MENU		
TRAY 1:IBM DRAWER	<input type="text" value="100"/>	(1 - 255)
TRAY 1:PCL COMMAND	<input type="text" value="2"/>	(1 - 99)
TRAY 2:IBM DRAWER	<input type="text" value="1"/>	(1 - 255)
TRAY 2:PCL COMMAND	<input type="text" value="1"/>	(1 - 99)
TRAY 3:IBM DRAWER	<input type="text" value="2"/>	(1 - 255)
TRAY 3:PCL COMMAND	<input type="text" value="5"/>	(1 - 99)
TRAY 4:IBM DRAWER	<input type="text" value="3"/>	(1 - 255)
TRAY 4:PCL COMMAND	<input type="text" value="8"/>	(1 - 99)
TRAY 5:IBM DRAWER	<input type="text" value="4"/>	(1 - 255)
TRAY 5:PCL COMMAND	<input type="text" value="9"/>	(1 - 99)

Figure 4: Web Page Configuration – Output Menu

IPDS OUTPUT MENU		
OUTPUT TRAY 1	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 2	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 3	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 4	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 5	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 6	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 7	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 8	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 9	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 10	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 11	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 12	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 13	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 14	<input type="text" value="0"/>	(0 - 99)
OUTPUT TRAY 15	<input type="text" value="0"/>	(0 - 99)

Using an IPDS-Menu configuration file

The IPDS-Menu configuration file is located on the IPDS CD. It can be edited and sent to the printer to configure all of the IPDS settings at the same time. All IPDS settings that are available from the Front Panel or the EWS are configurable by editing the factory-default values in a plain-text menu setup file. When the edited file is sent to the printer the new values will be set. The file must be binary-copied to the printer using FTP, LPR, a network Binary-Copy command, or the printer's EWS **Print** function. The menu setup file is self-documenting and it is located on the IPDS CD.

Chapter 5: Troubleshooting

This chapter contains solutions for problems you may encounter while using the product. If a problem persists even after you implement the solutions provided here, or if you encounter a problem not listed here, please contact your dealer, or contact HP at 661-257-5571 or visit www.hp.com/go/laserjetfonts.

This chapter provides instructions for troubleshooting of printing problems you may encounter when operating IPDS.

Software Updates

Contact HP at 661-257-5571 or visit www.hp.com/go/laserjetfonts to arrange for an update.

IPDS Information

There are several ways to generate status pages to verify the installation and configuration of the IPDS printer. This information is accessed from the printer's front panel.

IPDS Information Page

Step through the printer's main menu until you locate the IPDS Information section. The first option is to print the IPDS Information Page. The page will show the current software version of IPDS.

Printer Configuration Page

From the printer's main menu, step through the menu options until you locate the Information Menu. Select the option to Print Configuration. Several pages will be printed. This will show all installed options in the printer. If IPDS is properly installed, you will see the reference under the **Installed Personalities and Options** section. You will also see an IPDS configuration page that will show the current software version.

Printer Menu Map

From the printer's main menu, step through the menu options until you locate the Information Menu. Select the option to **Print Menu Map**. The menu map will show all available options on IPDS and the current settings.

Command & ASCII Dumps

IPDS includes two different **IPDS dump** modes. These are sometimes helpful in diagnosing IPDS to PCL conversion problems.

Command Dump

An IPDS Command Dump can be useful to diagnosis problems with your IPDS print jobs.

The IPDS Command Dump will print a listing of IPDS commands received from the host. A description of each command received along with the command number and numeric settings is printed.

To activate the IPDS Command Dump Mode, wait until all printing is completed, then end the printer's writer at the host.

1. Step through the main menu until you locate the IPDS OPTION MENU.

2. Step through the IPDS OPTION MENU until you locate the COMMAND DUMP option.
3. Select COMMAND DUMP ON and save the option.
4. Restart the printer's writer at the host and resend the print job.

The information contained in the IPDS Command Dump, will be best interpreted with the help of HP. Contact HP at 661-257-5571 or visit www.hp.com/go/laserjetfonts.

ASCII Dump

The ASCII Dump will print a listing of PCL commands and ASCII data after the IPDS data stream has been converted by the IPDS component.

To activate the ASCII Command Dump Mode, wait until all printing is completed, then end the printer's writer at the host.

1. Step through the main menu until you locate the IDPS OPTION MENU.
2. Step through the IPDS OPTION MENU until you locate the ASCII DUMP option.
3. Select ASCII DUMP ON and save the option.
4. Restart the printer's writer at the host and resend the print job.

The information contained in the IPDS Command Dump, will be best interpreted with the help of HP. Contact HP at 661-257-5571 or visit www.hp.com/go/laserjetfonts.

Diagnostic Tools and Utilities

The IPDS CD contains additional technical documentation, diagnostic tools and utilities to assist in isolating problems and capturing the complete IPDS job information.

IPDS Troubleshooting

Problem: The printer with the IPDS solution installed in it will not respond to a Ping.

Possible Resolutions: If you have problems pinging the printer:

- Verify the configuration of the eServer i5, iSeries or AS/400, including the printer's correct TCP/IP address and any intervening devices such as routers and bridges.
- Verify that the eServer i5, iSeries or AS/400 line description is varied on, the printer is turned on, and that the printer is also turned on and shows a status of READY.
- Verify that the eServer i5, iSeries or AS/400 TCP/IP interface is active.

