

**Infoprint 1120, 1125, 1130,
1140, and 1145**

Card for IPDS and SCS/TNe

***IPDS Emulation
User's Guide***

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1 Introduction

1.1 About This Manual

Thank you for purchasing the **Card for IPDS and SCS/TNe which provides emulation support for Intelligent Printer Data Stream (IPDS) and SNA Character String (SCS)**. This provides your printer with high quality IBM host connectivity print output. With the appropriate adapter and host software, your printer becomes an IBM host workstation printer capable of printing AFP, IPDS, or SCS documents from an AS/400, System/370, or System/390.

This document deals only with setting up and using the **IPDS emulation** in the Card for IPDS and SCS/TNe. It will help you to understand, use, and change option settings for receiving IPDS jobs over the LAN and for formatting the way IPDS jobs are printed.

If you need information on the **SCS/TNe emulation** provided with the Card, please refer to the separate *SCS/Tne Emulation User's Guide*.

Information on **how to install the Card** is on separate documentation shipped with your printer. Refer to the documentation which was shipped with your printer for information on how to install the Card.

If you need **basic information** about your IBM™ printer and how to use it, please refer to the printer's specific documentation.

1.2 Equipment Requirements and Specifications for IPDS Emulation Printing

The following printers are supported:

- Infoprint 1120
- Infoprint 1125
- Infoprint 1130
- Infoprint 1140
- Infoprint 1145

To use the IPDS emulation, your IBM printer must have a minimum of 16 MB of user memory (DRAM) and one of the following:

- Standard Network (Ethernet connection integrated into printer system board on selected printer models).
- a MarkNet™ internal print server for connection to a Token-Ring or Ethernet LAN. (This includes the MarkNet N2000 series)
- a Coax/Twinax Adapter for SCS internal adapter for connection to a host via coax or twinax cables.
- a MarkNet X2000 external print server for external connection (using the parallel port) to a Token-Ring or Ethernet LAN.

Code Levels Required:

Adapter for SCS	H01-9072 (or greater) for coax H02-8491 (or greater) for twinax
-----------------	--

MVS Maintenance Level Required in TCP/IP Profile

IBM PTF UQ03848
IBM PTF UQ11550

For help determining your code levels see *9 Using the IPDS Emulation with a LAN Print Server*, or *10 Using the IPDS emulation with the Adapter for SCS*.

Firmware updates for the Card for IPDS and SCS/TNe, the MarkNet internal and external print servers and the Adapter for SCS are available from the IBM Printing Systems home page. If you have a problem updating your code, contact the IBM customer support center.

1.3 Technical Support

If your printer is not working properly:

1. Turn off the printer for 10 seconds and then turn it back on.
2. Print a menu settings page. If it prints, the problem is probably in the network or the cabling leading to the printer. If the menu settings page does not print, the problem may be in the printer.
3. Follow the troubleshooting section on the publications CD-ROM to isolate or resolve the problem
4. If you cannot resolve the problem, contact IBM customer support (1-800-358-6661, option 2 in the U.S., Canada, and Mexico). Have your printer serial number ready. If you are asked for a machine type, specify one of the following:

4520 for the Infoprint 1120

4525 for the Infoprint 1125

4530 for the Infoprint 1130

4540 for the Infoprint 1140

4545 for the Infoprint 1145

For more information about technical support contacts in your country, or for information about printer drivers, utilities, programs, or documentation, visit the IBM Printing Systems home page for Infoprint 1000 printer family support at:

<http://www.ibm.com/printers/infoprint1000support>

1.4 Conventions Used in the Manual

- **Printer menu keys** and **operator panel texts** are written in **bold**.
- **Option names** usually correspond to menu texts and are **bold** when used in sentences or shown on a table listing options and general descriptions of the listed options. On an overview table showing options and the values for each, there is no special formatting.
- "Option values" described within sentences are written in "quotation marks". Within overtables showing options and values, there is no special formatting.
- *Section titles* and *book titles* are written in *italic*.
- On screen text is written in Courier typeface.
- Keyboard keys are written in angle brackets, e.g. <Enter> or <F1>.
- Bold is sometimes used for **emphasis** or as **subheaders**
for blocks of text within a section.
- Italics are used to label *Examples*, *Notes* and blocks of text with very *Important* information.

2 Using the Operator Panel

The IPDS emulation option settings may be changed from the printer operator panel, from a browser, from MarkVision Professional, or remotely by sending a text job with special commands to the printer. This section of the guide reviews how to change and save option settings using the operator panel. Refer to *8 Remote Configuration of Printer IPDS Settings* on page 85 for information on changing printer option settings remotely.

See *3 Setup Operations Reference* on page 21 for a listing of all possible values for each option.

Note: Please refer to your printer's documentation for instructions on how to use the operator panel. The layout of the operator panel may vary on the different models.

2.1 IPDS Emulation Setup Options vs. Printer Setup Options

Changes to the option settings under the **IPDS Menu** will only affect the way IPDS jobs print. These changes will not affect PostScript™, PCL™, or SCS jobs.

Changes to printer settings under the various printer menus will affect the way PostScript and PCL jobs are printed. Many of these printer settings will also affect IPDS jobs.

This guide discusses changing the **IPDS Menu** settings. Please see your printer's documentation for information on changing other printer settings.

Refer to the *SCS/TNe Emulation User's Guide* for information on setting up and using the SCS/TNe emulation.

Refer to the documentation which was shipped with your printer for information on *how to install and remove the Card for IPDS and SCS/TNe*.

2.2 Changing IPDS Settings Using the Operator Panel

2.2.1 The IPDS Setup Menu

Access the IPDS emulation options and settings from the **IPDS Menu**. To reach the menu:

1. From a **Ready** status, Press **<Menu** from the operator panel main screen until the **IPDS MENU** appears in the second line of the display.
2. Press **Select** to select the **IPDS MENU**.

You can modify printer settings by:

- Selecting a setting from a list of values
- Changing a numerical setting.
- Changing an On/Off setting

Examples of changing each type of setting follow.

2.2.2 Selecting a New Value as a Setting

1. From a **Ready** status message, press **Menu>** or **<Menu**. The menu names appear.
2. Continue to press and release **Menu>** or **<Menu** until you reach the menu you need.
3. Press **Select** to select the menu or menu item shown on the second line of the display.
 - If the selection is a menu, the menu is opened and the first printer setting in the menu is displayed.

- If the selection is a menu item, the current setting for the menu item is displayed. (The current user default setting has an asterisk (*) beside it.)

Each menu item has a list of valid values for the menu item. A value can be:

- A phrase or word to describe a setting.
- A numerical value that can be changed.
- An On or Off setting.

4. Press **Menu>** or **<Menu** to move to the value you need.
5. Press **Select** to select the value on the second line of the display. An asterisk appears beside the value to indicate that it is now the user default setting. The display shows the new setting for one second and then clears and shows the word **Saved**. It then displays the previous list of menu items.
6. Press **Return** to go back to previous menus. Then, make additional menu selections to set new default settings. Press **Go** to return to **Ready** if this is the last printer setting to change.

User default settings remain in effect until you save new settings or restore the factory defaults. See *2.2.5 Activating Saved Option Changes* on page 19.

Settings you choose from your IPDS print job may override the user default settings you select from the printer operator panel.

2.2.3 Selecting a Setting from a List of Values

When you select some menu items, the printer displays a list of values. Press the **Menu>** button to cycle through all the available items. To choose a new user default setting, press **Select**.

For example, if you select **IPDS MENU, EMULATION, IPDS Emulation**, you see the following in the front panel display:



IPDS Emulation
4028*

Cycle through the various emulations by pressing **Menu**> or <**Menu**. Press **Select** to select the appropriate IPDS emulation. **SAVED** appears on the display for one second. An asterisk (*) displays next to the value you selected to indicate it is the new user default.



IPDS Emulation
SAVED

If this is the last printer setting to change, press **Return** to back up to the list of menus. Press **Go** to display the **Ready** status message. See *2.2.5 Activating Saved Option Changes* on page 19.

2.2.4 Changing a Numerical Setting

If you choose a menu item that has a numerical value, the item name appears in the first line of the operator panel display and the numerical value displays in the second line of the operator panel display.

The current setting has an asterisk (*) next to it.

To increase the numerical value, press **Menu**>; to decrease the current setting, press <**Menu**. The displayed setting changes accordingly. To save the new setting, press **Select**. An asterisk (*) is displayed next to the new setting.

For example, if you select **MENUS**, **IPDS MENU**, **MARGINS**, **ALL INPUT TRAYS**, **Top Margin**, you see the following display:



Top Margin
0*

Press **Menu>** or **<Menu** to increase or decrease the offset in pels for the default top margin. Then press **Select**. The display shows the new settings for one second and then clears and shows the word **SAVED**. Press **Return** to back up the list of menus, or press **Go** to display the **Ready** status message if this is the last printer setting to be changed. See *Activating Saved Option Changes* below.

Another type of numerical value is found if you select **MENUS**, **IPDS MENU**, **EMULATION** and **Default CPI**. This option consists of two numbers, which are set independently of each other. Use **Menu>** or **<Menu** to increase or decrease the number value. Press **Select** to switch to the second number after setting the first. Press **Select** again to save the value. *For example:*



Default CPI
10.0*

2.2.5 Activating Saved Option Changes

You may need to power the printer OFF and ON to activate an option change. See the section below, which corresponds to your "attachment" method.

LAN Attachment

Most changes to **IPDS MENU** settings are active on the very next IPDS print job. This is true when you are LAN attached using the Standard Network port, a MarkNet internal print server or MarkNet X2000 external print server. When the **IPDS Timeout** option is set to a value other than **Host Controlled**, you will have to power the printer OFF and ON to activate some menu setting changes. See note below.

Coax/Twinax Attachment

If you are attached to your host using a coax or twinax connection, most settings do not become active until the printer is powered OFF and ON. You should power the printer OFF and ON, if you want the settings to be used for your next print job.

Note: If you are LAN attached with the **IPDS Timeout** option set to a value other than **Host Controlled** or if you are using a coax or twinax attachment, the warning message below is displayed if changes do not take effect immediately.

**Recycle PWR to
activate value**

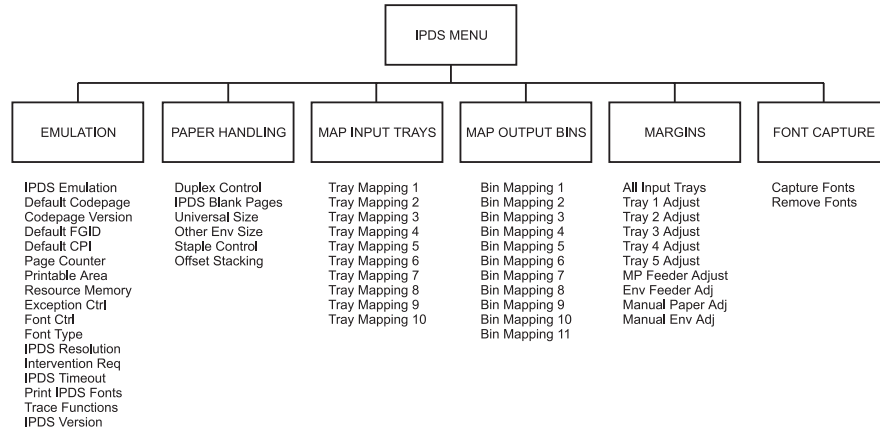
2.3 Printing the Menu Settings

1. Turn the printer power ON (I).
2. Press **Menu>** until **UTILITIES MENU** appears. Press **Select**.
3. Press **Menu>** until **Print Menus** appears. Press **Select**. The message **Printing Menu Settings** is displayed. The printer returns to the **Ready** state after the list of user default settings prints.

3 Setup Operations Reference

3.1 IPDS Emulation Options Menu Map

This section describes the menu structure for the IPDS emulation. Settings are displayed under the sub-menus reached from the **IPDS MENU**.



Note: The display you see will only show those menu items which are supported by your printer.

Some options are only activated after the printer power has been recycled. Refer to *2.2.5 Activating Saved Option Changes* on page 19.

To reach any of the sub-menus, press **<Menu** until **IPDS MENU** appears on the second line of the printer operator panel. Press **Select** to select the **IPDS MENU**.

3.2 Overview of the EMULATION Menu Options

The following lists all menu options found under the **EMULATION** menu. Values only display when they are available on your printer.

An asterisk “*” indicates the default factory value. The selected value for each of these options is listed on the IPDS **Print Menus** page. See *2.3 Printing the Menu Settings* on page 20.

Option name	Values
IPDS Emulation	4028*, 3112/3116, 43xx, 3812/3816
Default Codepage	Codepages A - E Arabic 420...Estonian 1122 Codepages F - K Fin/Sweden 278...Int. Set 5 500*...Japan (Eng) 281 Codepages L - Z Latin 0 924...USA/Canada 1140
Codepage Version	Version 1*, Version 0
Default FGID	416*, refer to the option description on page 26
Default CPI	10.0*, range: 5.0 – 30.0
Page Counter	Normal Update*, Early Update
Printable Area	4028 Whole Page*, 4028 Print Page, Physical Page, Full Page
Resource Memory	Normal*, More, Less
Exception Ctrl	Report All*, Sup Beyond VPA, Sup Undef Char, Suppress Both
Font Ctrl	Relaxed*, Strict

Font Type	Use Scalable*, Use Bitmap
IPDS Resolution	600 dpi*, 1200 dpi, 1200 Image Q, 300 dpi
Intervention Req	Report*, Do not report
IPDS Timeout	Host Controlled*, 15 seconds, 30 seconds, 60 seconds, 90 seconds, 2 minutes, 3 minutes, 5 minutes, 10 minutes
Print IPDS Fonts	Yes*, No.
Trace Functions	Disable*, Serial Output, PAR Std. Output, PAR Slot 1 Output, PAR Slot 2 Output, USB Std. Output, USB Slot 1 Output, USB Slot 2 Output
IPDS Version	Display IPDS version number in the operator panel.

A description of each **EMULATION** menu option follows.

3.3 EMULATION Menu Options

In the following an asterisk “*” indicates the default factory value.

3.3.1 IPDS Emulation

This option selects the printer emulation to be used.

4028*	IBM 4028 emulation (300 dpi)
3112/3116	IBM 3112/3116 emulation (300 dpi)
43xx	IBM 4312, 4317 or 4324 emulation (300 dpi)
3812/3816	IBM 3812/3816 emulation (240 dpi)

Note: The 3812/16 emulation does not support the printer IPDS Resolution setting of 300 dpi. If 3812/16 emulation is selected and the printer IPDS Resolution setting is 300 dpi, the printer IPDS emulation ignores the 300 dpi setting and uses 600 dpi. This means, that the 240 dpi data received from the host is converted to the printer's working resolution of 600 dpi.

3.3.2 Default Codepage

This option defines the default code page with the appropriate character set to be used. Values are in alphabetical order. The panel will display code page options beginning with the letters A - E, then F - K, and L - Z. Select the appropriate path to reach the desired code page.

Codepages A – E		Codepages F – K		Codepages L – Z	
Arabic	420	Fin/Sweden	278	Latin 0	924
ASCII	367	Fin/Sweden	1143	Latin 2	870
Aus/Ger	273	Fin/Swe Alt	288	Latin 2	1110
Aus/Ger	1141	France	297	Latin 4	1069
Aus/Ger Alt	286	France	1147	OCR-A	892
Baltic	1112	Greek	423	OCR-B	893
Belgium	274	Greek	875	PC std	437
Brazil	275	Hebrew	424	Portugal	037
Can. French	260	Hebrew	803	Portugal	282
Can. French	276	Iceland	871	Publishing	361
Cyrillic	880	Iceland	1149	Spain/L. Am	284
Cyrillic	1025	Int. Set 5	500*	Spain/L. Am	1145
Den/Nor	277	Int. Set 5	1148	Spain Alt	289
Den/Nor	1142	Italy	280	Turkish [#]	905
Den/Nor Alt	287	Italy	1144	Turkish [#]	1026
Estonian	1122	Japan (Eng)	281	UK	285
				UK	1146
				USA/Canada	037
				USA/Canada	1140

[#] Supports international language Latin 5.

Note: Code pages 1140 – 1149 support the euro symbol.

3.3.3 Codepage Version

This option determines which version of a code page is used. Some of the code pages are available in two versions. Some characters differ between the two versions of the same code page. If characters print differently than those entered on the keyboard, check the code page version.

Version 1* Use version 1 of appropriate code pages.

Version 0 Use version 0 of appropriate code pages.

3.3.4 Default FGID

Selects the default FGID to be used by the printer IPDS emulation when the host does not send an FGID at the start of a job.

The option has three submenus containing the FGIDs used in each emulation. In the table below the emulations are cross-referenced to pages in *Appendix B. Font and Code Page Information*. The FGIDs in the referenced tables are available in the operator panel.

Option name	Values
3812/3816 FGID	See page 176, 178, and 183
4028/31xx FGID	See page 174, 178, and 183
43xx FGID	See page 174, 178, and 183

The 4028/31xx and 43xx printers all use 300 pel fonts. Selecting a **Default FGID** value under the 4028/31xx menu or the 43xx menu will automatically change the **Default FGID** value of the other 300 pel emulations. The **3812/16 FGID** is not affected by the other menu selections.

11*	Default FGID for 3812/3816.
416*	Default FGID for 4028, 3112/3116, and 43xx emulation. When using a CPI value of 10.0 FGID 416 is equal to FGID 11.

3.3.5 Default CPI

Selects the default characters per inch (CPI) to be used by the printer IPDS emulation when the host does not send a CPI value at the start of a job. The option does not apply to the fixed pitch fonts.

10.0*	Default CPI. The range is 5.0 to 30.0.
--------------	--

3.3.6 Page Counter

This option selects the method used for updating IPDS page counters.

Normal Update* Jam and stacked page counters are updated when pages are printed.

Early Update All page counters are updated when they are processed but not printed. Pages may be lost if power or printer failure occurs. However, selecting this option may increase printing speed.

Note: When Early Update is selected, *Intervention Required* messages are not reported to the IPDS Host.

3.3.7 Printable Area

This option defines the printable area on the page and how clipping is performed. Top, bottom, and side margins for your print jobs are set through your print application.

4028 Whole Page* The printable area is 50 pels (4 mm) inside the physical page. The printable area is reported to the host. Clipping occurs if data is printed outside the printable area. All four edges will clip.

4028 Print Page The printable area is 50 pels (4 mm) inside the physical page. The printable area is reported to the host. If the logical page is outside the printable area it is moved down and to the right. The right and bottom edges will be clipped.

Physical Page The printable area is the physical page (edge to edge). The physical page printable area is reported to the host. With this setting active, you may need to adjust the left margin setting.

Note: The Infoprint 1120, 1125, 1130, 1140, and 1145 printers can physically print edge to edge. No clipping will occur. Printing within 50 pels of the paper edge may result in poor print quality. Continual printing within 50 pels of the paper edge is not recommended. It can result in paper jams due to toner contamination of the paper path.

Full Page The job is formatted for a page using a printable area, which is edge to edge. However, when the page is actually printed, the page image is compressed 2% in both the horizontal and vertical directions.

Note: *Full Page* is available on the Infoprint 1120, 1125, 1130, and 1140 printer models.

3.3.8 Resource Memory

This option defines the amount of memory to be used as IPDS Resource Memory. Increasing memory can sometimes improve performance because more fonts or other resources are retained in memory reducing transmission and printing times. Increasing memory for resources is recommended, if printing large IPDS jobs with many downloaded fonts, page segments, or overlays.

The actual amount of available memory depends on how much memory is being used by PostScript and PCL jobs.

- Normal*** Standard amount of memory can be used as IPDS resource memory.
- More** Additional amount of memory can be used as IPDS resource memory.
- Less** Smaller amount of memory can be used as IPDS resource memory.

3.3.9 Exception Control

It is often practical to suppress exception reporting on undefined characters and on position errors (printing outside the valid printable area (VPA)). This option overrides the Exception Handling Control in the IPDS data stream.

- Report All*** No suppression of exceptions. Exception reporting is controlled by the IPDS data stream.
- Sup beyond VPA** Exception reporting or position errors (outside VPA) is suppressed. The printer IPDS emulation will print the IPDS job but not report "08C1" printable area exceptions or "0411" bar code exceptions to the host.
- Sup Undef Char** If an undefined character is found, Exception Reporting is suppressed. The printer IPDS emulation will print the IPDS job but not report "0821" undefined character exceptions to the host.
- Suppress Both** Both position errors and undefined character exceptions are suppressed.

3.3.10 Font Control

This option defines how strict the reporting will be if a selected font does not correspond to a valid combination of code page and character set.

Relaxed* The printer makes an intelligent decision concerning whether the selected combination of code page and character set is adequately supported. A **Relaxed** setting will report very few exceptions. If the selected font is not found, the printer will substitute with the closest matching font. If a font/code page combination is selected, which is not fully supported, characters may be missing.

Strict A **Strict** setting reports exceptions when a requested font/code page or substituted font/code page combination is not valid. The strict setting prints all characters.

3.3.11 Font Type

This option selects the type of fonts used by the printer when a standard resident fixed pitch Courier, Prestige, or Letter Gothic Font is requested by the host.

Use Scalable* Use printer resident scalable fonts for Courier, Prestige, and Letter Gothic fonts when bitmap font Font IDs are received from the host.

Use Bitmap Use printer resident bitmap fonts for Courier, Prestige, and Letter Gothic fonts when bitmap font IDs are received from the host.

3.3.12 IPDS Resolution

This option defines the resolution used when printing IPDS jobs. This is a separate setting from the printer's **Print Resolution** menu option.

Resolutions which are not available on the printer will not be displayed.

This option sets the working print resolution for the IPDS jobs. This alters the quality of text with scalable fonts, barcodes, graphics, and scalable images. Bitmap fonts and non-scalable images are not affected.

600 dpi*	Print at 600 pel resolution
1200 dpi	Print at 1200 pel resolution
1200 Image Q	Print with 1200 Image Quality. Select 1200 Image Q when your job contains grayscale images that will benefit from enhanced line screening.
300 dpi	Print at 300 pel resolution

Note: When the host sends resources in 240 dpi (e.g. the emulation is set to 3812/16) the 300 dpi setting is not used. These resources will be converted to 600 dpi.

Memory considerations:

The 300 dpi resolution uses the least amount of memory. Switch to this resolution if your job will not print in the memory installed in the printer or add additional memory.

Refer to *Appendix C. Recommended memory* on page 189 for minimum total recommended memory for each resolution setting.

Additional memory above the total recommended may be required for printing complex pages.

Additional memory may also increase print speed.

3.3.13 Intervention Required

This option defines if the emulation should report *Intervention Required* messages to the host. Types of *Intervention Required* messages include a paper jam, paper out, cover open or offline message. These types of messages mean the printer is not ready to print.

Report* Report *Intervention Required* messages to the host. This is the typical setting.

Do Not Report Do not report *Intervention Required* messages to the host. Used only in special cases.

Note: When Page Counter is set to “Early Update”, *Intervention Required* messages are not reported to the host.

3.3.14 IPDS Timeout

This option either allows the host to directly control when an IPDS LAN session with a printer ends (disconnects) or allows the printer IPDS emulation to determine when an IPDS LAN session times out.

Note: The **IPDS Timeout** values are only used by the printer IPDS emulation when the printer is LAN attached using the Standard Network port or the MarkNet internal print server.

The printer is capable of receiving jobs on multiple printer ports. While the printer is busy printing jobs from one printer port, jobs on other printer ports remain in a waiting status. When the host disconnects from the printer or when the printer IPDS emulation times out, the printer automatically switches to another printer port to start a new job.

Host Controlled should be selected as the **IPDS Timeout** value when the host port value is 9100 or 9102. The printer defaults to **Host Controlled** when receiving IPDS jobs on port 9100 or 9102. **Host Controlled** or the timeout values (**15 seconds to 10 minutes**) may be used when the host port value is 9600. The host port value is specified when configuring the printer parameters on the host.

Host Controlled*

The printer IPDS emulation remains active until the host disconnects from the printer. Host timer/timeout values control when the host will disconnect. When the host disconnects, the printer will print jobs from other printer ports.

Host Timer/Timeout Values and Actions:

The host timer/timeout value should be set to a small value (15 to 30 seconds) so the host will quickly disconnect after an IPDS job is printed. All IPDS resources downloaded to the printer will be deleted when the host disconnects. A disabled or large host timer/timeout value will cause the printer IPDS emulation to remain active. The printer busy light will flash and IPDS will remain on the printer operator panel even though the printer has completed processing and printing the IPDS job.

15 seconds
30 seconds
60 seconds
90 seconds
2 minutes
3 minutes
5 minutes
10 minutes

IPDS emulation timeout value. These values are only used by the printer IPDS emulation when the host sends IPDS jobs on port 9600 to the Standard Network port or a MarkNet internal print server. If the host does not send another IPDS job or send additional IPDS resource data to the printer within the timeout value specified, the printer IPDS emulation will time out, place all IPDS resources in temporary storage (see *Storage of IPDS Resources* below), and allow the printer to print jobs from other printer ports.

Host Timer/Timeout Values and Actions:

While the printer is printing jobs from other printer ports, the host is still connected to the printer. The host timer/timeout value should be disabled or set to a large value to prevent the host from disconnecting and deleting the resources downloaded to the printer.

Notes:

- Up to four sessions are available on port 9600. Port 9600 is shared between IPDS LAN sessions, the SCS/TNe Emulation, and a Coax or Twinax IPDS session through an Adapter for SCS. *For example*, if you are printing SCS jobs over the LAN using the SCS/TNe Emulation and printing IPDS jobs through a Coax or Twinax connection with the Adapter for SCS, you would have two port 9600 sessions available for printing IPDS jobs over a LAN.

- The **IPDS Timeout** values are not active when the printer is connected to a host through an Adapter for SCS card. The IPDS timeout is controlled by the Coax or Twinax timeout value on the Adapter for SCS card.
- The **IPDS Timeout** value defaults to **Host Controlled** when the printer is connected to a host through a MarkNet X2000 external print server. The host port value must be 9100 or 9102 to communicate with these print servers.

For additional information see *Storage of IPDS Resources, below*.

Storage of IPDS Resources

Up to four different LAN sessions may be connected to port 9600. IPDS resources from the last active port 9600 session are temporarily stored in the printer memory when **IPDS Timeout** values (**15 seconds** to **10 Minutes**) are selected and the host timer/timeout values are set to a large value or disabled. Operator actions and processing of other jobs may cause the resources to be deleted. Events such as the following will cause deletion of the downloaded resources.

- The host ends the IPDS port 9600 session.
- TCP/IP communications is interrupted on the port 9600 session.
- Another IPDS session is started on port 9100, 9102, or 9600.
- **IPDS Menu** option values are changed.
- Processing of a non-IPDS job which requires more memory than is available in printer memory.
- **Reset Printer** is selected on the operator panel.
- The printer is powered **OFF**.

If the IPDS resources are deleted, the printer will return a Printer Reset exception to the host. The host will download the resources again with the next IPDS job.

3.3.15 Print IPDS Fonts

This option prints a font sample list of all the printer resident and captured IPDS fonts available in the current emulation.

To prevent loss of host downloaded resources a font list can not be printed when an IPDS session is active with a host. The printer can be in the **Ready** state and have a 9600 LAN IPDS session or a Coax or Twinax IPDS session active through the Adapter for SCS. The message **Active IPDS Ses. Ignoring Request** will be displayed when you select **Yes** on the front panel and an IPDS host session is active. You must end the IPDS session from the host or power the printer OFF and ON to print a font list. Host downloaded resources will be deleted when you end the IPDS session or power OFF the printer.

Note: This option cannot be changed remotely.

3.3.16 Trace Functions

This option determines if the Trace function is enabled. Trace data is sent to either the serial or parallel port. Unless you have a computer running a capture program attached to the serial or parallel port to receive the trace data, the printer will hang *Busy* and display **IPDS** on the first line of the operator panel and **TRC** on the second line of the operator panel.

Note: The Trace function is used by service personnel for troubleshooting and service.

Disable*	Disable Trace
Serial Output	Enable serial port for trace data output
PAR Std. Output	Enable the standard parallel port for trace data output
PAR Slot 1 Out	Enable the optional parallel port in slot 1 for trace data output
PAR Slot 2 Out	Enable the optional parallel port in slot 2 for trace data output
USB Std. Output	Enable the standard USB port for trace data output
USB Slot 1 Out	Enable the optional USB port in slot 1 for trace data output
USB Slot 2 Out	Enable the optional USB port in slot 2 for trace data output

Note: This option cannot be changed remotely.

3.3.17 IPDS Version

This option displays the current IPDS level in the second line of the operator panel. The IPDS level is also printed whenever the **Menu Settings** are printed. It is found under the **Printer Information** heading. See 2.3 *Printing the Menu Settings* on page 20.

Note: This option cannot be changed remotely.

3.4 Overview of the PAPER HANDLING Menu Options

The following lists all menu options found under the **PAPER HANDLING** menu. Values only display when they are available on your printer. An asterisk “*” indicates the default factory value. The selected value for each of these options is listed on the **IPDS Print Menus** page. See 2.3 *Printing the Menu Settings* on page 20.

Option name	Values
Duplex Control	Autodetect*, Enable, Disable
IPDS Blank Pages	Print*, Do Not Print
Universal Size	Paper Length 4200*, range: 1500 – 4200 (Infoprint 1120, 1125, 1130, and 1140) 5100*, range: 1654 - 5100 (Infoprint 1145) Paper Width 2550*, range: 825 - 2703(Infoprint 1120, 1125, 1130, and 1140) 3510*, range: 1016 - 3510 (Infoprint 1145)
Other Env Size	Envelope Length 4200*, range: 1500 - 4200 Envelope Width 2550*, range: 825 - 2550
Staple Control	Host Controlled*, OFF
Offset Stacking	Host Controlled*, OFF

A description of each **PAPER HANDLING** option follows.

3.5 PAPER HANDLING Menu Options

In the following an asterisk “*” indicates the default factory value.

3.5.1 Duplex Control

This option defines the treatment of duplex printing.

Autodetect*	Use and report duplex if a duplexer is installed.
Enable	Always report duplex. If a duplexer is not installed, the pages are printed in simplex.
Disable	Do not report duplex. Pages are printed in simplex even with a duplexer installed.

3.5.2 IPDS Blank Pages

This option determines if blank pages in IPDS print jobs are printed.

Print*	Print all IPDS pages.
Do Not Print	Skip printing of blank IPDS pages. Duplex pages are skipped only if both sides are blank.

3.5.3 Universal Size

The IPDS emulation uses the paper size setting specified in the printer menu to determine the size loaded. The paper size is returned to the host. A printer paper size of **Universal** is displayed in the printer menu when a non-standard size paper is detected in an auto size sensing tray or is selected as the paper size loaded into a non-size sensing tray or feeder. This option allows you to specify the paper size returned to the host when a non-standard paper size is loaded. The paper size is specified in 300 dots per inch.

Important: The default paper size value returned to the host is 215.9 x 355.6 mm (8.5 x 14.0 in.). A **34 Short Paper** error will be displayed if printing occurs past the length of the physical paper. You should specify the actual paper size to avoid this error.

Printer	Menu Option	Value Range	Function
Infoprint 1120, 1125, 1130, and 1140	Paper Length	4200*, 1500 to 4200	Specifies Universal paper length. See note below.
	Paper Width	2550*, 825 to 2703	Specifies Universal paper width. See note below.
Infoprint 1145	Paper Length	5100*, 1654 to 5100	Specifies Universal paper length. See note below.
	Paper Width	3510*, 1016 to 3510	Specifies Universal paper width. See note below.

Note: The printer paper trays and feeders are limited to feeding of specific paper sizes. The IPDS paper length and width selectable range is from the smallest to largest size paper which can be fed through the printer. Refer to your printer documentation when loading a non-standard paper size to determine if that paper size can be fed from that tray or feeder.

Conversion example:

Paper Size = 215.9 x 355.6 mm (8.5 x 14.0 in)

Paper Width = $215.9 \text{ mm} / 25.4 \frac{\text{mm}}{\text{in}} = 8.5 \text{ in} \times 300 \frac{\text{dots}}{\text{in}} = 2550$

Paper Length = $355.6 \text{ mm} / 25.4 \frac{\text{mm}}{\text{in}} = 14.0 \text{ in} \times 300 \frac{\text{dots}}{\text{in}} = 4200$

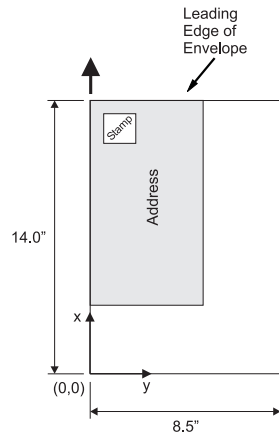
3.5.4 Other Env Size

The IPDS emulation uses the envelope size setting specified in the printer menu to determine the envelope size loaded. The envelope size is returned to the host. A printer envelope size of **Other Envelope** may be selected in the printer menu when a non-standard size envelope is loaded into a non-size sensing tray or feeder. This option allows you to specify the envelope size returned to the host when **Other Envelope** is selected in the printer menu as the envelope size. The envelope size is specified in 300 dots per inch. See 3.5.3 *Universal Size* on page 39 for a *conversion example*.

Important: The default envelope size value returned to the host is 215.9 x 355.6 mm (8.5 x 14.0 in.). A **34 Short Paper Error** will be displayed if printing occurs past the length of the physical envelope. You should specify the actual envelope size to avoid this error.

Menu Option	Value Range	Function
Envelope Length	4200*, 1500 to 4200	Specifies Other Envelope length. See note below.
Envelope Width	2550*, 825 to 2550	Specifies Other Envelope width. See note below.

Note: The printer trays and feeders are limited to feeding of specific envelope sizes. The IPDS envelope length and width selectable range is from the smallest to largest size envelopes which can be fed through the printer. Refer to your printer documentation when loading a non-standard envelope size to determine if that envelope size can be fed from that tray or feeder.



3.5.5 Staple Control

This option controls the staple function of the optional finisher. It is only displayed when the optional finisher is installed. Stapling is only available in selected finisher bins.

Stapling has a higher priority than output bin selection. All jobs which specify stapling are routed to the bin which supports stapling and are stapled.

Stapling has a higher priority than offset stacking. Jobs which specify stapling and offset stacking will be stapled and not offset.

Refer to *5.2 Stapling* on page 66 for additional information on stapling.

- | | |
|-------------------------|---|
| Host Controlled* | Stapling is controlled by the commands received in the IPDS job. |
| OFF | Stapling is not performed. Stapling commands received in the IPDS jobs are ignored. |

3.5.6 Offset Stacking

This option controls the offset stacking function. It is only displayed when offset stacking is supported in the printer standard bin or an optional finisher with offset stacking capability is installed. Offset stacking is only available in selected bins.

Bin selection has a higher priority than offset stacking commands in the IPDS job. The job must be routed to a bin which supports offset stacking and have offset stacking specified in the job before offset stacking will be performed.

The Infoprint 1130 and 1140 printers support offset stacking when the optional finisher is installed.

The Infoprint 1145 printer supports offset stacking in the printer standard bin and in bin 2 of the optional finisher.

Refer to *5.1 Offset Stacking* on page 62 for additional information.

Host Controlled* Offset stacking is controlled by the commands received in the IPDS job.

OFF Offset stacking is not performed. Offset stacking commands received in the IPDS jobs are ignored.

3.6 MAP INPUT TRAYS Menu Options

This option defines the mapping of the host's request for a physical feeder or input tray in the printer. Any host input source can be mapped to any printer input source. The printer input source is mapped to an IPDS host number. Input sources include the envelope feeder, manual paper feed, and manual envelope feed.

Note: Some models may not support all sources listed. The optional printer input sources will only be displayed when installed on the printer.

Pages can be hole punched using the Tray Mapping value settings.

Tray Mapping 1 through
Tray Mapping 10

Sub-menu selection item. These items refer to the number of the mapping, not to the physical printer tray. The tray values specified below are available under the specified printer's sub-menu Tray Mapping item when the physical tray is installed and available.

Values for Infoprint 1120,
1125, 1130, and 1140

Tray 1, Tray 2, Tray 3, Tray 4, Tray 5, MP Feeder,
Env Feeder, Manual Paper, Manual Env, No Map

These values specify the physical printer tray.

Values for Infoprint 1145

Tray 1, Tray 1 Hp, Tray 2, Tray 2 Hp, Tray 3, Tray
3 Hp, Tray 4, Tray 4 Hp, Tray 5, Tray 5 Hp,
Manual Paper, Manual Paper HP, Manual Env,
No Map

These values specify the physical printer tray. The Tray x Hp values are only displayed when the Infoprint 1145 optional finisher is installed. Pages can be hole punched using the Tray x Hp value settings. Refer to *5.2.4 Hole Punching* on page 73.

IPDS Number Values

The value range for the **IPDS Number** is 0 to 255. If an IPDS Number is mapped (used) twice, the lowest tray mapping (if available) is used.

A typical relationship between IPDS Numbers and input sources would be:

Tray Map. No.	Input Source Value	IPDS Number
Tray Mapping 1	Tray 1	0
Tray Mapping 2	Tray 2	1
Tray Mapping 3	Tray 3	2
Tray Mapping 4	Tray 4	3
Tray Mapping 5	Tray 5	4
Tray Mapping 6	Envelopes (Feeder)	64 (40H)
Tray Mapping 7	Envelopes (Manual)	64 (40H)
Tray Mapping 8	Manual Paper	99 (63H)
Tray Mapping 9	No Map	---
Tray Mapping 10	No Map	---

Note: The labels *Tray Mapping 1 - Tray Mapping 10* refer to the **number** of the mapping, not the physical tray.

Note: For **MAP INPUT TRAYS** to work correctly, the **PAPER TYPE** for each input tray must be set differently. The only time you set the **PAPER TYPE** the same is when you want to link the input trays (*see example 2*).