Problem: PSF/400 terminates when initialized.

Possible Resolutions: If PSF/400 terminates when you initialize, if for IPDS printing and issues a message PQT3603, check for the following error codes:

10 means an incorrect RMTSYS (V3R1 or V3R6) or RMTLOCNAME (V3R2, V3R7, or above) has been specified for the printer.

15 means that PSF/400 timed out waiting for the printer's response. You should check the value you entered for Activation Timer when using WRKAFF2 (V3R1 or V3R6), CRTPSFCFG (V3R2), or CRTDEVPRT (V3R7 or above).

Codes **20-39** indicate a general communications failure. Make sure all of the components in your network are operational, such as routers.

Codes **40-59** indicate a logic error between PSF and the printer control unit. Contact IBM support.

Problem: Spooled print file remains in PND status.

Possible Resolutions:

- Check the output queue with the command WRKOUTQ OUTQ (queue name)
- This typically indicates that PSF/400 is waiting for a response from the printer. This can be verified by displaying the QSPL subsystem. WRKACTJOB SBS(QSPL). If the status of the PDJ job for the printer is SELW, then PSF/400 is waiting for a response from the printer. Make sure that the printer is online and in READY status and that all network connections (for example, routers) between the eServer i5, iSeries or AS/400 and the printer are active.

Problem: Spooled files disappear without printing.

Possible Resolutions: To resolve this problem:

- Check that the correct printer queue name and correct IP address have been used.
- Ping the IP address. If the ping is successful, disconnect the network cable from the printer, and ping the address again. If the ping is still successful, there is another printer with that IP address on the network.

Problem: Data is being clipped.

Possible Resolution:

To resolve this problem, you may want to set the PSC (Page Size Control) parameter to *YES in the WRKAFF2 (V3R1 and V3R6) command or in the CRTPSFCFG command (V3R2, V3R7 or above).

Problem: Euro symbol is not printing.

Possible Resolution: If you are not able to print the Euro symbol, check the following:

- Make certain that your printer has resident in it, the most recent version of the Windows 3.1 Latin 1 character set that contains the Euro symbol.
- Make certain that your eServer i5, iSeries or AS/400 has the latest PTFs installed that support the Euro symbol.
- Make certain that your eServer i5, iSeries or AS/400 is sending out one of the following Euro Country Extended Code Pages:

Code Page	Description
1140	USA, Canada
1141	Austria, Germany
1142	Denmark, Norway
1143	Finland, Sweden
1144	Italy
1145	Spain, Latin America
1146	UK
1147	France
1148	International

When one of these code pages is sent by the eServer i5, iSeries or AS/400, IPDS will automatically convert the eServer i5, iSeries or AS/400's Euro Country Extended Code Page into the Windows 3.1 Latin 1 (Euro version) character set and send the instruction to the IPDS printer to print the Euro symbol. Of course, the laser will only print the Euro symbol if the printer has the Windows 3.1 Latin 1 Euro enable character set resident in it.

Problem: My LaserJet will either not boot, or does not show IPDS on the configuration page.

Resolution: Upgrade the firmware of the printer to the most currently released version.

Make sure that the **Default Personality** setting on the front panel is set to **Auto**.

Problem: IPDS shows up on the configuration page and the IPDS menu appears in the menu map printout, but there is no IPDS printing.

Resolution: Make sure that the **IPDS MODE** front panel menu option is set to active.

Make sure that the **Default Personality** setting on the front panel is set to **Auto**.

Problem: IBM host pages get printed in with LAN pages.

Resolution: The LaserJet's 1/0 time out value must be set to a minimum of 15 seconds longer than the eServer i5, iSeries or AS/400's PSF Release Timer setting. By default, the eServer i5, iSeries or AS/400 setting is for 15 seconds. Therefore the printer's 1/0 time out value would be 30 seconds.

Appendix A: IPDS Option Menu

IPDS Option Menu Setup

The following are the items in the IPDS Options Menu, shown in alphabetic order. An asterisk (*) by a value indicates the factory default setting.

600 DPI GRAPHICS

Determines if 600 dpi graphics are passed on to the printer at 600 dpi or converted to 300 dpi. Most graphics will print properly at 300, but some high resolution graphics require 600 dpi. However, selecting the 600 dpi option will increase the amount of time to print a document because nearly eight times more information must be downloaded to the printer.

VALUE	DESCRIPTION
Convert to 300*	Causes the graphics to be converted and printed at 300 dpi
Use 600 dpi	Causes the graphics to be printed at 600 dpi

ASCII DUMP

Enables or disables the ASCII dump feature.

VALUE	DESCRIPTION
Off*	Disables the ASCII dump feature
On	Enables the ASCII dump feature

CODE PAGE

This menu option lets you select the default Code Page for the translation tables.

VALUE	DESCRIPTION
US/Canada*	US/Canada Code Page
International	International Code Page
Aust/German	Austrian/German Code Page
Belgian	Belgian Code Page
Brazilian	Brazilian Code Page
Canada/Fren	French Canadian Code Page
Danish/Norw	Danish/Norwegian Code Page
Finn/Swedish	Finnish/Swedish Code Page
French	French Code Page
Italian	Italian Code Page
Japan (Eng)	English Character Japanese Code Page
Japanese	Katakana Japanese Code Page
Portuguese	Portuguese Code Page
Spanish	Spanish Code Page
Span-Speaking	Spanish Speaking Code Page
English (UK)	English UK Code Page
Aus/Ger Alt.	Alternate Austrian/German Code Page
Dan/Nor Alt.	Alternate Danish/Norwegian Code Page
Fin/Swe Alt.	Alternate Finish/Swedish Code Page

CODE PAGE VER

Selects which code page version will be used if more than one is available.