Example 1 - Making a higher capacity input tray the default tray

You may want to use one of the higher capacity input trays for IPDS **0**. To swap the IPDS Number for Tray 1 and Tray 2, you will need to do the following:

1. Set **Tray Mapping 2** for **Tray 2** to IPDS **0**.
2. Set **Tray Mapping 1** for **Tray 1** to IPDS **1**.

This will give you:

Tray Mapping 1 = IPDS 1 mapped to Tray 1
Tray Mapping 2 = IPDS 0 mapped to Tray 2

Note: You must set the **PAPER TYPE** for the high capacity tray to a different value from all other trays. For instance, you could choose a different custom paper type. This setting is found under the printer **PAPER MENU**.

Example 2 - Linking input trays

To link multiple input trays as one big input tray, you need to make changes under the printer's **PAPER MENU**. You need to set the **PAPER SIZE** and **PAPER TYPE** for each of the trays you want to link to the same value.

For example, the host expects colored paper in Tray 1 and you want to link Tray 2 and Tray 3, which have plain paper. Do the following:

Leave the **MAP INPUT TRAYS** at their defaults:

Tray Mapping 1	=	IPDS 0 mapped to Tray 1
Tray Mapping 2	=	IPDS 1 mapped to Tray 2
Tray Mapping 3	=	IPDS 2 mapped to Tray 3

Insert letter-size colored paper in Tray 1. Insert letter-size plain paper in Trays 2 and 3. The paper size is detected by the printer:

Tray 1 Size	=	Letter
Tray 2 Size	=	Letter
Tray 3 Size	=	Letter

Set the **PAPER TYPE** for the three trays as follows:

Tray 1 Type	=	Colored Paper
Tray 2 Type	=	Plain Paper
Tray 3 Type	=	Plain Paper

The printer will feed paper from Tray 3 when Tray 2 is empty.

Example 3 - Understanding what happens when an IPDS Number is mapped twice

If an IPDS Number is mapped (used) twice, the lowest tray mapping number is activated (if available). *For example* if Tray Mapping 6 and 7 both map to IPDS 64 as shown below, the printer will select media from the Env Feeder.

Tray Mapping 6	IPDS 64 Env Feeder
Tray Mapping 7	IPDS 64 Manual Env

In other words, the printer attempts to map to (select media from) the Env Feeder first, and if it is not installed, the printer defaults to Manual Env.

3.7 MAP OUTPUT BINS Menu Options

This option defines the mapping of the host's request for a physical output bin in the printer. The printer physical bin is mapped to an IPDS output bin selection number (IPDS Number) which is specified in the IPDS data stream. Printer output bins include the top of the printer (standard bin) and optional output bins that attach to the printer.

Note: Some printer models may not support all bins listed. The optional printer output bins will only be displayed when installed on the printer.

Bin Mapping 1 through
Bin Mapping 11

Sub-menu selection item. These items refer to the number of the mapping, not to the physical printer output bin. The output bin values specified below are available under the specified printer's sub-menu Bin Mapping item when the physical output bin is installed and available.

Values for Infoprint 1130 and
1140

Standard Bin, Bin 1, Bin 2, Bin 3, Bin 4, Bin 5, Bin 6, Bin 7, Bin 8, Bin 9, Bin 10, No Map

These values specify the physical printer output bin.

Values for Infoprint 1145

Standard Bin, Bin 1, Bin 2, Bin 3, Bin 4, Bin 5, Bin 6, Bin 7, Bin 8, Bin 9, Bin 10, Bin1 Hp, Bin 2 Hp, No Map

These values specify the physical printer output bin. The Bin x Hp values are only displayed when the Infoprint 1145 optional finisher is installed. Pages can be hole punched using the Bin x Hp value settings. Refer to *5.2.4 Hole Punching* on page 73.

IPDS Number Values

The value range for the **IPDS Number** is 1 to 255. If an IPDS Number is mapped (used) twice, the lowest bin mapping (if available) is used.

The default bin mapping for each printer is shown in the tables in the following sections.

3.7.1 Default Bin Mapping

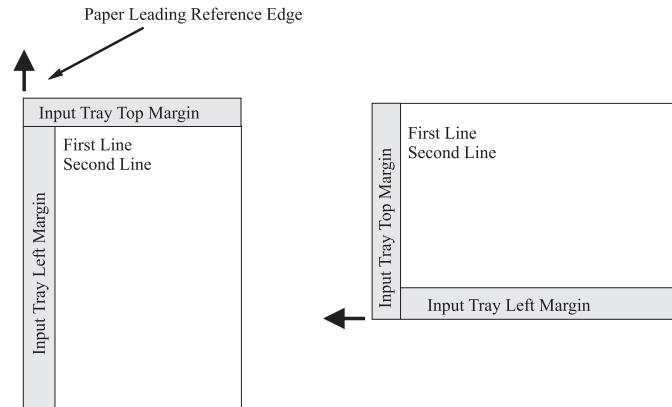
The default bin mapping represents a typical relationship between IPDS output bin selection numbers and the printer physical output bins. The default mapping when optional output bins are installed on the printer is shown in the table below. The labels *Bin Mapping 1- Bin Mapping 11* refer to the **number** of the mapping, not the printer physical output bin.

Bin Mapping No.	Output Bin Value	IPDS Number
Bin Mapping 1	Standard Bin	1
Bin Mapping 2	Bin 1	2
Bin Mapping 3	Bin 2	3
Bin Mapping 4	Bin 3	4
Bin Mapping 5	Bin 4	5
Bin Mapping 6	Bin 5	6
Bin Mapping 7	Bin 6	7
Bin Mapping 8	Bin 7	8
Bin Mapping 9	Bin 8	9
Bin Mapping 10	Bin 9	10
Bin Mapping 11	Bin 10	11

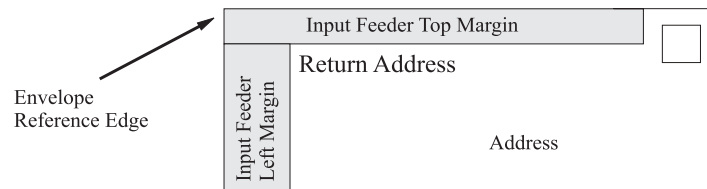
3.8 MARGINS Menu Options

Use margin settings to adjust the position of the page image. Margin settings, which could be compared to movements of the tractor feeder and paper knob of a matrix printer, affect all IPDS jobs and are not affected by IPDS commands in the job.

The input tray **Left Margin** and input tray **Top Margin** option settings should not be confused with the IPDS left and top margin settings sent from the host. Input tray **Left Margin** settings adjust the page image left or right in relation to the paper leading reference edge as it is fed through the printer. Input tray **Top Margin** settings adjust the page image up or down in relation to the paper leading reference edge as it is fed through the printer.



The input feeder **Left Margin** and input tray **Top Margin** option settings should not be confused with the IPDS left and top margin settings sent from the host. Input feeder **Left Margin** settings adjust the page image left or right in relation to the envelope reference edge as it is fed through the printer. Input feeder **Top Margin** settings adjust the page image up or down in relation to the envelope reference edge as it is fed through the printer.



Margins may be adjusted for all input trays and feeders using the **All Input Trays** menu. Additional adjustments may be made to the **All Input Trays** margin settings for an individual tray or feeder using the tray or feeder specific margin menu. Most often, the **All Input Trays** margin settings will remain at the default setting of zero and adjustments will be made using the specific tray or feeder margin menu. The **All Input Trays** margin adjustment PLUS the specific tray or feeder margin adjustment determines the total margin adjustment for a specific tray or feeder.

Margin Adjustment = All Input Trays setting + Specific Tray / Feeder Setting

The IPDS emulation is limited by the printer's printable area. The **Margins** menu may be used to adjust page images outside the valid printable area. The page image will be clipped. Valid Printable Area (VPA) exception conditions will not be reported to the host.

Margin adjustments are in 1/300ths of an inch.

Example 1 – Margins

The **All Input Tray Left Margin** is set to the default of **0**. The **Tray 1 Adjust Left Margin** is set to **+25**. This adjusts the page image left margin for all pages printed from tray 1 by 25/300ths of an inch to the right of the margin specified in the IPDS job.

Example 2 – Margins

The **All Input Tray Left Margin** has been adjusted to **-25**. This moves the left margin for pages printed for all IPDS jobs 25/300ths of an inch to the left. The **Tray 1 Adjust Left Margin** has been adjusted to **+25**. For tray 1, the additional **Tray 1 Adjust Left Margin** value will also be used to adjust the left margin. The tray 1 left margin adjustment will be zero for pages printed from tray 1. The **All Input Trays Left Margin** adjustment PLUS the **Tray 1 Adjust Left Margin** adjustment equals the total left margin adjustment. {-25 pels +25 pels = 0 adjustment}

Margin and Tray Linking Interaction

When trays are linked, the margins set in the **All Input Trays** menu and the margins set for the tray specified in the IPDS data stream will be used to adjust the page image on the paper

Example 1 – Margin and Tray Linking

Tray 1 is requested as the input source from the host. If tray 1 and tray 2 are linked and tray 1 runs out of paper, paper will be pulled from tray 2. The margin adjustments applied when printing from tray 2 will be the **All Input Trays** margins PLUS the **Tray 1 Adjust** margins set for the requested IPDS input source (tray 1).

Example 2 – Margin and Tray Linking

Tray 2 is requested as the input source from the host. If tray 1 and tray 2 are linked and tray 2 runs out of paper, paper will be pulled from tray 1. The margin adjustments applied when printing from tray 1 will be the **All Input Trays** margins PLUS the **Tray 2 Adjust** margins set for the requested IPDS input source (tray 2).

Example 3 – Margin and Tray Linking

Tray 2 is requested as the input source from the host. If tray 2, tray 3, and tray 4 are linked and tray 2 runs out of paper, paper will be pulled from tray 3 until it is empty and then from tray 4. The margin adjustments applied when printing from tray 3 or tray 4 will be the **All Input Trays** margins PLUS the **Tray 2 Adjust** margins set for the requested IPDS input source (tray 2).

Margin and Tray Mapping Interaction

When the host's IPDS Number has been mapped to another input source using the **Tray Mapping** option, the value of the **Tray Mapping** option will determine the margin adjustment applied to pages printed from the selected tray.

Example – Margin and Tray Mapping

The host input source IPDS Number 1 normally selects the printer physical tray 2. If IPDS Number 1 has been mapped to **Tray 1**, the **Tray 1 Adjust** margin values will be applied to all pages in a job which have tray 2 specified as the input source.

Each margin menu option has four sub-menus. The exception being the envelope menu options, which have only two. The available margin menu options and their sub-menus are shown below.

Margin menu option	Top Margin	Left Margin	Top Margin Back	Left Margin Back
ALL INPUT TRAYS	x	x	x	x
TRAY 1 ADJUST	x	x	x	x
TRAY 2 ADJUST	x	x	x	x
TRAY 3 ADJUST	x	x	x	x
TRAY 4 ADJUST	x	x	x	x
TRAY 5 ADJUST	x	x	x	x
MP FEEDER ADJUST	x	x	x	x
ENV FEEDER ADJ	x	x		
MANUAL PAPER ADJ	x	x	x	x
MANUAL ENV ADJ	x	x		

Margin menu options will only appear when the printer option is installed or when the printer supports feeding the media.

The following sections describe each of the margin menu options.

3.8.1 ALL INPUT TRAYS Menu

This menu option allows the top and left margins for simplex and duplex pages to be adjusted. Margin settings of this menu option apply to pages printed from any tray or feeder. Adjustments to the **All Input Tray** margin settings can be made by adjusting the individual margin settings for a specific tray or feeder. Negative values indicate a decrease in the margin value from the default margin of zero.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from all input trays and feeders.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from all input trays and feeders.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from all input trays and feeders.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from all input trays and feeders.

3.8.2 TRAY 1 ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 1. **Tray 1 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 1.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 1.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 1.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 1.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 1.

3.8.3 TRAY 2 ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 2. **Tray 2 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 2.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 2.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 2.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 2.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 2.

3.8.4 TRAY 3 ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 3. **Tray 3 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 3.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 3.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 3.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 3.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 3.

3.8.5 TRAY 4 ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 4. **Tray 4 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 4.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 4.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 4.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 4.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 4.

3.8.6 TRAY 5 ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from tray 5. **Tray 5 Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from tray 5.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from tray 5.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from tray 5.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from tray 5.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from tray 5.

3.8.7 MP FEEDER ADJUST Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from the multipurpose feeder. **MP Feeder Adjust** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from the MP feeder.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from the MP feeder.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from the MP feeder.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from the MP feeder.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from the MP feeder.

3.8.8 ENV FEEDER ADJ Menu

This menu option allows additional adjustment to the top and left margins for jobs printed from the envelope feeder. **Env Feeder Adj** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from the envelope feeder.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for envelopes printed from the envelope feeder.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for envelopes printed from the envelope feeder.

3.8.9 MANUAL PAPER ADJ Menu

This menu option allows additional adjustment to the top and left margins for simplex and duplex pages printed from the manual tray. **Manual Paper Adj** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all pages printed from the manual tray.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for pages printed from the manual tray.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for pages printed from the manual tray.
Left Margin Back	0*, -127 to 127	Adjusts the duplex page back side left margin for pages printed from the manual tray.
Top Margin Back	0*, -127 to 127	Adjusts the duplex page back side top margin for pages printed from the manual tray.

3.8.10 MANUAL ENV ADJ Menu

This menu option allows additional adjustment to the top and left margins for jobs printed from the manual tray. **Manual Env Adj** margin settings adjust the value of the **All Input Trays** corresponding margin setting for all envelopes printed from the manual tray.

See *margin settings examples* under *3.8 MARGINS Menu Options* on page 48 for additional information.

Intermediate Menu	Value	Function Performed
Left Margin	0*, -127 to 127	Adjusts the page front side left margin for envelopes printed from the manual tray.
Top Margin	0*, -127 to 127	Adjusts the page front side top margin for envelopes printed from the manual tray.

3.9 Overview of the FONT CAPTURE Menu Options

The following lists all menu options found under the **FONT CAPTURE** menu. Values only display when they are available on your printer. An asterisk “*” indicates the default factory value. The selected value for each of these options is listed on the **IPDS Print Menus** page. See *2.3 Printing the Menu Settings* on page 20.

Option name	Values
Capture Fonts	Disable*, Save To Disk, Save To Flash
Remove Fonts	No*, Yes

A description of each **FONT CAPTURE** option follows.

3.10 FONT CAPTURE Menu Options

In the following an asterisk “*” indicates the default factory value.

3.10.1 Capture Fonts

Note: This option only displays if a user flash memory or a disk is installed in the printer.

This option controls the capturing of eligible bitmap fonts (LF1 format) and eligible outline fonts (LF3 format) from the host by the IPDS emulation. If the IPDS job specifies a font which is a permanent resident printer font or a font which has already been captured, the host selects the resident or captured font and does not download the font. This saves time and network traffic. See *7 Font Capturing* on page 79 for further details.

Important: You should always check your font licensing information before making a font eligible for capture.

Disable* No fonts are captured. Fonts already captured remain in the printer.

Save To Disk Capture fonts and store them on the printer disk. A disk with sufficient space has to be available in order to store captured fonts. This setting displays only if a printer disk is available.

If the printer disk is password protected, no fonts will be captured. To capture fonts, remove the password protection, capture the fonts, and password protect the disk again.

Save To Flash Capture fonts and store them in user flash memory. A flash with sufficient memory has to be available in order to store captured fonts. This setting displays only if a flash is available.

If the flash is password protected, no fonts will be captured. To capture fonts, remove the password protection, capture the fonts, and password protect the flash again.

3.10.2 Remove Fonts

This function is used for the removal of all captured fonts stored on a user flash and disk.

If the flash or disk is password protected, the message **Flash Protected, Fonts Not Erased** or **Disk Protected, Fonts Not Erased** displays in the front panel. If both the flash and the disk are password protected, the messages appear after each other. Remove the password protection to allow removal of the fonts.

Removing captured fonts from the flash removes the fonts but does not free the memory for other usage. Flash memory can **ONLY** be freed by formatting the flash. This deletes all resources stored in the flash.

No* Cancel action. No fonts are removed.

Yes Remove all captured fonts. This includes all fonts stored on both disk and flash.

4 Duplex Printing Using Preprinted Media

The IPDS emulation uses the value selected in the printer **PAPER MENU** under **PAPER LOADING** to determine how paper is loaded. If you have set the value in the printer menu to **Duplex** and have loaded preprinted media (such as letterhead) correctly for duplex printing, any IPDS job received from the host, whether duplex or simplex, will print correctly on the paper. Refer to your printer manual for more information on the **PAPER LOADING** option and how to load preprinted paper for duplex printing.

5 Finishing Support

Finishing support includes offset stacking, stapling, and hole punching. The table below shows the finishing support provided with your printer and finishing support when an optional finisher is installed.

Function / Support	Infoprint 1130 and 1140 with Optional Finisher (<i>See note</i>)	Infoprint 1145	Infoprint 1145 with Optional Finisher
Hole Punch	-	-	Finisher physical bin 1 and 2
Offset Stacking	Finisher physical bin 1	Std Bin	Std Bin, Finisher physical bin 2
Offset	30 mm	30 mm	30 mm
Staple	Finisher physical bin 1	-	Finisher physical bin 2
Staple Position	Single (Top Left)	-	Front, Rear, Dual
Maximum Staple Packet Size	25 Sheets (20 lb. plain letter)	-	50 Sheets (20 lb. plain letter)

– Indicates **not** supported.

Note The Infoprint 1130 and 1140 models support several different output devices. The optional finisher is always installed as the first output device and provides one additional output bin.

5.1 Offset Stacking

Offset stacking of IPDS jobs is available when offset stacking is supported in the printer standard bin or when an optional finisher with offset stacking capability is installed. Jobs are offset approximately 30 mm (1.18 in). For offset stacking to occur, the following must happen:

- **Host Controlled** must be selected in the **IPDS Menu Offset Stacking** menu. **Host Controlled** is the default value. Refer to 3.5.6 *Offset Stacking* on page 42 for additional information.
- Offset stacking commands must be received with the IPDS job.
- The IPDS job must not request stapling. Jobs which specify stapling will be stapled and not offset.
- The bin selection specified in the IPDS job must be mapped to a bin which supports offset stacking. Refer to 3.7 *MAP OUTPUT BINS Menu Options* on page 46 for additional information on bin mapping.

Offset stacking is not supported in the Infoprint 1120, 1125, 1130, and 1140 standard bin.

Output bin selection and stapling take precedence over offset stacking.

Hole punching may be performed with offset stacking.

Note: The **Offset Pages** menu item under the printer **Finishing Menu** does not affect offset stacking of IPDS jobs.

Note: Some paper sizes or types will not staple or offset correctly when they are directed to the finisher. Refer to your finisher or printer documentation for additional information.

5.1.1 AS/400 Offset Stacking

When offset stacking is available, the IPDS emulation reports to the host that offset stacking is supported. The AS/400 automatically sends offset stacking commands with each job. The host default output bin selection number is 1, which selects the printer standard bin.

Following are three different ways to ensure that jobs are offset when the Infoprint 1130 and 1140 optional finisher is installed:

- Change the host output bin selection number to 2 in the default printer file using the CHGPRTF command. (Assumes printer default bin mappings.)
- Create a new printer file using the CRTPRTF command and set the host output bin selection number to 2. (Assumes printer default bin mappings.)
- In the printer map **Output Bins** menu, change **Bin Mapping 1** output bin value from **Standard Bin** to **Bin 1**. (Assumes the host output bin selection number is 1.) This routes all jobs which would normally have gone to the printer standard bin to finisher bin 1 which supports offset stacking. Refer to *3.7 MAP OUTPUT BINS Menu Options* on page 46 for details on bin mapping.

The Infoprint 1145 supports offset stacking in the printer standard bin. The IPDS emulation will report offset stacking capability and the AS/400 will automatically send offset stacking commands in the data stream.

Offset stacking is also supported in the Infoprint 1145 optional finisher. When the finisher is installed, jobs stacked in the printer standard bin or in finisher bin 2 will be offset stacked. Following are three different ways to route jobs to the optional finisher and have them offset stacked:

- Change the host output bin selection number to 3 in the default printer file using the CHGPRTF command. (Assumes printer default bin mappings.)
- Create a new printer file using the CRTPRTF command and set the host output bin selection number to 3. (Assumes printer default bin mappings.)
- In the printer Map Output Bins menu, change **Bin Mapping 1** output bin value from **Standard Bin** to **Bin 2**. (Assumes the host output bin selection number is 1.) This routes all jobs which would normally have gone to the printer standard bin to finisher bin 2 which supports offset stacking. Refer to

3.7 *MAP OUTPUT BINS Menu Options* on page 46 for details on bin mapping.

To prevent jobs from being offset when they are directed to a bin which supports offset stacking, select **OFF** in the IPDS **Offset Stacking** menu. Refer to 3.5.6 *Offset Stacking* on page 42 for additional information.

5.1.2 Mainframe Offset Stacking

For MVS JES2/JES3 offset stacking is controlled by the **COPYMARK** parameter contained in the printer device definition statement in the JES2/JES3 initialization member. The following examples illustrate the options and syntax for both JES2/JES3.

Example 1- JES2

JES2 Specifications using the **COPYMARK** parameter. (*See note*):

COPYMARK=DATASET	Offset stacking increment on dataset boundary.
COPYMARK=JOB	Offset stacking increment on job boundary.
COPYMARK=CONSTANT	No offset stacking is performed.

Example 2 – JES3

JES3 Specifications using the **COPYMARK** parameter. (*See note*):

COPYMARK=C	Offset stacking increment on dataset boundary.
COPYMARK=J	Offset stacking increment on job boundary.
COPYMARK=N	No offset stacking is performed.

Note: Copy marks are not generated by the IPDS emulation.

Example 3 - Output bin selection

The host default output bin selection number is 1 which selects the printer standard bin. If offset stacking is not supported in the printer standard bin, offset stacking will not be performed.

Following are three different ways to ensure jobs are offset when the Infoprint 1130 and 1140 optional finisher is installed.

- Specify OUTBIN in the JCL statements as follows:

```
//OUT1 OUTPUT OUTBIN=2  
//DDNAME DD SYSOUT=CLASS,OUTPUT=(*,OUT1)
```

- Specify OUTBIN=2 in the OUTPUT DD card of your IEBGENER job.
- In the printer map **Output Bins** menu, change **Bin Mapping 1** output bin value from **Standard Bin** to **Bin 1**. (Assumes the host output bin selection number is 1.) This routes all jobs which would normally have gone to the printer standard bin to finisher bin 1 which supports offset stacking. Refer to *3.7 MAP OUTPUT BINS Menu Options* on page 46 for details on bin mapping.

To prevent jobs from being offset stacked when they are directed to a bin which supports offset stacking, select **Off** in the IPDS **Offset Stacking** menu.

5.2 Stapling

Stapling is available when an optional finisher is installed.

When stapling is specified in the IPDS job, the job bin selection will be ignored and the job will be routed to a bin which supports stapling.

Jobs are stapled according to the following printer and finisher restrictions. It is the user's responsibility to load a media type and size which can be stapled by the optional finisher. Refer to your printer documentation for media types and sizes supported by the optional finisher and for any additional restrictions that may apply.

- Jobs which exceed the maximum staple packet size will not be stapled. The job will be ejected from the finisher without a staple.
- Stapling has a higher priority than output bin selection.
- Jobs which specify stapling and offset stacking will be stapled and not offset.
- Stapling and hole punching may be performed on the same job.

Note: The **Staple Job** menu item under the printer **Finishing Menu** does not affect stapling of IPDS jobs.

5.2.1 Staple Priming

The printer automatically primes the stapler after staples are loaded when the **Staples Empty** message is displayed on the operator panel. The job currently being printed is ejected from the stapler without being stapled.

Priming the stapler manually must be performed using the **Prime Stapler** function under the printer **Job Menu**. This operation must be initiated when the printer is in a **Ready** status. To perform a manual staple priming operation, hold jobs on the host and wait for the printer to finish printing the current job and return to the Ready status. Perform the staple priming operation and then release jobs on the host. Refer to your printer documentation on how to perform manual staple priming.

5.2.2 AS/400 Stapling

Stapling is controlled in the print file parameters on the AS/400. Printer files may be created using the 'CRTPRTF' command or changed using the 'CHGPRTF' command. Check to see that all AS/400 PTFs which affect stapling have been applied before calling for technical support.

Stapling Support in the Infoprint 1130 and 1140 Optional Finisher

The Infoprint 1130 and 1140 optional finisher supports only one staple position. You cannot physically change the position of the staple. The printer automatically rotates text 180 degrees when the finisher is installed.

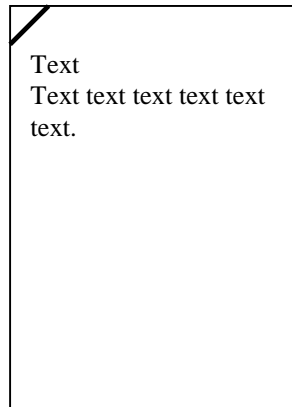
If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

Parameters in the print file that affect stapling

Printer device type *IPDS
Output bin 2
Corner staple *DEVD or *TOPLEFT

The *DEVD staple position is the top left. Specifying any other setting may cause an exception to be reported to the AS/400 host.

*DEVD
*TOPLEFT



*Text shown with
0 degree rotation
specified in IPDS
job*



*Short-edge fed paper,
leading edge*

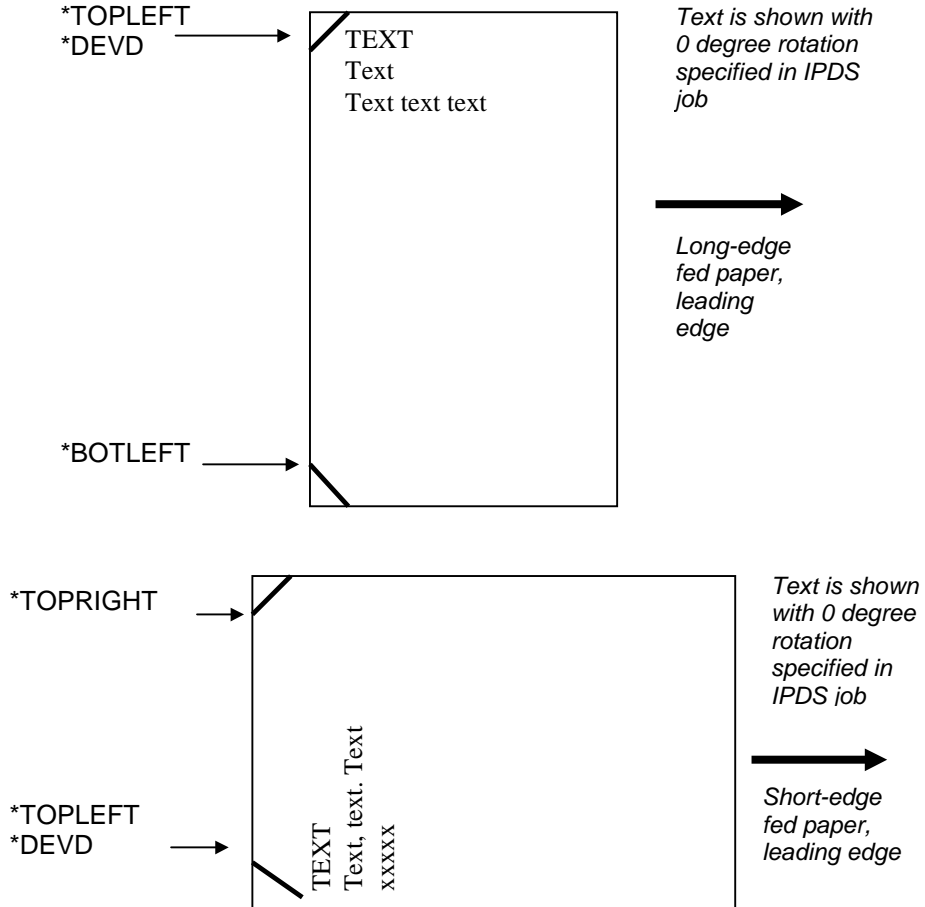
Stapling Support in the Infoprint 1145 Optional Finisher

The Infoprint 1145 optional finisher supports multiple staple positions. The printer automatically rotates the text 180 degrees for short-edge fed paper and 90 degrees for long-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

Parameters in the print file which affect stapling:

The Printer device type must be *IPDS.

Corner staple..... *TOPLEFT, *BOTLEFT, *TOPRIGHT or *DEVD



Edge stitch

Reference edge *LEFT, *TOP or *DEVD
Reference edge offset..... *DEVD
Number of staples *DEVD

Two staples are placed on the left or top reference edge of the paper.

*TOP must only be used with short edge fed paper.

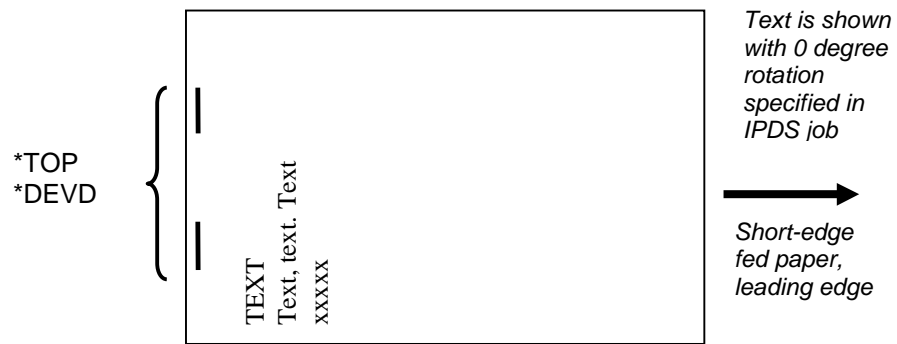
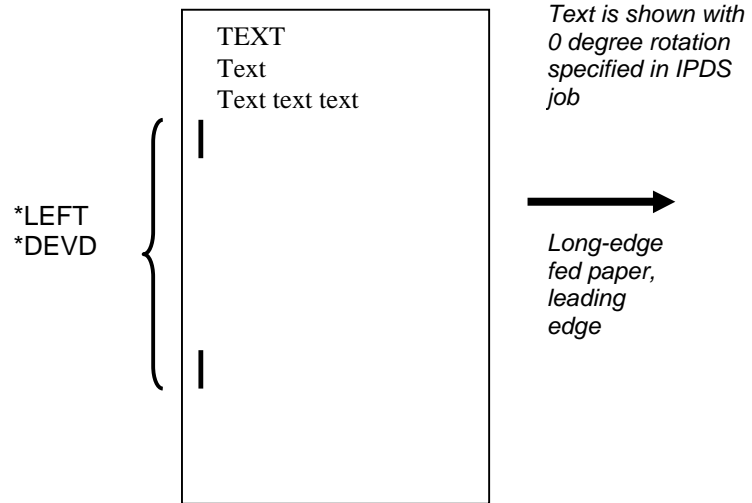
*LEFT must only be used with long edge fed paper.

An invalid specification may cause an exception to be reported to the AS/400 host.

The “Reference edge offset”, “Number of staples”, and “Staple offsets” parameters are not supported, and are ignored if set to other values.

Drawings of staple placement are found on the next page.

Edge Stitch Stapling on AS/400



5.2.3 Mainframe Stapling

Stapling is controlled in MVS by the PSF Form Definition parameters used within the job being sent to the printer from the host system. The form definition for stapling can be defined either in the host PSF printer member or on the sysout statement of the job being sent.

Stapling Support in the Infoprint 1130 and 1140 Optional Finisher

The Infoprint 1130 and 1140 optional finisher supports only one staple position. You cannot physically change the position of the staple. The printer automatically rotates text 180 degrees when the finisher is installed.

If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

The form definition to use in the PSF printer member or in the job output statement for simplex printing is: F1FC0010. (See *PSF OS/390 Users Guide* for other Form Definitions Supplied with PSF, for Staple with Duplex, Tumble etc.)

The following is an *example of a job output statement* that includes the Form Definition to use IPDS staple function for a simplex job:

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FC0010
```

Stapling Support in the Infoprint 1145 Optional Finisher

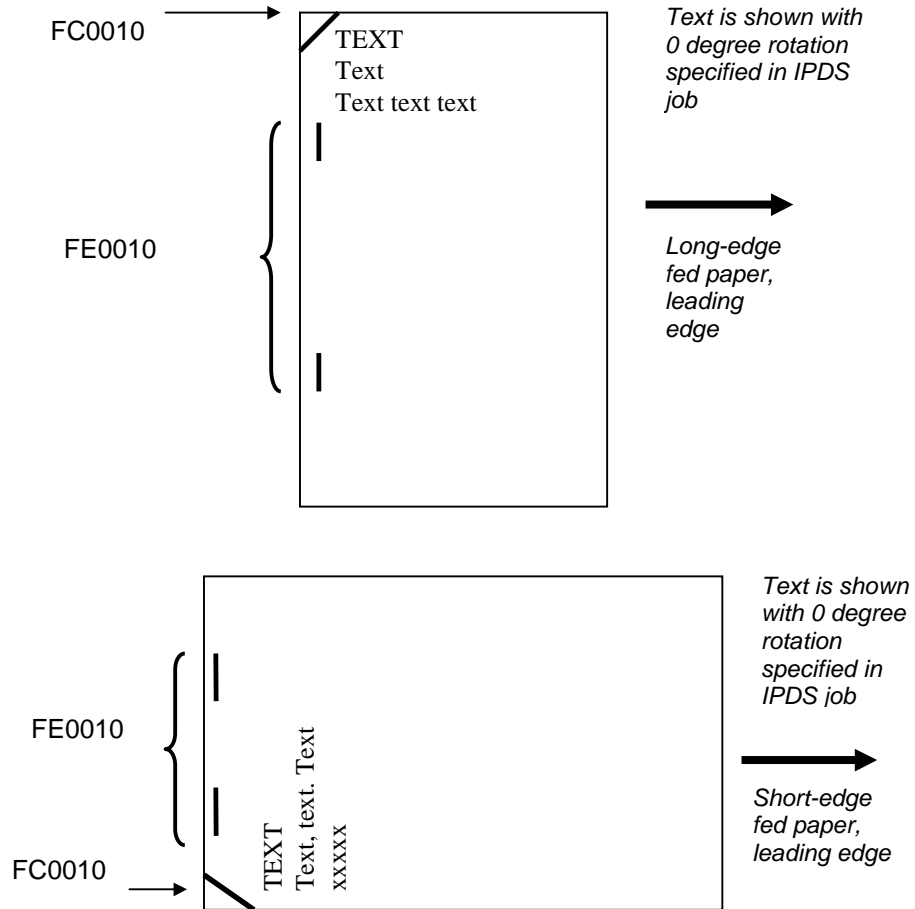
The Infoprint 1145 optional finisher supports multiple staple positions. The printer automatically rotates the text 180 degrees for short-edge fed paper and 90 degrees for long-edge fed paper. If necessary, reformat your job on the host with a different text orientation to avoid stapled sets that are hard to read. Refer to your printer or finisher documentation to determine the staple location for various paper sizes.

The following is an *example of a job output statement* that includes the Form Definition to place two staples in the printed output.