VALUE	DESCRIPTION
0*	Version 0
1	Version 1

COMMAND DUMP

Enables or disables the command dump feature - consult [Chapter 5: Troubleshooting](#), for further instructions on the Command Dump feature.

VALUE	DESCRIPTION
Off*	Disables the command dump feature
On	Enables the command dump feature

COMPRESS RATIO

Determines the percentage of compression of host text data to fit the logical page into the printable area of the physical page. This setting takes effect only if the setting TEXT COMPRESSION is set to LPI Compress or LPI/CPI Comp.

VALUE	DESCRIPTION
0 to 99	0 to 99% Compression
5*	5% (default)

DEFAULT FONT

Selects which font will be loaded/mapped by the printer when the host requests the default font. Only certain fonts are selectable from the IPDS menu. Refer to [Appendix C: IPDS Fonts](#) for a listing of the fonts and their associated FGID numbers.

VALUE	DESCRIPTION
Cour 10 CPI	Courier 10 CPI
Cour 12 CPI	Courier 12 CPI
Cour 15 CPI	Courier 15 CPI
Cour 17.1 CPI	Courier 17.1 CPI

EDGE-TO-EDGE

Some printers have the capability of printing virtually from one edge of the paper to the other edge (there is a small, unprintable area at both edges). Non edge-to-edge printers have an unprintable area around the entire page. The printable area of an edge-to-edge printer is essentially the same as the page size. For a non edge-to-edge printer, the printable area is smaller than the page. For example, an HP 4250 printer has a printable area of 8" x 10.5" on an 8.5" x 11" page, while an HP 9050 (in edge to edge mode) has a printable area that is **almost** as large as the page (the 9050 can print to within 1.5 mm of the edge of the page).

When a document that is designed to use the full page is printed on a non edge-to-edge printer, the document may not print correctly, i.e. the document may not be aligned correctly. There is a possibility that text on the right, top and bottom edges of the page will be cut off or overprinted. Choosing this edge-to-edge option when using a non edge-to-edge printer may help improve the alignment. Using horizontal and vertical offsets may also improve the alignment of the document.

VALUE	DESCRIPTION
None*	No edge-to-edge adjustments are applied to the print job
Simulated	Causes adjustments to be made that will simulate edge-to-edge printing

NOTE: If the printer has edge-to-edge capability such as the HP LaserJet 9050, setting the printer's standard-menu front panel option (not the IPDS edge-to-edge option) will cause IPDS to automatically set itself to use true edge-to-edge processing.

EMULATION

This purpose of this setting is to ensure the proper conversion of the native IBM printer DPI to the Hewlett-Packard printer. The IBM 4028 page printer is a 300 DPI printer and the 3812/3816 page printers are 240 DPI printers.

VALUE	DESCRIPTION
4028*	download fonts to printer with no change
3812/3816	Converts any 240 DPI download fonts to 300 DPI

FONT MAP

Selects how IPDS font commands from the host are mapped to printer resident PCL fonts. Refer to [Appendix C: IPDS Fonts](#) for a detailed list of font mappings. Best Fit maps the IPDS font to a printer resident font that most closely resembles the original IPDS font. 4028/43XX Compatible maps the IPDS font like an IBM 4028/43XX series printer would (i.e. including font substitutions). 3812/16 Compatible maps the IPDS font like an IBM 3812/16 printer would.

VALUE	DESCRIPTION
Best Fit	Selects the Best Fit option
4028/43XX Comp*	Selects the 4028/43XX Compatible option
3812/3816 Comp	Selects the 3812/3816 Compatible option

HORIZONTAL OFFSET

Selects the horizontal offset of the logical page on the physical page in 1/60 of an inch. If parts of the logical page containing data are moved off the physical page, this data will not print!

VALUE	DESCRIPTION
-127 to 127	-127/60 inch to 127/60 inch offset
0*	no offset selected

NOTE: The default values of the HORIZONTAL OFFSET and the VERTICAL OFFSET commands align the logical page with the top left-hand corner of the physical page. Since the host printers have a non-printable area of approx. 1/60 inch around the outside of the page, host data within the / inch area would be lost. To remedy this, adjust the margin offsets the value 15 (15/60 = 1/60).

IPDS MODE

In order for the IPDS component to properly operate, it must allocate certain printer resources. The purpose for this setting is to allow the user to selectively disable the use of these resources when required to do other jobs (this would have a similar effect as removing the Flash Device). In order for the HP IPDS solution to print host IPDS jobs, this setting must be enabled.

VALUE	DESCRIPTION
Enabled*	Enables the IPDS conversion software
Disabled	Disables the IDPS conversion software

OVERLAYS

Overlays downloaded to the printer can be stored in one of two ways, temporarily in RAM or as a macro. If the overlay is stored as a macro, it will print faster but it is possible that the macro will be deleted or replaced by a print job from another host (such as Windows).