```
//OUT1 OUTPUT CLASS=C,COPIES=1,FE0010
```

Sending form definitions which specify invalid staple locations may cause an exception to be reported to the host.

The following shows staple placement for simplex form definitions:



5.2.4 Hole Punching

Hole punching of IPDS jobs is available when the Infoprint 1145 optional finisher is installed. Hole punching is not defined in the IPDS data stream and must be specified in the **IPDS MAP INPUT TRAYS** menu or in the **IPDS MAP OUTPUT BINS** menu. The hole punch function will work with the finisher staple or offset stacking functions. Refer to your printer or finisher documentation to determine the hole punch location for various paper sizes.

Note: The **Hole Punch** menu item under the printer **Finishing Menu** does not affect hole punching of IPDS jobs.

Note: The Infoprint 1130 and 1140 optional finisher does not support hole punching.

5.2.5 Hole Punching From an Input Source

Hole punching may be performed on paper pulled from any paper input source on the printer. Hole punching from an input source is specified using the **IPDS MAP INPUT TRAYS** menu. Refer to *3.6 MAP INPUT TRAYS Menu Options* on page 43 for additional information. A combination of the printer physical input source and the IPDS data stream requested input source is used to specify hole punching.

Example 1 - To have all pages from Tray 1 hole punched (Infoprint 1145 default settings are assumed in this example)

To have all pages printed from the printer physical Tray 1 hole punched, specify the following in the **MAP INPUT TRAYS** menu:

1. Select **Tray Mapping 1**
2. Select **Tray 1Hp**
3. Select **IPDS Number 0**

This sets **Tray Mapping 1** to **Tray 1Hp** to **IPDS Number 0**. When the IPDS input source **0** is specified in the data stream, paper is picked from the printer physical Tray 1 and hole punched.

Example 2 - To have selected pages from Tray 2 hole punched (Infoprint 1145 default settings are assumed in this example)

To have some pages punched and some pages not punched from Tray 1 by specifying the following in the **MAP INPUT TRAY** menu:

Tray Mapping 1 to Tray 1 to IPDS Number 0 (Default Setting)

(When **IPDS Number 0** is the requested source in the IPDS data stream, pages are pulled from the printer physical Tray 1 and are not hole punched. **0** is the IPDS default input source value.)

Tray Mapping 8 to Tray 1 Hp to IPDS Number 4

(When **IPDS Number 4** is the requested source in the IPDS data stream, pages are pulled from the printer physical Tray 1 and all pages are hole punched.)

5.2.6 Hole Punching to an Output Bin

Hole punching may be performed on paper routed to any optional finisher output bin. Hole punching to an output bin is specified using the IPDS **MAP OUTPUT BINS** menu. Refer to 3.7 *MAP OUTPUT BINS Menu Options* on page 46 for additional information. A combination of the printer physical output bin and the IPDS data stream specified output bin is used to specify hole punching.

Example 1 - To have all pages stacked in Bin 2 hole punched

To have all pages stacked in the printer physical output bin 2 hole punched, specify the following in the IPDS **MAP OUTPUT BINS** menu:

1. Select **Bin Mapping 1**
2. Select output **Bin 2 Hp**
3. Select **IPDS Number 1**

This sets **Bin Mapping 1** to output **Bin 2 Hp** to **IPDS Number 1**. When the requested output bin number is **1** in the IPDS data stream, pages are hole punched and stacked in the finisher physical output bin 2.

Example 2 - To have selected pages stacked in Bin 2 hole punched

To have some pages punched and some pages not punched as they are stacked in the finisher physical output bin 2, specify the following in the IPDS **MAP OUTPUT BINS** menu:

1. Select **Bin Mapping 1**.
2. Select output **Bin 2**.
3. Select **IPDS Number 1**.
4. Select **Bin Mapping 4**.
5. Select output **Bin 2 Hp**.
6. Select **IPDS Number 2**.

Note: **IPDS Number 1** is the default IPDS data stream output bin.

When **IPDS Number 1** is the requested output bin in the IPDS data stream, pages are stacked in the finisher physical output Bin 2 and are not hole punched.

When **IPDS Number 2** is the requested output bin in the IPDS data stream, pages are stacked in the finisher physical output Bin 2 and are hole punched.

6 IPDS Job Cancel

The IPDS cancel function allows IPDS jobs to be canceled at the printer. Selecting a specific job to cancel is difficult when several small jobs are queued to print from the host. The job being printed may not be the job which is canceled. The cancel request is returned to the host on the earliest possible page boundary. If all pages of a job have been processed and stored in the printer's memory, that job will not be canceled.

The IPDS cancel function may only be selected when an IPDS session is established with a host. The IPDS cancel function will not be displayed during certain *Intervention Required* conditions on the printer. The intervention must be cleared before the job can be canceled.

When attached to a host via Twinax, the Adapter for SCS must have Twinax code level H02-8471 or greater for Cancel to be reported to the host. The message **Cancel Not Supported** will be displayed if the Adapter for SCS does not support the cancel function.

6.1 Canceling an IPDS Job

To cancel when IPDS appears on the display, press **Stop, Stop, Select, and Go**. An explanation of what will occur with each key press follows.

1. Press **Stop**.
 - The printer displays **Not Ready** and continues to clear all paper from the paper path. The printer stops receiving and processing data from the host. You may proceed to Step 2 before the printer clears the paper path.
2. Press **Stop** again.
 - The message **Press Select to Cancel IPDS Job** is displayed.
 - The message **Press Select to Cancel IPDS Job** will not display during certain *Intervention Required* messages. You must clear the printer intervention first.

- Some events on the printer may cause the message **Press Select to Cancel IPDS Job** to be removed from the display. If the message is removed, press **Go** and then perform a cancel job sequence by performing steps 1 through 4.
3. Press **Select**.
 - The message **Canceling Job - Press Go** is displayed. The cancel request is queued and will be sent to the host on the earliest possible page boundary. If all pages have been processed into the printer's memory and the IPDS session is ended before additional job data is received, the cancel request is ignored.
 4. Press **Go**.
 - The **Canceling Job** message is displayed and the printer resumes receiving and processing data from the host. Pages already processed and stored in memory are printed. Several pages may print.
 - A cancel request will be sent to the host on the earliest possible page boundary. The printer beeps and briefly displays the **Sending Cancel** message when the cancel is sent to the host. The host cancels the job and the next job on the host queue will be sent to the printer.
Note: The actual host action is dependent on host settings.
IPDS resources are saved by the printer unless the host requests deletion of these resources.
 - Attempts to perform a cancel request while the **Canceling Job** message is displayed will cause the message **Cancel Pending – Press Go** to display on the operator panel. Press **Go** to continue.

6.2 Aborting a Cancel Request

When the **Canceling Job** message is displayed, a cancel request may be aborted by pressing the **Return** button. The message **Cancel Aborted** will be displayed briefly. The cancel request will not be sent to the host. The printer IPDS emulation continues to process pages received from the host.

7 Font Capturing

The **IPDS Menu FONT CAPTURE** option allows capture of eligible bitmap fonts (LF1 format) and eligible outline fonts (LF3 format) received from the host. These fonts may be stored (captured) on flash or disk. Fonts intended for capturing must be marked eligible for capture on the host before they will be downloaded to the printer for capture. Fonts which are resident on the printer will not be downloaded for capture by the host. See *3.10.1 Capture Fonts* on page 57 for an option description.

Note: You should always check your font licensing information before making a font eligible for capture.

7.1 Storage, Use, and Clearing of Printer Captured Fonts

Fonts eligible for capture may be stored on flash memory or on a hard disk. The flash memory and hard disk are printer optional storage media and are ordered separately from the printer. When a font is captured on the printer, it appears as a resident printer font to the host. The font does not need to be downloaded again if the session is ended and restarted.

Captured fonts are only available to the IPDS emulation. The resolution of the captured font must match the IPDS emulation resolution for the font to be used by the host application. For instance, a font captured with a 300 pel resolution can not be used by the IPDS emulation when it is emulating an IBM 3812/16 printer. The fonts used in emulating a 3812/16 printer have a resolution of 240 pels.

Important: Captured fonts are available for use by any host connected to the printer. Sensitive fonts should not be made eligible for capture.

Fonts captured to flash memory or a disk remain in the printer until:

- overwritten by a later font capture with a font having the same characteristics or
- cleared by using the **Remove Fonts** menu item in the **Font Capture** menu.

Fonts activated from flash or disk and in use during a session will not be cleared by **Remove Fonts**. Activated fonts will remain in memory until the activation is removed by the host or the session with the host is ended.

Note: The IPDS data stream does not define commands for clearing captured fonts from the printer. Fonts may be removed using Remote Configuration parameters. See *8 Remote Configuration of Printer IPDS Settings* on page 85 for additional information.

7.2 Capturing Fonts from an AS/400

7.2.1 AS/400 Program Requirements

PSF/400 V4R2 or later is required for making fonts eligible for capture.

7.2.2 Making Fonts Eligible for Capture on the AS/400

Two steps are required on the AS/400 to capture fonts. These are:

1. Make the font resource eligible for capture.

To mark a font resource eligible for capture, set `FNTCAPTURE` to `*YES`. This is done when you create the font resource using the `CRTFNTRSC` command or change the font resource using the `CHGFNTRSC` command. A raster font is built from a font character set and a code page. Both of these font resources must be marked eligible for the raster font to be captured. Additional information on font capture may be found in *OS/400 Printer Device Programming V4R4 Version 4 (SC41-5713)* and in *IBM AS/400 Printing V (SG24-2160)*.

2. Identify the printer as being capable of capturing fonts. Set the `FNTCAPTURE` parameter to `*YES` in the printer `PSFCONFIG`.

7.3 Capturing Fonts from a Mainframe Host

7.3.1 Mainframe Program Requirements

Font capture is supported by PSF/MVS 2.2.0 with APAR OW08340 and PSF/VSE 2.2.1 with APAR DY43969.

7.3.2 Making Fonts Eligible for Capture on a Mainframe

Note: The procedures/documentation below are for OS390/MVS/PSF platform. The following are the software release requirements for font capture feature within this platform. (For details on font capture with PSF refer to the PSF Customization Guide, Program Number: 5655-B17)

OS390/MVS 2.4 or later
PFS for MVS 2.2 or later

Note: Earlier releases may also support "Font Capture". For details - check your "*PSF Customization Guide*".

There are basically 3 steps involved regarding font capture as follows:

1. Display current font marking status.
2. Mark fonts for capture.
3. Send job from host to printer with the font and font character set you want printer to capture.

Fonts on the host can be marked either "PUBLIC", "PRIVATE", or "UNMARKED". In order for the printer to capture fonts as resident the fonts must be marked "PUBLIC" on the host. Fonts marked "PRIVATE" are only temporarily downloaded and are removed from printer by the host. "UNMARKED" fonts are treated the same as if they were marked "PRIVATE" and will not be captured as printer resident fonts.

7.3.2.1 STEP 1. DISPLAY CURRENT FONT MARKING STATUS

To determine the marking status of your host fonts you can run the APSRMARK report utility. The following is a sample of the JCL to run the font report listing.

Sample JCL to run font report listing to determine current font marking status:

```
//APSHORT JOB ( ),
//          CLASS=A,
//          MSGCLASS=A,
//          MSGLEVEL=(1,1),
//          NOTIFY=&SYSUID,
//          TIME=1440
//*** NOTE: USE THIS JOB TO PRINT SHORT FONT STATUS MARKINGS ONLY ***
//*** NOTE: CHANGE DSN LINE 13 (IN1 STATEMENT) TO MATCH YOUR FONTLIB *
//*****
//STEP1 EXEC PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
//*
//IN1 DD UNIT=3390,DSN=SYS1.FONTLIB,DISP=SHR,VOL=SER=OS3R7A
//SYSIN DD *
//          INDD=IN1,MEMBER=ALL,REPORT,SHORT
//*
```

Note: Change report type to "LONG" for font detailed report (replace the "SHORT" option).

7.3.2.2 STEP 2. MARKING FONTS FOR CAPTURE

In order for printer to capture host fonts as resident printer fonts they must be marked "PUBLIC". The following is a sample of the JCL commands to mark existing fonts as "PUBLIC".

Sample JCL to Mark Fonts "PUBLIC":

```
//APSMARK JOB ( ),
//          CLASS=A,
//          MSGCLASS=A,
//          MSGLEVEL=(1,1),
//          NOTIFY=&SYSUID,
//          TIME=1440
//*****
//* THIS JOB WILL MARK FONTS FOR CAPTURE FOR PRINTER FROM FONT LIB. *
//* MARK THEM AS EITHER PUBLIC OR PRIVATE. TO MARK PUBLIC ENTER *
//* "PUBLIC" KEYWORD ON LINE 18 INDD STATEMENT. FOR PRIVATE ENTER *
//* "PRIVATE" KEYWORD ON LINE 18 INDD STATEMENT. THEN SUBMIT. *
//*****
```

```

// * TO DISPLAY STATUS MARKING CHANGE RUN REPORT JOB "APSSHORT". *
// *****
// * NOTE: USE "REPLACE" IF MEMBER ALREADY EXIST: SEE FOLLOWING EXAMPLE*
// * NOTE: USE "REPLACE" IF MEMBER ALREADY EXIST: SEE FOLLOWING EXAMPLE*
// * INDD=IN1,OUTDD=OUT1,MEMBER=COH20000,PUBLIC,REPLACE *
// *****
// * NOTE: BEFORE YOU RUN THIS JOB YOU MUST ALLOCATE NEW FONTLIB DSN *
// * 1ST CREATE NEW LIB, THEN USE IEBGENER TO COPY FROM OLD LIB *
// * I.E. SYS1.FONTLIBB TO NEW LIB SYS1.FONTPRIV OR SYS1.FONTPUB *
// *****
//STEP1 EXEC PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
// *
// IN1 DD UNIT=3390,DSN=SYS1.FONT300,DISP=SHR,VOL=SER=OS3R7A
//OUT1 DD UNIT=3390,DSN=SYS1.FONTNEW,DISP=SHR,VOL=SER=OS3R7A
//SYSIN DD *
INDD=IN1,OUTDD=OUT1,MEMBER=T1V10037,PUBLIC
INDD=IN1,OUTDD=OUT1,MEMBER=C08400B0,PUBLIC
/*

```

Note: If you want to mark all fonts in a particular font library "PUBLIC" you can create a new font library, copy, and mark all fonts as "PUBLIC" at the same time. The following is a sample of the JCL commands to copy and mark all fonts "PUBLIC" to a new library.

Sample JCL to copy and mark all fonts "PUBLIC" to a new font library:

```

//APSRMARK JOB (),
// CLASS=A,
// MSGCLASS=A,
// MSGLEVEL=(1,1),
// NOTIFY=&SYSUID,
// TIME=1440
// *****
// * THIS JOB WILL COPY/MOVE MEMBERS TO ALTERNATE FONT LIB AND *
// * MARK THEM AS EITHER PUBLIC OR PRIVATE. TO MARK PUBLIC ENTER *
// * "PUBLIC" KEYWORD ON LINE 18 INDD STATEMENT. FOR PRIVATE ENTER *
// * "PRIVATE" KEYWORD ON LINE 18 INDD STATEMENT. THEN SUBMIT. *
// * TO DISPLAY STATUS MARKING CHANGE RUN REPORT JOB "APSSHORT". *
// * *****
// * NOTE: BEFORE YOU RUN THIS JOB YOU MUST ALLOCATE NEW FONTLIB DSN *
// * 1ST CREATE NEW LIB, THEN USE IEBGENER TO COPY FROM OLD LIB *
// * I.E. SYS1.FONTLIBB TO NEW LIB SYS1.FONTPRIV OR SYS1.FONTPUB *
// *****
//STEP1 EXEC PGM=APSRMARK
//SYSPRINT DD SYSOUT=J
// *
// IN1 DD UNIT=3390,DSN=SYS1.FONTLIBB,DISP=SHR,VOL=SER=OS3R7A
// INOUT1 DD UNIT=3390,DSN=SYS1.FONTPRIV,DISP=SHR,VOL=SER=OS3R7A
//SYSIN DD *
INDD=IN1,OUTDD=INOUT1,PUBLIC,MEMBER=ALL
/*

```

7.3.2.3 STEP 3. SENDING JOB FROM HOST TO PRINTER SELECTING FONT CHARACTER SET YOU WANT PRINTER TO CAPTURE

Once you have marked fonts "PUBLIC" you can select the font character set to be captured from either within printer definition member in PSF or from within the in-stream JCL of the job. The following is an *example* of both.

To select font capture from printer definition member, add the "CHARS" option as follows to your PSF printer member.

```
//                                CHARS=(88FB)                                /* default font set */
```

To select font capture from in-stream JCL add the "CHARS" option to sysout/output statement as follows.

```
//OUT1 OUTPUT CLASS=A,DEST=LOCAL,FORMDEF=A10110,PAGEDEF=A06462,CHARS=88FB
```

To print a list of captured fonts, select **Print IPDS Fonts** from the **IPDS Menu**.

8 Remote Configuration of Printer IPDS Settings

Most IPDS emulation settings stored in the printer (the default IPDS settings) can be changed remotely using a browser, MarkVison™ Professional, or by sending a special IPDS text job to the printer. These methods of changing settings are useful during printer installation to set the IPDS option settings to the values recommended by your system administrator. At a later time, if it is determined by your system administrator that an option setting should be changed, the setting may be changed easily on each printer.

8.1 Settings That Require Operator Intervention

Two option setting changes require operator intervention at the printer. Operator intervention to power OFF and power ON the printer is required so the host will recognize the changes. The message **Recycle PWR to activate value** will be displayed on the printer operator panel when the following option settings are changed.

IPDS Emulation Changing to the IBM 3812/16 emulation (240 dpi) from a 4028, 43xx, or 3112/16 emulation (300 dpi) or changing to a 4028, 43xx, or 3112/16 emulation from the IBM 3812/16 emulation, displays the message **Recycle PWR to activate value** and halts the printer. Changing between 4028, 43xx, or 3112/16 emulations does not require recycling of the printer power.

Duplex Control Setting this option to a new value causes the message **Recycle PWR to activate value** to be displayed and halts the printer.

8.2 Option Values Which Can Not Be Changed Remotely

The following IPDS options can not be changed remotely.

- Trace Functions
- IPDS Version
- Print IPDS Fonts

8.3 Remote Configuration Using a Browser

A browser, such as Microsoft Internet Explorer or Netscape, may be used to remotely configure most IPDS settings on printers attached to a LAN using a Standard Network port or MarkNet internal and external print servers.

To access and change IPDS option settings through your browser:

- 1) End all IPDS sessions with the printer. This may involve ending all active AS/400 writers and draining all active Mainframe printers.
- 2) Access the printer web page by typing the IP address of the printer as the URL.
- 3) Select the Configuration tab
- 4) Select the IPDS Menu option
- 5) Change option settings as desired
- 6) Select the Submit button
- 7) Power the printer Off/On if the “**Recycle PWR to activate value**” message is displayed on the printer front panel
- 8) Restart all IPDS sessions

All option values which may be changed remotely will be displayed. Simply change the option value settings desired and select “Submit”. This sends the new option value settings to the printer. These new option value settings are saved in the printer and will become active when the next IPDS session is started.

If new option value settings are submitted during an IPDS session, the new option value settings will not be used until the current IPDS session ends and a new IPDS session is established. Refer to *8.2 Option Values Which Can Not Be Changed Remotely* on page 86 for more information. Some IPDS option setting changes require operator intervention. Refer to *8.1 Settings That Require Operator Intervention* on page 85 for more information.

The “Refresh Form” button resets all option values in the form to the option values first displayed. This is useful if you decide after making several changes you want to return to the original displayed option values. Selecting the “Refresh Form” button after submitting new option values will not display the new option values saved in the printer. To display the new option value settings, select the “Configuration Tab” and select the “IPDS Menu option”.

8.4 Remote Configuration Using MarkVision Professional

MarkVision Professional may be used to remotely configure most IPDS settings on printers attached to a LAN using a Standard Network port, or a MarkNet internal or external print server. IPDS settings may be changed by launching the remote Printer Operator Panel and changing the value just as you would change the value through the printer operator panel. The IPDS settings may also be changed by launching a browser from MarkVision Professional and following the steps in *8.3 Remote Configuration Using a Browser*. Most IPDS option settings may be changed. Refer to *8.2 Option Values Which Can Not Be Changed Remotely* on page 86 for more information. Some IPDS option setting changes require operator intervention. Refer to *8.1 Settings That Require Operator Intervention* on page 85 for more information.

8.5 Remote Configuration Using an IPDS Text Job

Most IPDS emulation default option settings stored in the printer can be changed on LAN, Coax, and Twinax attached printers by sending a special IPDS text job to the printer. Only the IPDS emulation default option settings can be changed using a text job. Other printer emulation (PostScript and PCL) default option settings can not be changed. Refer to *8.2 Option Values Which Can Not Be Changed Remotely* on page 86 for more information. Some IPDS option setting changes require operator intervention. Refer to *8.1 Settings That Require Operator Intervention* on page 85 for more information.

The IPDS emulation continually searches IPDS text jobs for two special command strings. When the string `&%IPDSSETOPT;` is found, the IPDS emulation enters a remote set options mode. Job text is searched for option and value strings which are the same as the option and value strings displayed on the printer operator panel. The option and value strings are entered at the host as normal text and are sent to the printer like

any other IPDS text job. Valid value strings change the IPDS option value and store the new value as a permanent IPDS option setting. When the string &% is found, the IPDS emulation ends processing option and values strings and a page is printed showing all changed values and errors for invalid value strings. The IPDS emulation will also end option and value string processing when detecting some intervention conditions.

8.5.1 AS/400 Recommended Procedure

The IPDS session must be closed after the text job has been sent to the printer to activate the new IPDS option settings. The changes take effect during the next established IPDS session.

The following steps are recommended to remotely change the printer IPDS option settings.

1. End all writers associated with the printer except the writer to be used to send the text job.
2. Hold all print jobs in the printer job queue to be used to print the option setting changes.
3. Print the text job with the option setting changes.
4. End the IPDS session with the printer so the option changes will be activated during the next IPDS session. "**Vary Off**" the printer for locally attached devices and end the writer for LAN attached printers to end the IPDS session.
5. Review the **IPDS Option Change Status** page which was printed for any errors.
6. Recycle the printer power if the operator panel displays the message **Recycle PWR to activate value**. This is displayed if the IPDS emulation or the duplex setting was changed. See *8.1 Settings That Require Operator Intervention* on page 85 for more information.
7. Print a **Print Menus** page and review the IPDS default settings to be sure they have been set correctly.
8. Release queues held in step 2.
9. Start all writers ended in step 1.

8.5.2 Mainframe Recommended Procedure

The IPDS session must be closed after the text job has been sent to the printer to activate the new IPDS default settings. The changes take effect during the next established IPDS session. Changing some options may generate a reset message or a configuration change message on the host when restarting from a timed out session.

The following steps are recommended to remotely change the printer IPDS option settings.

1. Drain the printer in JES for any queues assigned to the printer to allow any pre-selected jobs to complete printing.
2. Place all print jobs on hold for the printer queue to which you will submit the text job.
3. Submit the text job with the option setting changes.
4. Start the printer in JES so the text job can print.
5. Drain the printer to end the IPDS session so the option changes will be activated during the next IPDS session.
6. Review the **IPDS Option Change Status** page which was printed for any errors.
7. Recycle the printer power if the operator panel displays the message **Recycle PWR to activate value**. This is displayed if the IPDS emulation or the duplex setting was changed. See *8.1 Settings That Require Operator Intervention* on page 85 for more information.
8. Print a **Print Menus** page and review the IPDS default settings to verify they were set correctly.
9. Release all held print jobs assigned to this printer in the JES output queue.

8.5.3 Creating a Text Job to Change IPDS Option Settings

Host text processing applications may be used to create the IPDS text job to be sent to the printer. A few rules must be followed to create the text. These rules are explained below and in the following sections.

- Text must be in EBCDIC encoding. The text characters are available in all normal EBCDIC code pages. Special code pages and fonts like OCR and APL should be avoided.
- All movement, spaces, tabs, line feeds, carriage returns, etc. are ignored in the text strings. This means that spaces and line breaks etc. have no influence and can be omitted.
- Both lower and upper case letters can be used for options and values. The case of each option or value does not have to match the operator panel.

8.5.3.1 Lead-in String

The text string below is the *Lead-in string* which causes the IPDS emulation to enter an IPDS set option mode. This must be the first line of the of the job. It is devised so that it should not occur in normal print data.