VALUE	DESCRIPTION
IPDS Memory*	Stores the overlay in temporary memory as PCL commands
Printer Memory	Stores the overlay as a macro

TEXT COMPRESSION

Determines the direction of compression of host text data to fit the logical page into the printable area of the physical page. The compression ratio is set through the COMPRESSION RATIO menu item.

VALUE	DESCRIPTION
No Compress*	Does not compress any AFP/IPDS text
LPI Compress	Compresses only the LPI of the AFP/IPDS text
LPI/CPI Comp	Compresses both the LPI and the CPI of the AFP/IPDS text

NOTE: Compressing AFP/IPDS documents containing images, graphics or bar codes in addition to text, may cause alignment problems, since only text is compressed.

VERTICAL OFFSET

Selects the vertical offset of the logical page on the physical page in 1/60 inch increments. If parts of the logical page containing data are moved off the physical page, this data will not print.

VALUE	DESCRIPTION
-127 to 127	-127/60 inch to 127/60 inch offset
0*	no offset selected

Appendix B: IPDS Input Menu & Output Menu

IPDS Input Menu Setup

The default IPDS INPUT MENU settings can be used to print most IPDS jobs but if the default settings don't produce the desired results they can be changed to cause specific IPDS Drawer commands (the IBM DRAWER menu item) to be printed from specific HP input trays (the PCL COMMAND menu item). This process (referred to as IPDS Tray Mapping) is explained further in [IPDS Tray Mapping Procedure](#) below.

The **IPDS INPUT MENU, PCL COMMAND** item determines the PCL 5 Paper Source command that will be used for a specific IPDS drawer ID. Only the PCL '#' value is used for the **PCL COMMAND** item. The PCL 5 syntax for the **Paper Source** command is:

<Esc>&l#H

where '**<Esc>**' is the PCL Escape character (ASCII 27)

'**l**' is a lower-case L character

'**#**' is the desired input Source (tray/bin/feeder)

The LaserJet and Color LaserJet 2xxx, 3xxx, 4xxx, and 5xxx series printers (including the newer P/CP and M/CM models) use the following '#' values for the **PCL COMMAND** menu item:

- 0** USE CURRENT TRAY
- 1** TRAY TWO
- 2** TRAY ONE - MANUAL-FEED PAPER
- 3** TRAY ONE - MANUAL-FEED ENVELOPE
- 4** TRAY ONE - CASSETTE-MODE
- 5** TRAY THREE
- 6** ENVELOPE FEEDER
- 7** AUTO-SELECT TRAY
- 8** TRAY FOUR
- 9** TRAY FIVE
- 10** TRAY SIX
- 20** OPTIONAL SHEET FEEDER

The LaserJet and Color LaserJet 6xxx, 8xxx, and 9xxx series printers (including the newer P/CP and M/CM models) all use the following '#' values for the PCL COMMAND menu item:

- 0** USE CURRENT TRAY
- 1** TRAY TWO
- 2** TRAY ONE - MANUAL-FEED PAPER
- 3** TRAY ONE - MANUAL-FEED ENVELOPE
- 4** TRAY ONE - CASSETTE-MODE
- 5** TRAY THREE
- 7** AUTO-SELECT TRAY

20 TRAY FOUR or OPTIONAL SHEET FEEDER

22 HIGH CAPACITY INPUT (HCI) TRAY ONE

HCI TRAY ## (where ## is 23-69)

IPDS Output Menu Setup

On the IPDS OUTPUT MENU, **OUTPUT TRAY** item determines the PCL 5 Media Destination command that will be used for each IPDS Output Bin command. The PCL 5 syntax for the Media Destination command is:

<Esc>&l#G

where '**<Esc>**' is the PCL Escape character (ASCII 27)

'**l**' is a lower-case L character

'**#**' is the desired output Destination (bin/stacker)

Enter the PCL '#' value to specify the HP Media Destination that will be used for a specific IPDS Output bin command:

- 0** Automatic bin selection
- 1** Destination bin 1 (Printer top/face-down bin)
- 2** Destination bin 2 (Printer left/face-up bin; this bin is not available if HCO is attached)
- 3** Destination bin 3 (HCO face-up bin)
- 4** Destination bin 4 (HCO #1 face-down bin)
- 5** Destination bin 5 (HCO #2 face-down bin)
- 6** Destination bin 6 (HCO #3 face-down bin)
- 7** Destination bin 7 (HCO #4 face-down bin)
- 8** Destination bin 8 (HCO #5 face-down bin)
- 9** Destination bin 9 (HCO #6 face-down bin)
- 10** Destination bin 10 (HCO #7 face-down bin)
- 11** Destination bin 11 (HCO #8 face-down bin)

IPDS Tray Mapping Procedure

When the host queries the IPDS printer for its capabilities, the size of the media in the printer's paper trays will be automatically included in the information that is returned.

IPDS Paper Drawers are typically identified as:

- Drawer 1 First Paper Drawer
- Drawer 2 Second Paper Drawer
- Drawer 3 Third Paper Drawer
- Drawer 65 Envelope Feed
- Drawer 100 Manual Feed

HP Paper Trays are typically identified as:

- Tray 2 First Paper Tray
- Tray 3 Second Paper Tray
- Tray 4 Third Paper Tray
- Tray 1 Manual Paper Tray (Manual feed, Envelope feed, or Cassette mode)

In most cases the factory default IPDS INPUT MENU settings can be used but if you want to use different trays for the IPDS jobs you can re-map the IPDS Drawer IDs to specific LaserJet Tray commands.

The IPDS INPUT MENU contains sets of **TRAY # pairs** that can be used to map up to five different IPDS IDs to specific HP input trays. Each of the **TRAY # pairs** has an IBM DRAWER item and a PCL COMMAND item.

Starting with the TRAY 1 pair, for each IPDS Drawer ID that you want to re-map to a different Tray enter the Drawer number in the IBM DRAWER item and enter the desired HP PCL tray '#' value in the PCL COMMAND item.

When the IPDS job is printed, the IPDS Drawer commands will now be mapped to the desired PCL Paper Source commands. The resultant tray behavior however still may or may not be what you wanted or expected. This could be because the PCL Media Size takes precedence over the PCL Paper Source commands or it could be caused by one or more of the settings in the HP printer's standard PAPER HANDLING and/or TRAY BEHAVIOR menus.

It's beyond the scope of this document to explain the use of the standard LaserJet menus (they are explained in the HP User documentation) but some IPDS Tray Mapping examples should help.

IPDS Tray Mapping Examples

1. Tray Mapping example to print Legal size paper from HP Tray 1 (cassette mode) and print Letter size paper from HP Tray 2:

IPDS IPDS INPUT MENU menu

TRAY 1: IBM DRAWER 100
TRAY 1: PCL COMMAND 4 (HP Tray 1, Cassette Mode)

TRAY 2: IBM DRAWER 1
TRAY 2: PCL COMMAND 1 (HP Tray 2)

HP PAPER HANDLING menu

TRAY 1 SIZE: LEGAL
TRAY 1 TYPE: PLAIN

TRAY 2 SIZE: LETTER
TRAY 2 TYPE: PLAIN

HP CONFIGURE DEVICE / SYSTEM SETUP / TRAY BEHAVIOR menu

USE REQUESTED TRAY:	EXCLUSIVELY	(User preference)
MANUALLY FEED PROMPT:	UNLESS LOADED	(User preference)
PS DEFER MEDIA:	ENABLED	(User preference)
SIZE/TYPE PROMPT:	DO NOT DISPLAY	(User preference)
USE ANOTHER TRAY PROMPT:	DISABLE	(User preference)

2. Tray Mapping example to print Letter size paper from HP Tray 1 (manual feed) and print Legal size paper from HP Tray 2:

IPDS IPDS INPUT MENU menu

TRAY 1: IBM DRAWER 100
TRAY 1: PCL COMMAND 2 (HP Tray 1, Manual Feed)

TRAY 2: IBM DRAWER 1
TRAY 2: PCL COMMAND 1 (HP Tray 2)

HP PAPER HANDLING menu

TRAY 1 SIZE: LETTER
TRAY 1 TYPE: PLAIN

TRAY 2 SIZE: LEGAL
TRAY 2 TYPE: PLAIN

HP CONFIGURE DEVICE / SYSTEM SETUP / TRAY BEHAVIOR menu

USE REQUESTED TRAY: EXCLUSIVELY (User preference)
MANUALLY FEED PROMPT: ALWAYS (User preference)
PS DEFER MEDIA: ENABLED (User preference)
SIZE/TYPE PROMPT: DISPLAY (User preference)
USE ANOTHER TRAY PROMPT: ENABLE (User preference)

3. Tray Mapping example to print Plain A4 paper from HP Trays 1, 2, and 3 and print Preprinted A4 paper from HP Tray 4. The Plain paper will be printed from HP Trays 1, 2, 3 and the Pre-Printed paper will only be printed from HP Tray 4:

IPDS IPDS INPUT MENU menu

TRAY 1: IBM DRAWER 1
TRAY 1: PCL COMMAND 4 (HP Tray 1, Cassette Mode)

TRAY 2: IBM DRAWER 2
TRAY 2: PCL COMMAND 20 (HP Tray 4)

TRAY 3: (Settings do not matter)
TRAY 4: (Settings do not matter)
TRAY 5: (Settings do not matter)

HP PAPER HANDLING menu

TRAY 1 SIZE: A4
TRAY 1 TYPE: PLAIN

TRAY 2 SIZE: A4
TRAY 2 TYPE: PLAIN

TRAY 3 SIZE: A4
TRAY 3 TYPE: PLAIN

TRAY 4 SIZE: A4
TRAY 4 TYPE: PREPRINTED

HP CONFIGURE DEVICE / SYSTEM SETUP / TRAY BEHAVIOR menu

USE REQUESTED TRAY:	FIRST
MANUALLY FEED PROMPT:	UNLESS LOADED
PS DEFER MEDIA:	ENABLED (User preference)
SIZE/TYPE PROMPT:	DISPLAY (User preference)
USE ANOTHER TRAY PROMPT:	DISABLE (User preference)

4. Tray Mapping example to print Plain A4 paper from HP Trays 1, and 4 and print Preprinted A4 paper from HP Trays 2, 3:

IPDS IPDS INPUT MENU menu

TRAY 1: IBM DRAWER 1
TRAY 1: PCL COMMAND 4 (HP Tray 1, Cassette Mode)