```
&%IPDSSETOPT;
```

The following string is also valid, as the spaces are ignored.

```
&% IPDS SETOPT;
```

Refer to the *example text job* on page 97 to see how the lead-in string is specified in the text job.

8.5.3.2 Lead-out String

The *Lead-out string* below terminates the IPDS emulation set option mode. This string must always be the last line of the job. The Lead-out string is always recognized even if it occurs in the middle of an option name or value. A lead-in lead-out sequence can span several pages. Closing an IPDS session will terminate the set options mode. It is recommended that all the option changes be limited to one page.

&%

Important: If the above string is not entered in the job containing the IPDS default option changes to end the IPDS set option mode, other jobs on the queue will not be processed correctly.

Refer to the *example text job* on page 97 to see how the lead-out string is specified in the text job.

8.5.3.3 Entering Option Name and Value Settings

The text for specifying Option Name and Value Settings is based on the text appearing in the printer operator panel. Most option names are unique and occur only once. For these options it is possible to use the syntax shown below.

```
Option Name = Value;
```

The *Option Name* and *Value* must be separated with an equal sign and the *Value* must be followed by a semicolon. The wording and spelling of the *Option Names* and *Values* are identical to the text found in the operator panel. Spaces used in the operator panel option text are optional and are ignored. The option and value string case does not have to match the operator panel.

For some options, a menu identifier needs to be specified. An *example* is the **Top Margin** setting which occurs in both the **All Input Trays** and the **Tray 1 Adjust** sub-menus under the **Margins** menu. Setting this and similar options is done by specifying the sub-menu before the *Option Name*. A colon is used to separate the two. The sample sequences below show how the **Top Margin** in the **Tray 1 Adjust** sub-menu can be changed.

```
Margins: Tray 1 Adjust: Top Margin = 20;
```

Or

```
Tray 1 Adjust: Top Margin = 20;
```

The general syntax text string is:

```
Menu Name: Sub-Menu Name: Option Name = Value;
```

It is recommended to precede all *Option Names* with the full menu path. This minimizes confusion and increases compatibility with possible future IPDS options.

Some options use an extended syntax. This applies to the options in the **MAP INPUT TRAYS** and the **MAP OUTPUT BIN** menus. Each of the mapping options needs two values when configured. When two values are required, they are separated by a comma. An *example* of two valid assignments are shown below.

```
Map Input Trays: Tray Mapping 1 = Tray1, 2;
```

Or

```
TrayMapping 1=Tray 1,2;
```

The example assigns the IPDS logical paper source number 2 with Tray 1.

8.5.3.4 Entering Comments in the Job

Comments may be entered in the job text. The beginning of a comment is marked with the start characters (/*) and terminated with the end characters (*). See the *sample comment* below:

```
IpdsEmulation=4028; /* Sample comment */
```

8.5.3.5 Syntax summary and hints

- A semicolon must end all option assignments.
- When two values are required, they must be separated by commas.
- Both lower and upper case letters can be used for options and values. Thus, the case does not have to match the operator panel.
- Space characters are ignored and are optional.
- Line feed controls are ignored. These should be used to prevent the text from printing off the edge of the page.
- Always use an EBCDIC code page. Special code pages such as APL and OCR should not be used.
- Comments are allowed. They have to be bracketed by the start characters /* and the end characters */.

8.5.3.6 Examples of legal commands

The following are *examples of legal commands* which will be processed by the printer IPDS emulation and will change the IPDS option value setting.

```
IpdsEmulation=4028; /* Sample comment */  
EMULATION: IPDS Emulation = 3112/3116;  
Emulation:ipdsemulation=4028;defaultcodepage=Fin/Sweden278;  
Margins:Tray1Adjust:Top Margin = 20;  
Tray 2 Adjust:Left Margin = -10;  
Tray1Adjust:RightMargin=+10;  
Bin Mapping 4 = Output Bin 2,3;  
FONT CAPTURE: Remove Fonts = Yes;
```

8.5.3.7 Examples of illegal commands

The following are *examples of illegal commands* which will be processed by the printer IPDS emulation and cause an error message to be printed.

Top Margin = 20;	This applies to several Top Margin options.
Emulation:DuplexControl=Enable;	Duplex control is not in the Emulation menu.
IPDS Emulation = 3112;	The full value name 3112/3116 must be used.

8.5.3.8 Set Default Options Mode Error Messages

An option change status page is printed after each page with received changes. An option change status page is also printed if a page break is detected before a full page with changes has been received. Valid option value text strings are printed. Error messages are printed for invalid option value text strings to assist in correcting the text string. The list below shows error messages that appear on the *IPDS Option Change Status* page.

"Disk Protected"	An unsuccessful attempt was made to remove fonts stored on the disk. Remove the password protection.
"Disk/Flash Protected"	An unsuccessful attempt was made to remove fonts stored on both the disk and user flash. Remove the password protection.
"Duplicate Option Name"	More than one menu option matches the name. Please specify the full menu path.
"Flash Protected"	An unsuccessful attempt was made to remove fonts stored in the user flash. Remove the password protection.
"Illegal Number"	The specified option value's type is wrong. Please specify the correct type.
"Invalid Option Syntax"	The option syntax is invalid.
"Invalid Value"	The value following the equal sign is invalid or missing. Enter the value or enter a valid value for the option.
"Missing Menu before :"	The menu identifier is missing. Please put the name of the menu, which contains the option, before the colon.
"Option not Allowed"	An attempt was made to change an option which can not be changed remotely. The setting is ignored.
"Syntax Error"	This indicates a violation of the IPDS syntax.
"Too many errors - listing stopped"	Too many errors were detected to fit on the option change status page. No more than 25 errors are printed on the status page.

"Too many options changed - listing stopped"	Not all options changed have been recorded on the option change status page. Print a menu page to verify option settings.
"Too Many Values"	The specified number of values used to set an option does not match the syntax. Please specify the correct number of values.
"Two Values Required"	One value is missing. Please specify two values according to syntax. An <i>example</i> of an option requiring two values is shown below. <pre>TrayMapping 1 = Tray 1,2;</pre>
"Unknown Option"	Invalid option name detected. Enter a valid option name.
"Unknown Value"	An option value was not specified. Enter a valid value.
"Unsupported Option"	An unsupported option in the current printer configuration was specified. An example could be an attempted margin adjustment of tray 3 on a printer with only 2 trays.
"Unsupported Value"	This message is printed if the value is found but not currently available. This could happen if a printer option has not been installed.
"Value Out of Range"	The specified value is outside the valid option range. Specify a value within the range.

Additional information such as invalid option names or values are also printed.

8.5.3.9 Restoring Factory Default Settings Remotely

IPDS factory default settings may be restored remotely by sending the special command below. The command does not appear in the IPDS operator panel menus.

```
EMULATION: RestoreDefaults = Yes;
```

The example text job below may be used to restore IPDS factory defaults. This job restores most IPDS option settings to their factory defaults. The message **Recycle PWR to activate value** may be displayed when using this command. See *8.1 Settings That Require Operator Intervention* on page 85 for more information. See *8.2 Option Values Which Can Not Be Changed Remotely* on page 86 for defaults which can not be changed.

```
&%IPDSSETOPT;  
EMULATION:RestoreDefaults=YES;  
&%
```


9 Using the IPDS Emulation with a LAN Print Server

Note: The steps outlined for setting up parameters on an AS/400 or Mainframe may be different on your system. Examples showing parameters displayed on an AS/400 or Mainframe may be different than the parameters displayed on your system.

9.1 IPDS in a LAN Environment

When using the IPDS emulation in a printer attached to a LAN with the Standard Network port (Ethernet), a MarkNet (Token-Ring or Ethernet) internal print server, or a MarkNet X2000 external print server (Token-Ring or Ethernet), the printer can receive, process and print AFP/IPDS print jobs over TCP/IP from the following IBM software:

- PSF/MVS 2.2 or greater
- PSF/2 2.0 (or greater)
- PSF/AIX V2.1 (or greater)
- PSF/400 V3R1, V3R2, V3R6, V3R7, V4R1, V4R2, V4R3, V4R4, or V5R1

The IPDS emulation adds support for the non-standard bi-directional TCP/IP PPD/PPR protocol allowing the IPDS data to be transmitted using TCP/IP.

Important: An IPDS host expects to have full control of IPDS resources and settings once it has established communications with the printer. More than one IPDS host may send jobs to a LAN attached IPDS printer. The second host job will be started by the printer after the first host job has been completed and the first host releases the printer. Release of the printer is controlled by the host "release timer" value, the printer **IPDS Timeout** value, and the Standard Network port, MarkNet internal print server, or MarkNet X2000 external print server timeouts as specified in the following sections.

Example

IPDS resources have been downloaded during a session with a host connected through the Adapter for SCS card (Coax or Twinax attachment). These resources will be deleted by the IPDS emulation when an IPDS job is received from a LAN attached host. When another IPDS job is received through the Adapter for SCS card, the printer will return a Printer Reset exception to the host. The host will download the resources again with the next IPDS job.

If you are:

- Connecting the printer to a LAN using the Standard Network port or installing a MarkNet internal print server – Go to *9.2 Configuring a Standard Network Port or MarkNet Internal Print Server* on page 101.
- Installing a MarkNet X2000 external print server – Go to *9.3 Configuring a MarkNet X2000 External Print Server* on page 104.

9.2 Configuring a Standard Network Port or MarkNet Internal Print Server

To enable IPDS printing with a Standard Network port or a MarkNet internal print server, several settings must be changed. You can make these changes from the printer operator panel.

MarkNet internal print servers include internal print servers in the MarkNet N2000 series.

9.2.1 Selecting the TCP/IP Protocol Settings

From the printer operator panel, do the following:

1. Press **Menu>** until the **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **STANDARD NETWORK** or **NETWORK OPTION 1** displays. Press **Select**. (This example assumes a MarkNet internal print server is installed in option connector 1.)
3. Press **Menu>** until you see **STD NET SETUP** or **NETWORK 1 SETUP**. Press **Select**.
4. Press **Menu>** until you see **TCP/IP**. Press **Select**.

Here you find the following settings:

Activate Yes

Enable BOOTP Yes or No
(Yes, if you use a BOOTP server.)
(No, if you set the IP address another way.)

Enable DHCP Yes or No
(Yes, if you use a DHCP server.)
(No, if you set the IP address another way.)

Enable RARP Yes or No
(Yes, if you use a RARP server.)
(No, if you set the IP address another way.)

Set IP Address 157.184.67.102
(Address available from your network administrator)

Set IP Netmask 255.255.255.0
(Appropriate netmask for your network)

Set IP Gateway 157.184.67.1 (IP address of the IP gateway)

Set Hostname Name (Necessary when using DHCP server.)

9.2.2 Setting the Job Timeout

The recommended setting for the Job Timeout is 0 (disabled). This allows the host system "release timer" value and the printer **IPDS Timeout** value to control when print jobs from another protocol, interface, server, or host can be started.

You may set the Job Timeout value to a value greater than the host "release timer" value. Errors are very likely to occur when the printer requires user intervention and the intervention is not cleared before the timeout occurs.

Setting the Job Timeout smaller than the host "release timer" value or the printer **IPDS Timeout** value will result in communication errors after the job has printed. From the printer operator panel, do the following:

1. Press **Menu>** until the **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **STANDARD NETWORK** or **NETWORK OPTION 1** displays. Press **Select**. (This example assumes the MarkNet internal print server is installed in option connector 1.)
3. Press **Menu>** until you see **STD NET SETUP** or **NETWORK 1 SETUP**. Press **Select**.
4. Press **Menu>** until you see **NETWORK CARD**. Press **Select**.

Here you find the following setting:

Job Timeout 0

(A setting of 0 allows the host system timer or the printer **IPDS Timeout** value to control when print jobs from another protocol, interface, server or host can be started.)

9.3 Configuring a MarkNet X2000 External Print Server

To enable IPDS printing with the MarkNet X2000 several settings must be changed. **Changes to MarkNet X2000 settings can be made using the appropriate network printer utilities.** For more information on how to change these settings, refer to the *network adapter manual (MarkNet X2000)* which came with your print server.

9.3.1 Printing a MarkNet X2000 Setup Page

To see the code level, you need to print the setup page. To print the MarkNet X2000 setup page, press and release **Menu** and **Test** simultaneously. Under the **Network Card** heading on the **Setup Page**, look for **Firmware Revision**.

For more information, refer to the *network adapter manual (MarkNet X2000)* which came with your print server.

If you need to update your MarkNet code level, contact the IBM customer support center. MarkNet X2000 firmware updates are also available from the IBM Printing Systems home page.

9.3.2 Setting the MarkNet X2000 TCP/IP Protocol Settings

The following TCP/IP protocol settings must be set in order for the host to send jobs to the printer through the MarkNet X2000. Contact your network administrator if you need help with these settings.

Activate	Yes
Set IP Address	157.184.67.102 (Address available from your network administrator)
Set IP Netmask	255.255.255.0 (Appropriate net mask for your network)
Set IP Gateway	157.184.67.1 (IP address of the IP gateway)

9.3.3 Setting the MarkNet X2000 Job Timeout

The recommended setting for the MarkNet X2000 **Job Timeout** is 0 (disabled). This allows the host system "release timer" value to control when print jobs from another protocol, interface, server, or host can be started.

You may set the MarkNet X2000 **Job Timeout** value to a value greater than the host "release timer" value. Errors are very likely to occur when the printer requires user intervention and the intervention is not cleared before the timeout occurs.

Setting the MarkNet X2000 **Job Timeout** smaller than the host "release timer" value will result in communication errors after the job has printed.

9.3.4 Setting the MarkNet X2000 Busy Timeout

Some MarkNet X2000 models can support multiple parallel port connections. Each parallel port connection has a separate **Busy Timeout** setting. The **Busy Timeout** must be set on the MarkNet X2000 parallel port connection which is connected to your IPDS printer.

Note: This timeout is named "**Busy Timeout**" on the MarkNet X2000 setup page and is named "**Printer Timeout**" under Adapter Settings when displayed using MarkVision Professional™.

The recommended setting for the MarkNet X2000 **Busy Timeout** is 0 (disabled). This allows the host system "release timer" value to control when print jobs from another protocol, interface, server, or host can be started.

You may set the MarkNet X2000 **Busy Timeout** value to a value greater than the host "release timer" value. Errors are very likely to occur when the printer requires user intervention and the intervention is not cleared before the timeout occurs.

Setting the MarkNet X2000 **Busy Timeout** smaller than the host "release timer" value will result in communication errors after the job has printed.

9.4 Printing IPDS from PSF/400 with OS/400 V3R1 or V3R6

Install the latest cumulative PTF fix pack or tape for the operating system (including the tool, WRKAFP2).

- PTF SF29249
PTF SF29249, which is available from IBM, provides the source code for WRKAFP2 and must be installed. This PTF provides QSYS/QPQXWAFP program command source code in the PTF cover letter special instructions.
- PTF SF29961 (V3R1)
- PTF SF32907 (V3R6)

1. Set up and start the TCP/IP network:

- Create a Token-Ring or an Ethernet line description for the printer using CRTLINTRN or CRTLINETH.
- Add a TCP/IP interface using ADDTCPIFC.
- Add a router definition, if required, using ADDTCP RTE.
- Start TCP/IP using STRTCP.

2. Create an APPC-attached printer device description using CRTDEVPRT (see steps below).

Note: Only the required fields are listed below.

At the command line, type: CRTDEVPRT and press <F4>. Enter the following information:

Device description IPDSPRT
(User defined name)

Device class *RMT

Device type *IPDS

Device model 0

Press <ENTER>

Advanced function printing *YES

Press <ENTER>

AFP attachment *APPC

Press <ENTER>

Font identifier 11
(Font Global ID for Courier 10 CPI)

Form feed *AUTOCUT

Press <ENTER>, then <PAGE DOWN>

Remote location TCP/IP

Press <ENTER> to create the printer device description for the IPDS printer.

- Using WRKAFP2, specify the printer's TCP/IP configuration information. This data area, which must be saved in library QGPL, will override the APPC device description just created with the CRTDEVPRT command.

At the command line, type: WRKAFP2 and press <F4>.

Printer device name	DEVD	IPDSPRT
(Same user defined name as before)		

IPDS pass through	IPDSPASTHR	*YES
-------------------	------------	------

TCP/IP support	TCP/IP	*YES
----------------	--------	------

Press <ENTER>

Remote System	RMTSYS	157.184.67.102
(IP address or remote system host name)		

Port	PORT	9100
------	------	------

(9100 or 9600 for Standard Network port or MarkNet internal print server)
(9100 for Parallel 1 on MarkNet X2000)
(9102 for Parallel 2 on MarkNet X2000)

Refer to 3.3.14 *IPDS Timeout* on page 32 for further information on the selection of ports.

Press <ENTER>

Inactivity timer	INACTTMR	*SEC15
------------------	----------	--------

Press <ENTER> to create the data area.

All values must be re-entered if any changes are made to any of the values in WRKAFP2; otherwise all values are reset to the default value.

Related information

Vary on the printer device description:

```
VRYCFG CFGOBJ(IPDSPRT) CFGTYPE(*DEV) STATUS(*ON)
```

Start the writer:

```
STRPRTWTR IPDSPRT
```

To PING the device:

```
PING 'ip_address' or PING host_name
```

```
For example: PING '157.184.67.102'
```

To print the contents of the data area in the library QGPL, type:

```
WRKAFP2 DEVD(IPDSPRT) PRINTONLY(*YES)
```

9.5 Printing IPDS from PSF/400 with OS/400 V3R2

Install the latest cumulative PTF fix pack or tape for the system.

- PTF 41993, which is available from IBM, provides a fix for out of paper responses from the printer.

1. Set up and start the TCP/IP network:

- Create a Token-Ring or an Ethernet line description for the printer using CRTLINTRN or CRTLINETH.
- Add a TCP/IP interface using ADDTCPIFC.
- Add a router definition, if required, using ADDTCPRTE.
- Start TCP/IP using STRTCP.

2. Create a printer device description using CRTDEVPRT (see steps below and the example on page 116).

Note: Only the required fields are listed below.

At the command line, type: CRTDEVPRT and press <F4>. Enter the following information:

Device description (User defined name)	IPDSPRT
Device class	*RMT
Device type	*IPDS
Device model	0

Press <ENTER>

Advanced function printing *YES

Press <ENTER>

AFP attachment *APPC

Press <ENTER>

Font identifier 11
(Font Global ID for Courier 10 CPI)

Form feed *AUTOCUT

Press <ENTER>, then <PAGE DOWN>

Remote location TCP/IP

Press <ENTER> to create the printer device description for the IPDS printer.

- Using CRTPSFCFG, specify the printer's TCP/IP configuration information. This PSF configuration object, which must be saved in library QGPL, overrides the APPC device description just created with the CRTDEVPRC command. See the *example* on page 114.

At the command line, type: CRTPSFCFG and press <F4>. Enter the following information:

PSF Configuration	DEVD	IPDSPRT
	(Same user defined name as before)	
Library		QGPL
IPDS pass through	IPDSPASTHR	*YES
Release timer	RLSTMR	*SEC15

Press <F10>, then <PAGE DOWN> to access the additional parameters.

Remote location	RMTLOCNAME	157.184.67.102
(IP address or remote host name)		

TCP/IP Port	PORT	9100
-------------	------	------

(9100 or 9600 for Standard Network port or MarkNet internal print server)
(9100 for Parallel 1 on MarkNet X2000)
(9102 for Parallel 2 on MarkNet X2000)

Refer to 3.3.14 *IPDS Timeout* on page 32 for further information on the selection of ports.

Press <ENTER> to create the PSF object.

Related information

Vary on the printer device description:

```
VRYCFG CFGOBJ(IPDSPRT) CFGTYPE(*DEV) STATUS(*ON)
```

Start the writer:

```
STRPRTWTR IPDSPRT
```

To PING the device:

```
PING 'ip_address' or PING host_name
```

```
For example, PING '157.184.67.102'
```

To list PSF configuration objects (in the library QGPL), use WRKPSFCFG command.

Command set for PSF configuration objects:

```
CRTPSFCFG - create
```

```
CHGPSFCFG - change (with the writer stopped)
```

```
DSPPSFCFG - display
```

```
DLTPSFCFG - delete (with the writer stopped)
```

9.5.1 Example CRTDEVPRT for OS/400 V3R2

```

Device description . . . . . : DEVD          IPDSPRT
Option . . . . . : OPTION        *BASIC
Category of device . . . . . :           *PRT

Automatically created . . . . . :           NO
Device class . . . . . : DEVCLS    *RMT
Device type . . . . . : TYPE      *IPDS
Device model . . . . . : MODEL     0
Advanced Function Printing . . . . . : AFP      *YES
AFP attachment . . . . . : AFPATTACH *APPC
Online at IPL . . . . . : ONLINE   *YES
Font . . . . . : FONT
  Identifier . . . . . :           011
  Point size . . . . . :           *NONE
Form feed . . . . . : FORMFEED    *AUTOCUT
Separator drawer . . . . . : SEPDRAWER *FILE
Separator program . . . . . : SEPPGM  *NONE
Printer error message . . . . . : PRTERMSG *INQ
Message queue . . . . . : MSGQ     IPDSMSG
  Library . . . . . :           PRTDEV
Maximum pending requests . . . . . : MAXPDRQS 6
Print while converting . . . . . : PRTCVT  *YES
Form definition . . . . . : FORMDF   FC10110
  Library . . . . . :           *LIBL
Character identifier . . . . . : CHRID   *SYSVAL
Remote location . . . . . : RMTLOCNAME TCP/IP
Local location . . . . . : LCLLOCNAME *NETATR
Remote network identifier . . . . . : RMTNETID *NETATR
Mode . . . . . : MODE            QSPWTR
Dependent location name . . . . . : DEPLOCNAME *NONE
Text . . . . . : TEXT           IPDS Printer

```

9.5.2 Example CRTPSFCFG for OS/400 V3R2

```
PSF configuration . . . . . : IPDSPRT
  Library . . . . . : QGPL
User resource library . . . . . : *JOBLIBL
IPDS pass through . . . . . : *YES
Activate release timer . . . . . : *NORDYF
Release timer . . . . . : *SEC15
Restart timer . . . . . : *IMMED
SNA retry count . . . . . : 2
Delay time between retries . . . . . : 0
Blank page . . . . . : *YES
Page size control . . . . . : *NO
Resident fonts . . . . . : *YES
Resource retention . . . . . : *YES
Edge orient . . . . . : *NO
Remote location:
  Name or address . . . . . : 157.184.67.102
TCP/IP port . . . . . : 9100
TCP/IP activation timer . . . . . : 170
PSF defined options . . . . . : *NONE
Text description . . . . . :
Device resource library list . . . . . : *DFT
```

9.6 Printing IPDS from PSF/400 with OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1

Install the latest cumulative PTF fix pack or tape for the system.

- PTF 43310, which is available from IBM, provides a fix for out of paper responses from the printer.

1. Set up and start the TCP/IP network:

- Create a Token-Ring or an Ethernet line description for the printer using CRTLINTRN or CRTLINETH.
- Add a TCP/IP interface using ADDTCPIFC.
- Add a router definition, if required, using ADDTCPRTE.
- Start TCP/IP using STRTCP.

2. Define a PSF configuration object for your printers using CRTPSFCFG. What you define here is referenced in the printer device description (CRTDEVPRT). *More than one printer can use this object. See the example on page 122.*

Note: Only the required fields are listed below.

Type CRTPSFCFG and press <F4>. Enter the following information:

PSF configuration (IPDSPRT is a user defined name.)	PSFCFG	IPDSPRT
	Library	QGPL
IPDS pass through	IPDSPASTHR	*YES
Release timer	RLSTMR	*SEC15
Text 'description'	TEXT	'IPDS Printer'

(Optional)

Note: With V3R7 you enter the TCP/IP address and port number in the printer device description. It is not entered here.

Press <ENTER> to create the PSF object.

3. Create a printer device description for your printer using CRTDEVPRT. See the *example* on page 122.

Note: Only the required fields are listed.

Type CRTDEVPRT and press <F4>. Enter the following information:

Device description (IPDSPRT is a user defined name.)	DEV D	IPDSPRT
Device class	DEVCLS	*LAN
Device type	TYPE	*IPDS
Device model	MODEL	0

Press <ENTER>

LAN attachment	LANATTACH	*IP
----------------	-----------	-----

Press <F9> to get all of the parameters.

Advanced function printing	AFP	*YES
Port number	PORT	9100

(9100 or 9600 for Standard Network port or MarkNet internal print server)
(9100 for Parallel 1 on MarkNet X2000)
(9102 for Parallel 2 on MarkNet X2000)

Refer to 3.3.14 *IPDS Timeout* on page 32 for further information on the selection of ports.

Press <PAGE DOWN> (or <ROLL UP>)

Font: FONT
Identifier 11
(11 is for Courier 10 CPI)

Form feed FORMFEED *AUTOCUT

Press <PAGE DOWN> (or <ROLL UP>)

Activation timer ACTTMR *NOMAX

Press <PAGE DOWN> (or <ROLL UP>)

Press <PAGE DOWN> (or <ROLL UP>)

Remote location RMTLOCNAME
Name or address 157.184.67.102
(IP address or remote host name)

Press <PAGE DOWN> (or <ROLL UP>)

User-defined object: USRDFNOBJ
Object IPDSPRT
Library QGPL
Object type *PSFCFG

Text 'description' TEXT 'IPDS Printer'
(Optional)

Press <ENTER> to create the printer device description.

4. Vary on the device:

VRYCFG CFGOBJ(IPDSPRT) CFGTYPE(*DEV) STATUS(*ON)

5. Start the writer:

STRPRTWTR IPDSPRT

Related information

To end the writer: ENDWTR IPDSPRT

To PING the device: PING 'ip_address' or PING host_name
For example: PING `157.184.67.102`

To list PSF configuration objects (in the library QGPL), use the WRKPSFCFG command.

Command set for PSF configuration objects:

CRTPSFCFG - create

CHGPSFCFG - change (with the writer stopped)

DSPPSFCFG - display

DLTPSFCFG - delete (with the writer stopped)

Note 2: Capture host fonts at printer must be set to *YES and fonts must be marked eligible to be captured before the host will send fonts which can be captured to the printer. See *3.10.1 Capture Fonts* on page 57 and *7 Font Capturing* on page 79 for more details.

9.6.2 Example CRTDEVPRT for OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1

```

Device description . . . . . DEVD          > IPDSPRT
Device class . . . . . DEVCLS          > *LAN
Device type . . . . . TYPE            > *IPDS
Device model . . . . . MODEL          > 0
LAN attachment . . . . . LANATTACH    > *IP
Switched line list . . . . . SWTLINLST
LAN remote adapter address . . . . . ADPTADR
Adapter type . . . . . ADPTTYPE        *INTERNAL
Adapter connection type . . . . . ADPTCNNTYP *PARALLEL
Emulated twinaxial device . . . . . EMLDEV
Advanced Function Printing . . . . . AFP          > *YES
AFP attachment . . . . . AFPATTACH      *WSC
Port number . . . . . PORT            > 9100
Switch setting . . . . . SWTSET
Local location address . . . . . LOCADR
Auxiliary printer . . . . . AUXPRT
Emulating ASCII device . . . . . EMLASCII      *NO
Physical attachment . . . . . ATTACH
Online at IPL . . . . . ONLINE          *YES
Attached controller . . . . . CTL
Language type . . . . . LNGTYPE        *SYSVAL
Print quality . . . . . PRTQLTY        *STD
Font:
  Identifier . . . . .                  > 11
  Point size . . . . .                  *NONE
Form feed . . . . . FORMFEED          > *AUTOCUT
Separator drawer . . . . . SEPDRAWER    *FILE
Separator program . . . . . SEPPGM      *NONE
Library . . . . .
Number of drawers . . . . . NBRDRAWER
Printer error message . . . . . PRTRERRMSG *INQ
Message queue . . . . . MSGQ          IPDSMSG
Library . . . . .                      PRTDEV
Maximum length of request unit . . . . . MAXLENRU *CALC
Application type . . . . . APPTYPE      *NONE
Activation timer . . . . . ACTTMR       > *NOMAX
Inactivity timer . . . . . INACTTMR    *ATTACH
SNA pass-through device desc . . . . . SNPTDEV *NONE
SNA pass-through group name . . . . . SNPTGRP *NONE
Host signon/logon command . . . . . LOGON *NONE
Pacing . . . . . PACING                7
Line speed . . . . . LINESPEED         *TYPE
Word length . . . . . WORDLEN          *TYPE
Type of parity . . . . . PARITY        *TYPE
Stop bits . . . . . STOPBITS           *TYPE
Host Print Transform . . . . . TRANSFORM *NO
Manufacturer type and model . . . . . MFRTYPMDL
Paper source 1 . . . . . PPRSRC1       *MFRTYPMDL
Paper source 2 . . . . . PPRSRC2       *MFRTYPMDL
Envelope source . . . . . ENVELOPE     *MFRTYPMDL
ASCII code page 899 support . . . . . ASCII899 *NO
Maximum pending requests . . . . . MAXPNDRQS 6

```

9.6.3 Example CRTDEVPRT for OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1 (continued)

```

Print while converting . . . . . PRTCVT          *YES
Print request timer . . . . . PRTRQSTMR        *NOMAX
Form definition . . . . . FORMDF              F1C10110
  Library . . . . .                          *LIBL
  Character identifier:          CHRID
  Graphic character set . . . . .             *SYSVAL
  Code page . . . . .
Remote location:              RMTLOCNAME
  Name or address . . . . .                 > 157.184.67.102
Local location . . . . . LCLLOCNAME          *NETATR
Remote network identifier . . . . . RMTNETID  *NETATR
Mode . . . . . MODE                         QSPWTR
Workstation customizing object WSCST        *NONE
  Library . . . . .
Authority . . . . . AUT                      *LIBCRTAUT
User-defined options . . . . . USRDFNOPT     *NONE
User-defined object:         USRDFNOBJ
  Object . . . . .                          > IPDSPRT
  Library . . . . .                          > QGPL
  Object type . . . . .                      > *PSFCFG
Data transform program . . . . . USRDATATFM  *NONE
  Library . . . . .
User defined driver program . . . . . USRDRVPGM *NONE
  Library . . . . .
System driver program . . . . . SYSDRVPGM
Text 'Description' . . . . . TEXT           > 'IPDS PRINTER'
Dependent location name . . . . . DEPLOCNAME *NONE

```

9.7 Printing IPDS from PSF/MVS

The IPDS emulation enables IPDS printing directly from a MVS mainframe. Software requirements for MVS are:

*PSF/MVS Version 2 Release 2.0 with APAR OW15599,OW15018 and OW16442.
OW08340 for font capture.*

PSF/MVS Version 3.1 or later.

*MVS Scheduler APAR OW12236 to support two new PRINTDEV keywords:
IPADDR and PORTNO.*

TCP/IP Version 3 Release 1, or higher installed and configured on MVS.

For an installation description please refer to the IBM publications:

*Print Service Facility/MVS
Update Guide
Version 2, Release 2, Modification 0
Publication No. G544-3984-01*

*Print Services Facility/MVS
System Programming Guide
Version 2, Release 2, Modification 0
Publication No. S544-3672-03*

*PSF V3R1 for OS/390
Customization
Publication No. S544-5622-00*

*PSF V3R1 for OS/390
Licensed Program Specifications
Publication No. G544-5626-00*

*PSF V3R1 for OS/390
Messages and Codes
Publication No. G544-5627-00*

*PSF V3R1 for OS/390
User's Guide
Publication No. S544-5630-00*

9.7.1 Steps to Create a New Printer

1. Define the printer to VTAM.

```
PSFL2450 MODEENT LOGMODE=PSFL2450,  
FMPROF='13',TSPROF='07',PRIPROT='B0',  
SECPROT='B0',COMPROT='D0B1',RUSIZES='87F8'  
PSERVIC='060200000000000000002000'  
PSNDPAC='02,SRVCPAC='02',SSNDPAC='00'
```

2. Define the printer to a JES printer.

a. Example for JES2

```
FSS(FSS1) PROC=PSFPROC,HASPFSSM=HASPFSSM  
PRT7      FSS=FSS1,MODE=FSS,  
          PRMODE=(LINE,PAGE,SOSI1),  
          CLASS=C,UCS=0,SEP,NOSEPDS,CKPTPAGE=100,  
          DRAIN,MARK,TRKCELL=YES
```

b. Example for JES3

```
FSSDEF,TYPE=WTR,FSSNAME=FSS3,PNAME=SAMPLE01,  
SYSTEM=SYS1,TERM=NO,  
DEVICE,DTYPE=PRTAFP1,NAME=PRT7,  
JUNIT=(,SYS1,,OFF),FSSNAME=FSS3,  
MODE=FSS,PM=(LINE,PAGE,SOSI1),CHARS=(YES,GT12),  
CARRIAGE=(YES,A868),CKPNTGP=100,HEADER=YES,  
WC=(C)
```

3. Add the printer to the PSF STARTUP PROC.

```
//PRT7      CNTL  
//PRT7 PRINTDEV FONTDD=* .FONT01, /* FONT /*  
//OVLydd=* .OLAY01, /* OVERLAY /*  
//PSEGDD=* .PSEG02, /* SEGMENT /*  
//PDEFDD=* .PDEF01, /* PAGEDEF /*  
//FDEFDD=* .FDEF01, /* FORMDEF /*  
//JOBHDR=* .JOBHDR, /* JOB HEADER /*  
//JOBTRLR=* .JOBTLR, /* JOB TRAILER /*  
//DSHDR=* .DSHDR, /* DATA SET HEADER /*  
//FORMDEF=A10110, /* FORMDEF /*  
//PMSG=(YES,16), /* MESSAGES /*  
//DATAck=BLOCK, /* BLOCK DATA CHECKS /*  
//TRACE=NO, /* INTERNAL TRACE /*  
//MGMTMODE=OUTAVAIL, /* OUTPUT AVAILABLE /*  
//DISCINTV=15, /* TIMEOUT=15 SECONDS /*  
//TIMEOUT=REDRIVE,  
//FAILURE=WCONNECT, /* ATTEMPT RECONNECT /*  
//IPADDR=157.184.67.102,  
//PORTNO=9100,  
//PRT7 ENDCNTL
```

Refer to the next section for information on selecting DISCINTV and PORTNO.

9.7.2 Printer Sharing Parameters

To enable the printer to start other print jobs from another protocol, interface or server the following parameters on the PRINTDEV statement have to be coded in the PSF STARTUP PROC:

MGMTMODE=OUTAVAIL

DISCINTV=15

TIMEOUT=REDRIVE

FAILURE=WCONNECT

IPADDR=157.184.67.102

(address available from your network administrator)

PORTNO=9100

(9100 or 9600 for Standard Network port or MarkNet internal print server)

(9100 for Parallel 1 on MarkNet X2000)

(9102 for Parallel 2 on MarkNet X2000)

Refer to *3.3.14 IPDS Timeout* on page 32 for further information on the selection of ports.

The value (15) for DISCINTV specifies the time in seconds after which PSF ends the printer session when no output is available. The valid range is from 0 to 8160 seconds. The default value is 0. If DISCINTV=0, the PSF does not end the printer session when no output is available.

The Standard Network port or MarkNet internal print server has a network inactivity timer called **Job Timeout**. The MarkNet X2000 external print server has a network inactivity timer called the **End-of-Job Timeout option**. **In this manual, the expression *End-of-Job Timeout* refers to both times.** The default is 90 seconds. It is recommended that the End-of-Job Timeout is disabled (set to 0) and the DISCINTV is set to 15 seconds, if the printer **IPDS Timeout** value is set to **Host Controlled**.

If the **End-of-Job Timeout** is greater than the DISCINTV value, errors are very likely to occur if the printer requires user intervention. If, on the other hand, the **End-of-Job Timeout** is smaller than the DISCINTV value, an error is certain to occur the first time the MarkNet card times out after a completed print job. Therefore, the **End-of-Job Timeout** should be set to 0 (disabled).

The **End-of-Job Timeout** can be set with the MarkNet configuration procedure. Please refer to the *network adapter manual* which came with your print server.

For activation timeout errors, set the connect timer or activation timer in the PSF settings to 30 second or greater.

9.7.3 Example PSF STARTUP PROC - JCL and PRINTDEV