TRAY 2: IBM DRAWER 2
TRAY 2: PCL COMMAND 1 (HP Tray 2)

TRAY 3: (Settings do not matter)
TRAY 4: (Settings do not matter)
TRAY 5: (Settings do not matter)

HP PAPER HANDLING menu

TRAY 1 SIZE: A4
TRAY 1 TYPE: PLAIN

TRAY 2 SIZE: A4
TRAY 2 TYPE: PREPRINTED

TRAY 3 SIZE: A4
TRAY 3 TYPE: PREPRINTED

TRAY 4 SIZE: A4
TRAY 4 TYPE: PLAIN

HP CONFIGURE DEVICE / SYSTEM SETUP / TRAY BEHAVIOR menu

USE REQUESTED TRAY:	FIRST
MANUALLY FEED PROMPT:	UNLESS LOADED
PS DEFER MEDIA:	ENABLED (User preference)
SIZE/TYPE PROMPT:	DISPLAY (User preference)
USE ANOTHER TRAY PROMPT:	DISABLE (User preference)

Appendix C: IPDS Fonts

The IPDS Printing Solution code generally maps IPDS fonts requested from the host to PCL fonts resident in the printer. The following table shows how IPDS fonts are mapped to PCL fonts, depending on which Font Mapping parameter is active. When the pitch of the PCL font is not identical to the pitch of the original IPDS font, the IPDS solution causes the spacing between the characters to be adjusted to produce comparable print output. In some cases where the font in the printer differs drastically from that of the IBM host, the IBM font has been stored in the Flash Device. Fonts not included in this listing are downloaded from the IBM host.

IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
0003	OCR B	10 CPI	Resident in IPDS solution					
0005	Rhetoric	10 CPI	Letter Gothic	10 CPI	Courier	10 CPI	Letter Gothic	10 CPI
0011	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0012	Prestige Pica	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0013	Artisian	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0018	Courier italic	10 CPI	Courier italic	10 CPI	Courier italic	10 CPI	Courier italic	10 CPI
0019	OCR A	10 CPI	Resident in IPDS solution					
0020	Pica	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0026	Matrix Gothic	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0030	Math Symbol	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0031	Aviv	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0038	Orator bold	10 CPI	Letter Gothic bold	10 CPI	Courier bold	10 CPI	Letter Gothic bold	10 CPI
0039	Gothic bold	10 CPI	Letter Gothic bold	12 CPI	Courier bold	10 CPI	Letter Gothic bold	12 CPI
0040	Gothic	10 CPI	Letter Gothic	12 CPI	Courier	10 CPI	Letter Gothic	12 CPI
0041	Roman	10 CPI	Letter Gothic	12 CPI	Courier	10 CPI	Letter Gothic	12 CPI
0042	Serif Text	10 CPI	Letter Gothic	12 CPI	Courier	10 CPI	Letter Gothic	12 CPI
0043	Serif italic	10 CPI	Letter Gothic italic	12 CPI	Courier italic	10 CPI	Letter Gothic italic	12 CPI
0044	Katakana Gothic	10 CPI	Letter Gothic	10 CPI	Courier	10 CPI	Letter Gothic	10 CPI
0046	Courier bold	10 CPI	Courier bold	10 CPI	Courier bold	10 CPI	Courier bold	10 CPI
0049	Shalom	10 CPI	Letter Gothic	10 CPI	Courier	10 CPI	Letter Gothic	10 CPI
0050	Shalom bold	10 CPI	Courier	10 CPI	Courier bold	10 CPI	Courier	10 CPI
0051	Matrix Gothic	10 CPI	Letter Gothic	10 CPI	Courier	10 CPI	Letter Gothic	10 CPI
0052	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI	Courier	10 CPI
0055	Aviv bold	10 CPI	Courier	10 CPI	Courier bold	10 CPI	Courier bold	10 CPI
0066	Gothic	12 CPI	Letter Gothic	14 CPI	Courier	12 CPI	Letter Gothic	14 CPI
0068	Gothic italic	12 CPI	Letter Gothic italic	14 CPI	Courier italic	12 CPI	Letter Gothic italic	14 CPI
0069	Gothic bold	12 CPI	Letter Gothic bold	14 CPI	Courier bold	12 CPI	Letter Gothic bold	14 CPI
0070	Serif Text	12 CPI	Letter Gothic	12 CPI	Courier	12 CPI	Letter Gothic	12 CPI
0071	Serif italic	12 CPI	Letter Gothic italic	12 CPI	Courier italic	12 CPI	Letter Gothic italic	12 CPI
0072	Serif bold	12 CPI	Letter Gothic bold	12 CPI	Courier bold	12 CPI	Letter Gothic bold	12 CPI
0076	APL/TN	12 CPI	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI
0080	Math Symbol	12 CPI	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI

IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
0084	Script	12 CPI	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI
0085	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI
0086	Prestige Elite	12 CPI	Courier	12 CPI	Courier	12 CPI	Courier	12 CPI
0087	Letter Gothic	12 CPI	Resident in IPDS solution					
0091	Light italic	12 CPI	Letter Gothic italic	12 CPI	Courier italic	12 CPI	Courier italic	12 CPI
0092	Courier italic	12 CPI	Courier italic	12 CPI	Courier italic	12 CPI	Courier	12 CPI
0098	Shalom	12 CPI	Letter Gothic	12 CPI	Courier	12 CPI	Courier	12 CPI
0099	Aviv	12CPI	Letter Gothic	12 CPI	Courier	12 CPI	Courier	12 CPI
0101	Shalom bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI
0102	Aviv bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI
0110	Letter Gothic bold	12 CPI	Resident in IPDS solution					
0111	Prestige Elite bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI	Courier bold	12 CPI
IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
0112	Prestige Elite italic	12 CPI	Courier italic	12 CPI	Courier italic	12 CPI	Courier italic	12 CPI
0155	Boldface italic	10 Pt	Times New italic	10 Pt	Times New	11 Pt	Times New italic	10 Pt
0158	Modern	11 Pt	Times New	11 Pt			Times New	11 Pt
0159	Boldface	11 Pt	Times New bold	11 Pt	Times New	11 Pt	Times New bold	11 Pt
0160	Essay	10 Pt	Arial	11 Pt	Courier	11 Pt	Arial	11 Pt
0162	Essay italic	10 Pt	Arial italic	11 Pt	Courier	11 Pt	Arial italic	11 Pt
0163	Essay bold	10 Pt	Arial bold	11 Pt	Times New	11 Pt	Arial	11 Pt
0164	Prestige	12 Pt	Courier	12 Pt	Courier	11 Pt	Arial	11 Pt
0167	Barak	10 Pt	Times New	11 Pt	Courier	11 Pt	Times New	11 Pt
0168	Barak bold	10 Pt	Times New bold	11 Pt	Times New	11 Pt	Times New bold	11 Pt
0173	Essay light	10 Pt	Arial light	11 Pt	Courier	11 Pt	Courier	11 Pt
0175	Document	12 Pt	Times New	11 Pt	Courier	11 Pt	Times New	11 Pt
0178	Barak	7 Pt	Times New	7 Pt	Letter Gothic	20 CPI	Times New bold	11 Pt
0179	Barak bold	7 Pt	Times New bold	7 Pt	Letter Gothic	20 CPI	Times New bold	11 Pt
0180	Barak	9 Pt	Times New	9 Pt	Courier	15 CPI	Times New bold	11 Pt
0181	Barak bold	9 Pt	Times New bold	9 Pt	Courier	15 CPI	Times New bold	11 Pt
0182	Barak	22 Pt	Times New	22 Pt	Courier	10 CPI	Times New bold	11 Pt
0183	Barak bold	22 CPI	Times New bold	22 CPI	Courier bold	10 CPI	Times New bold	11 CPI
0204	Gothic Text	13.3CPI	Letter Gothic	13.3CPI	Courier	15 CPI	Letter Gothic	13.3CPI
0211	Shalom	15 CPI	Letter Gothic	15 CPI	Courier	15 CPI	Letter Gothic	15 CPI
0212	Shalom bold	15 CPI	Courier bold	15 CPI	Courier	15 CPI	Courier	15 CPI
0221	Prestige Elite italic	15 CPI	Gothic	15 CPI	Gothic	15 CPI	Gothic	15 CPI
0222	Gothic	15 CPI	Letter Gothic	15 CPI	Courier	15 CPI	Letter Gothic	16.7CPI
0223	Courier	15 CPI	Courier	15 CPI	Courier	15 CPI	Courier	15 CPI
0225	Math Symbol	15 CPI	Courier	12 CPI	Courier	15 CPI	Courier	12 CPI
0226	Shalom	15 CPI	Letter Gothic	15 CPI	Courier	15 CPI	Letter Gothic	16.7CPI
0229	Serif Text	15 CPI	Courier	15 CPI	Courier	15 CPI	Courier	15 CPI

IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
0230	Gothic	15 CPI	Letter Gothic	16.7CPI	Courier	15 CPI	Letter Gothic	16.7CPI
0234	Shalom bold	15 CPI	Letter Gothic bold	16.7CPI	Courier	15 CPI	Letter Gothic bold	16.7CPI
0244	Courier	5 CPI	Courier light	8 CPI	Courier	10 CPI	Courier light	8 CPI
0245	Courier bold	5 CPI	Courier bold	8 CPI	Courier bold	10 CPI	Courier bold	8 CPI
0247	Shalom bold	17 CPI	Courier bold	17 CPI	Courier	17.1CPI	Courier bold	17 CPI
0248	Shalom	17 CPI	Courier	17 CPI	Courier	17.1CPI	Courier	17.1CPI
0252	Courier	17 CPI	Courier	14 CPI	Courier	17.1CPI	Courier	14 CPI
0253	Courier bold	17.1CPI	Courier bold	14 CPI	Courier	17.1CPI	Courier bold	14 CPI
0254	Courier	17.1CPI	Courier	17.1CPI	Courier	17.1CPI	Courier	14 CPI
0256	Prestige	17.1CPI	Courier	17.1CPI	Courier	17.1CPI	Courier	14 CPI
0281	Letter Gothic	20 CPI	Letter Gothic	20 CPI	Letter Gothic	20 CPI	Letter Gothic	20 CPI
0282	Aviv	20 CPI	Letter Gothic	20 CPI	Letter Gothic	20 CPI	Letter Gothic	20 CPI
0290	Letter Gothic	27 CPI	Letter Gothic	27 CPI	Letter Gothic	20 CPI	Letter Gothic	20 CPI
0416	Courier	Scalable			Courier	Scalable		
0420	Courier bold	Scalable			Courier bold	Scalable		
0424	Courier italic	Scalable			Courier italic	Scalable		
0428	Courier italic bold	Scalable			Courier italic bold	Scalable		
0751	Sonoran Serif	8 Pt	CG Times	8 Pt	CG Times	8 Pt	CG Times	8 Pt
IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
0752	Naseem	8 Pt	CG Times	8 Pt	Courier	12 CPI	Letter Gothic	20 CPI
0753	Naseem bold	8 Pt	CG Times bold	8 Pt	Courier	12 CPI	Letter Gothic	20 CPI
0754	Naseem bold	10 Pt	CG Times	10 Pt	Courier	12 CPI	Courier	12 CPI
0755	Naseem bold	14 Pt	CG Times	14 Pt	Courier	12 CPI	Courier	10 CPI
0756	Naseem italic	8 Pt	CG Times italic	8 Pt	Courier	12 CPI	Letter Gothic	20 CPI
0757	Naseem italic bold	8 Pt	CG Times italic bold	8 Pt	Courier	12 CPI	Letter Gothic	20 CPI
0758	Naseem italic bold	10 Pt	CG Times italic bold	10 Pt	Courier	12 CPI	Courier	12 CPI
0759	Naseem italic bold	14 Pt	CG Times italic bold	14 Pt	Courier	12 CPI	Courier	10 CPI
0760	Times Roman	6 Pt	CG Times	6 Pt	CG Times	6 Pt	Letter Gothic	27 CPI
0761	Times Roman bold	12 Pt	CG Times bold	12 Pt	CG Times bold	12 Pt	Letter Gothic	20 CPI
0762	Times Roman bold	14 Pt	CG Times bold	14 Pt	CG Times bold	14 Pt	Letter Gothic	16.7CPI
0763	Times Roman italic	12 Pt	CG Times italic	12 Pt	CG Times italic	12 Pt	Letter Gothic	20 CPI
0764	Times Roman italic bold	10 Pt	CG Times bold italic	10 Pt	Letter Gothic	10 Pt	Letter Gothic	27 CPI
0765	Times Roman italic bold	12 Pt	CG Times bold italic	12 Pt	Letter Gothic	12 Pt	Letter Gothic	20 CPI
1051	Sonoran Serif	10 Pt	CG Times	10 Pt	CG Times	10 Pt	CG Times	11 Pt
1053	Sonoran Serif bold	10 Pt	CG Times bold	10 Pt	CG Times bold	10 Pt	CG Times bold	11 Pt
1056	Sonoran Serif italic	10 Pt	CG Times italic	10 Pt	CG Times italic	10.5 Pt	CG Times italic	11 Pt
1351	Sonoran Serif	12 Pt	CG Times	12 Pt	CG Times	12 Pt	CG Times	13 Pt
1653	Sonoran Serif bold	16 Pt	CG Times bold	16 Pt	CG Times bold	16 Pt	CG Times bold	16 Pt

IBM			Best Fit		4028/43xx Compatible		3812/16 Compatible	
FGID	Name	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt	PCL Font	CPI/pt
1803	Sonoran Serif bold	18 Pt	CG Times bold	18 Pt	CG Times bold	18 Pt	CG Times bold	12 CPI
2103	Sonoran Serif bold	24 Pt	CG Times bold	24 Pt	CG Times bold	24 Pt	CG Times bold	22 Pt
2304	Helvetica	Scalable			Arial	Scalable		
2305	Helvetica bold	Scalable			Arial bold	Scalable		
2306	Helvetica italic	Scalable			Arial italic	Scalable		
2307	Helvetica italic bold	Scalable			Arial italic bold	Scalable		
2308	Times New Roman	Scalable			Times New	Scalable		
2309	Times New Roman bold	Scalable			Times New bold	Scalable		
2310	Times New Roman italic	Scalable			Times New italic	Scalable		
2311	Times New Roman italic bold	Scalable			Times New italic bold	Scalable		
4407	Sonoran Serif med.	6 Pt	CG Times	6 Pt				
4427	Sonoran Serif bold	9 Pt	CG Times bold	9 Pt				
4535	Sonoran Serif italic	9 CPI	CG Times italic	9 CPI				
4555	Sonoran Serif italic bold	10 CPI	CG Times italic bold	10 CPI				
5067	Goudy bold italic	10 Pt	CG Times bold	11 Pt	CG Times bold	11 Pt	CG Times bold	11 Pt
5687	Sonoran Serif med.	8 CPI	CG Times	8 CPI	CG Times bold	8 CPI		
5707	Times Roman bold	12 CPI	CG Times bold	15.75CPI	CG Times bold	15.75CPI		
5815	Times Roman italic	12 CPI	CG Times italic	12 CPI	CG Times italic	12 CPI		
5835	Times Roman italic bold	10 CPI	CG Times bold italic	10 CPI	CG Times bold italic	10 CPI		
1695 1	Sonoran Serif med.	12 CPI	CG Times	12 CPI				
1697 1	Sonoran Ser med bold	12 CPI	CG Times bold	12 CPI				
1707 9	Sonoran Serif med italic	12 CPI	CG Times italic	12 CPI				
1709 9	Sonoran Ser med ital bold	12 CPI	CG Times italic bold	12 CPI				