```
//SAMPLE PROC
//*
//STEP01 EXEC PGM=APSPPIEP,REGION=4096K,TIME=1440
//STEPLIB DD DSN=PSF.LINKLIB,DISP=SHR
//JOBHDR OUTPUT PAGEDEF=V06483, /* JOB HEADER */
// FORMDEF=A10110,CHARS=GT12 /* */
//JOBTLR OUTPUT PAGEDEF=V06483, /* JOB TRAILER */
// FORMDEF=A10110,CHARS=GT12 /* FORMDEF */
//MSGDS OUTPUT PAGEDEF=A08682 /* MESSAGE */
// FORMDEF=A10110,CHARS=GT15 /* */
//*
//FONT01 DD DSN=SYS1.FONTLIB,DISP=SHR/* SYSTEM FONTS */
// DD DSN=INST.FONTLIB,DISP=SHR/* USER FONTS */
//*
//PSEG02 DD DSN=INST.PSEGLIB,DISP=SHR/* PAGE SEGMENTS */
//*
//OLAY01 DD DSN=INST.OVERLIB,DISP=SHR/* OVERLAYS */
//*
//PDEF01 DD DSN=SYS1.PDEFLIB,DISP=SHR/* SYSTEM PAGE DEFS */
// DD DSN=INST.PDEFLIB,DISP=SHR/* PAGE DEFS */
//*
//FDEF01 DD DSN=INST.FDEFLIB,DISP=SHR/* SYSTEM FORM DEFS */
// DD DSN=INST.FDEFLIB,DISP=SHR/* FORM DEFS */
//*
//PRT7 CNTL
//PRT7 PRINTDEV FONTDD=* .FONT01,/* FONT */
// OVLydd=* .OLAY01, /* OVERLAY */
// PSEGDD=* .PSEF02, /* SEGMENT */
// PDEFDD=* .PDEF01, /* PAGEDEF */
// FDEFDD=* .FDEF01, /* FORMDEF */
// JOBHDR=* .JOBHDR, /* JOB HEADER */
// JOBTRLR=* .JOBTLR, /* JOB TRAILER */
// DSHDR=* .DSHDR, /* DATA SET HEADER */
// FORMDEF=A10110, /* FORMDEF */
// PMSG=(YES,16), /* MESSAGES */
// DATAck=BLOCK, /* BLOCK DATA CHECKS */
// TRACE=NO, /* INTERNAL TRACE */
// MGMTMODE=OUTAVAIL, /* OUTPUT AVAILABLE */
// DISCINTV=15, /* TIMEOUT = 15 SECONDS */
// TIMEOUT=REDRIVE, /* */
// FAILURE=WCONNECT, /* ATTEMPT RECONNECT */
// IPADDR=157.184.67.102, /* IP ADDRESS */
// PORTNO=9100, /* PORT NUMBER */
//PRT7 ENDCNTL
```


9.8 Printing IPDS from PSF/2

This section describes how to set up PSF/2 to make it possible to print IPDS data to a LAN attached printer using TCP/IP.

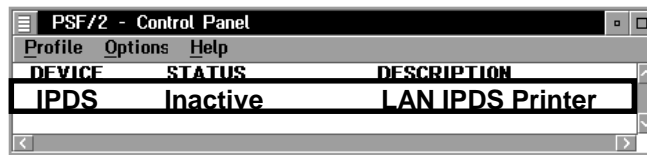
This section does not describe how to connect PSF/2 to an IBM host to receive AFP and IPDS data. Please refer to the *PSF/2 documentation* for a description.

System requirements

OS/2™ version 2.11 or newer
DB/2 version 1.0 or newer
PSF/2 version 2.0 or newer
TCP/IP version 2.0 (CSD UN56401) or newer

How to Create a New Printer

1. Start PSF/2 control panel by selecting the PSF/2 Folder and then selecting the PSF/2 Control Panel icon.



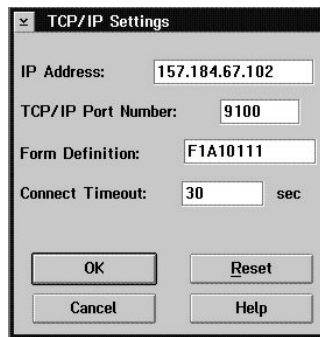
2. On the PSF/2 Control Panel select Profile and then New. The PSF/2 New Device menu appears.

The screenshot shows a dialog box titled "New device" with the following fields and options:

- Device name:** IPDS
- Path:** D:\PSF2\SYSTEM\
- Description:** LAN IPDS Printer
- Attachment Type:** A list box containing "Parallel", "TCP/IP", and "None". A "Settings..." button is located to the right of the list.
- Device Resolution:** A list box containing "300 PEL", "240 PEL", and "900 PEL".
- Buttons:** "Create", "Cancel", and "Help".

Enter the device name and the device description and select a Device Resolution of 300 pel.

3. Select TCP/IP as Attachment Type and select Settings. The TCP/IP Settings menu appears.



The screenshot shows a dialog box titled "TCP/IP Settings". It contains the following fields and values:

- IP Address: 157.184.67.102
- TCP/IP Port Number: 9100
- Form Definition: F1A10111
- Connect Timeout: 30 sec

At the bottom of the dialog are four buttons: OK, Reset, Cancel, and Help.

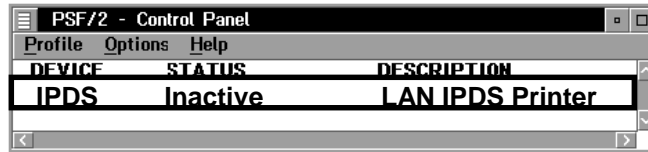
Enter the IP address of the printer. The IP address should be obtained from your network administrator. The TCP/IP port number entered must be either 9100, 9102, or 9600.

9100 or 9600 for Standard Network port or MarkNet internal print server
9100 for Parallel 1 on MarkNet X2000
9102 for Parallel 2 on MarkNet X2000

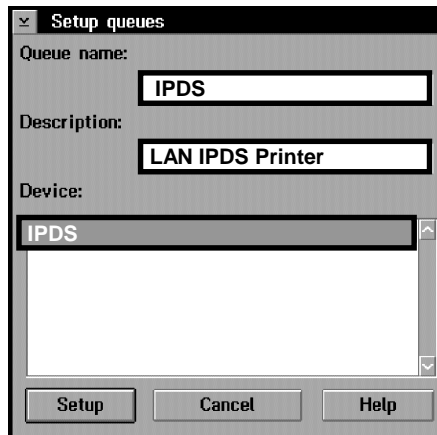
Refer to *3.3.14 IPDS Timeout* on page 32 for further information on the selection of ports.

Select OK and then Create. The PSF/2 printer device is now created and is ready to print from a PSF/2 connected IBM host.

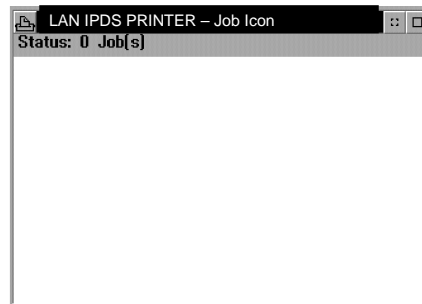
4. On the PSF/2 Control Panel select Options and Setup queues.



The Setup queues menu will appear. It will be blank at first. Enter the Queue name, description and select the Device and then select Setup.



An OS/2 printer queue is now created and the printer is ready to print IPDS from OS/2 and a PSF/2 connected host.



Note: You can check the connection using the PSF/2 Print Submitter. A number of AFP print files are delivered with the PSF/2 package. Any of these files can be submitted to the newly created print queue.

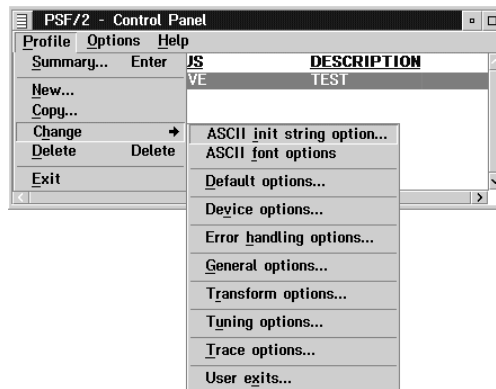
9.9 Printer Sharing in the PSF/2 Environment

To enable the printer to start other print jobs from another protocol, interface or server, the PSF/2 tuning option Job Interval Shutdown Timer is used.

Important: The End-of-Job Timeout has to be disabled (set to 0) in order to prevent the print server or adapter from releasing the TCP/IP protocol. See *Setting the End-of-Job Timeout* on page 101.

Use the following steps to set the Job Interval Shutdown Timer option:

1. Start the PSF/2 control panel by selecting the PSF/2 folder and then the PSF/2 Control Panel icon.
2. On the PSF/2 Control Panel select Profile and then Change.



3. Now select Tuning options.

The screenshot shows a dialog box titled "Tuning Options". It has a dropdown arrow in the top-left corner. The settings are as follows:

Setting	Value
Font pruning	<input checked="" type="checkbox"/>
ACK interval:	100
Job interval shutdown timer:	30
Maximum memory [in kilobytes]:	512
Retain fonts:	10
Retain overlays:	0
Retain page segments:	0

Buttons at the bottom: Change, Cancel, Help, Reset, Default.

The Job Interval Shutdown Timer indicates the number of seconds PSF/2 waits before shutting down when there are no jobs in the queue. In other words this is the amount of time that PSF/2 remains active after the last job is printed.

Valid values: integers 1 to 9999
1-9998 time in seconds to wait between jobs
9999 wait indefinitely for the next job to be received.

If you are using the Standard Network port or a MarkNet internal print server and set the printer **IPDS Timeout** value to **Host Controlled**, the recommended value is 30 seconds.

9.10 Printing IPDS from PSF/AIX

To create a new IPDS printer definition in PSF/AIX perform the following actions:

1. Execute the command `smit psf_add_prt_tcpip` to get the PSF/AIX SMIT Printer Definition for TCP/IP attached printers.
2. Answer the following:

Printer NAME:

Enter a name for the IPDS printer. This name will also be used for the print queue associated with the printer.

Internet ADDRESS:

Enter the host name (preferred) or IP address you have assigned to the MarkNet adapter (e.g. 157.184.67.102). If you use the host name, PSF/AIX will resolve it into an IP address either through the Host file or through a Domain Naming Service (DNS) Server.

PORT Number:

Must be set to 9100, 9102, or 9600

(9100 or 9600 for Standard Network port or MarkNet internal print server)
(9100 for MarkNet X2000)
(9102 for Parallel 2 on MarkNet X2000)

Refer to *3.3.14 IPDS Timeout* on page 32 for further information on the selection of ports.

Number of QUEUE DEVICES:

Leave this at the default value (4 devices) initially. You can tune this option later, according to the throughput of the printer.

Connect TIMEOUT:

Initially leave this at the default value (30 seconds). Refer to the *PSF/AIX on-line help* for information about when to increase this value.

DESCRIPTION:

Enter an optional description for the printer.

3. Press Enter to create the new IPDS printer definition.

Note: You can check the connection by using the **enq** command to place jobs in the queue. Example:

```
enq -P'psfqueue' -odatatype=AFPDS /etc/motd
```

You can also use the command `smit psf_data_type_sel` to queue the job.

See also the *Installing a TCP/IP-attached IPDS printer* in the IBM AIX *Print Service Facility/6000: Print Administration Version 1.2* manual for further information about this task.

10 Using the IPDS Emulation with the Adapter for SCS

Note: The steps outlined for setting up parameters on an AS/400 or Mainframe may be different on your system. Examples showing parameters displayed on an AS/400 or Mainframe may be different than the parameters displayed on your system.

10.1 Using the Coax/Twinax Adapter for SCS

This section describes how to set up the Adapter for SCS to make it possible to print IPDS data to either a direct coaxially attached printer or a direct twinaxially attached printer. Please refer to *Appendix A. Technical Specifications*, page 165 for a list of compatible hardware attachments and supported host software.

Adapter for SCS Code Levels Required

H01-9072 (or greater) for coax
H02-8491 (or greater) for twinax

To see the **Adapter for SCS code level**, you need to use the printer's operator panel. The last four digits (in "8491") are the ones you want to be greater than or equal to.

To print a **Firmware Summary**, follow these steps

1. When **Ready** or **Power Saver** displays in the operator panel, press **Menu>** to move to **NETWORK MENU**. Press **Select**. You will then see **NETWORK OPTION 1**, **NETWORK OPTION 2** or **NETWORK OPTION 3** display. Pick the number corresponding to the option slot the adapter is installed in. Press **Select**.
2. Press **Menu>** until you see **SCS MENU 1**, **SCS MENU 2** or **SCS MENU 3** display.
3. Press **Select**. Press **Menu>** until you see **TESTS OPTIONS**.
4. Press **Select**. **Firmware Summary** displays. Press **Select**.

5. Press **Menu**> until you see **Print**. Press **Select**. A short report listing the revision numbers will print.

Important: The IPDS emulation may be shared by IPDS hosts connected to the printer using the Adapter for SCS (Coax or Twinax attachment) and IPDS hosts connected to the printer using the Standard Network port or a MarkNet internal print server or MarkNet X2000 external print server. When sharing the printer between these types of connections, the IPDS emulation will delete downloaded resources from one host session before beginning another session.

Example

IPDS resources have been downloaded during a session with a host connected through the Adapter for SCS card (Coax or Twinax attachment). These resources will be deleted by the IPDS emulation when an IPDS job is received from a LAN attached host. When another IPDS job is received through the Adapter for SCS card, the printer will return a Printer Reset exception to the host. The host will download the resources again with the next IPDS job.

Note: When using the Coax/Twinax Adapter for SCS in a printer with the IPDS emulation installed, the Coax or Twinax Timeout value overrides the **IPDS Timeout** value.

10.2 Using the Coax Interface with IPDS

Note: When coax attached, the Adapter for SCS will, by default, use the IPDS emulation if the IPDS emulation is installed. If you install a new Adapter for SCS in a printer with the IPDS emulation (and vice versa), you do not need to configure the Adapter for SCS to use the IPDS emulation.

10.3 IPDS Enabled Setting

This is a setting on the Adapter for SCS, which only appears when the IPDS emulation is detected in the printer. The default is “Yes” (IPDS is enabled).

From the printer operator panel, do the following:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **NETWORK OPTION 1** displays. Press **Select**. (This example assume the Adapter for SCS is installed in option connector 1.)
3. Press **Menu>** until you see **SCS MENU 1**. Press **Select**.
4. Press **Menu>** until you see **IPDS OPTION**. Press **Select**.

Here you find the setting:

IPDS Enabled	Yes*
	No

To pass IPDS data to the IPDS emulation, select “Yes”.

To disable support of IPDS printing, select “No”.

Note: Changes to this setting become active only after the printer is powered OFF and then powered ON.

10.4 Changing the Coax Timeout Value (For Reference Only)

If necessary you can change the Coax Timeout value by following these steps:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **NETWORK OPTION 1**, **NETWORK OPTION 2** or **NETWORK OPTION 3** displays. The number corresponds to the number of the option connector the Adapter for SCS occupies. Press **Select**.
3. Press **Menu>** until you see **SCS MENU 1**, **SCS MENU 2** or **SCS MENU 3**. Press **Select**.
4. Press **Menu>** until you see **SCS OPTIONS**. Press **Select**.
5. Press **Menu>** until you see **MISC. SETTINGS**. Press **Select**.
6. Press **Menu>** until you see **Coax Timeout**. Press **Select**. Enter a value from 0 to 255. Press **Select**. The default is 0 seconds (disabled). You can specify how long the adapter will wait before closing the connection to the host.

10.5 Verifying the Coax Interface with the IPDS Emulation

To verify the Adapter for SCS configuration, print a *SCS IDB dump* page. Follow these steps:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **NETWORK OPTION 1** displays. Press **Select**. (This example assumes the Adapter for SCS is installed in option connector 1.)
3. Press **Menu>** until **SCS MENU 1** displays. Press **Select**.
4. Press **Menu>** until you see **TEST OPTIONS**. Press **Select**.
5. Press **Menu>** until you see **SCS IDB DUMP**. Press **Select**.
6. Press **Menu>** until you see **Print**. Press **Select**.

The printer returns to **Ready** when the IDB Dump has been printed.

The SCS IDB dump contains all the current adapter settings including the IPDS Enabled setting and the current Adapter for SCS firmware level. Look for the sentence near the top of the page telling you whether IPDS is active or not active.

Additional Information

Please refer to the *Adapter for SCS, Coax/Twinax Connection, Installation and User's Guide* for a detailed description on how to set up the Adapter for SCS.

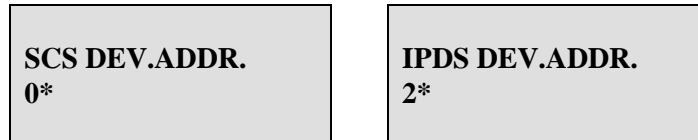
10.6 Using the Twinax Interface with IPDS

When twinax attached, the Adapter for SCS will, by default, NOT use the IPDS emulation if it is installed in the printer. The Adapter for SCS must be configured to use the IPDS emulation before it connects to the host.

10.7 Dual Addresses with the Twinax Interface

When installing a Card containing the IPDS emulation and Coax/Twinax Adapter for SCS into a printer, it is possible to use both the IPDS emulation and the SCS emulation in the Adapter for SCS simultaneously. To use both emulations, supply the IPDS emulation and the SCS emulation in the Adapter for SCS with two different twinax addresses.

In the operator panels shown here, address 0 is for the SCS emulation in the Adapter for SCS and address 2 is for the IPDS emulation. *See the next few pages for instructions on how to change the addresses.*



Note: If the IPDS emulation and the SCS emulation in the Adapter for SCS are given the same address, the SCS emulation in the Adapter for SCS is used and the IPDS emulation is ignored. The word **DUPLICATE** is displayed in the operator panel.

10.8 Twinax Interface Settings

Only three setting options have to be considered to set up the Adapter for SCS for IPDS operation:

SCS Device Address
IPDS Device Address
IPDS Buffer Sizes

Note: Be certain to set the correct twinax address for both the SCS address in the Adapter for SCS and the IPDS address before physically connecting your printer to the twinax wiring system. If you were to incorrectly enter the same address used by another device, you would disable that device. **If you do not know your printer's correct address, contact your network administrator.**

10.9 SCS Device Address Setting

The **SCS Device Address** is used to select the twinax device address for the SCS emulation or to disable the SCS emulation if you don't want to use it. From the printer operator panel, do the following:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** to display **NETWORK OPTION 1**. Press **Select**. (This example assumes the Adapter for SCS is installed in option connector 1.)
3. Press **Menu>** to display **SCS MENU 1**. Press **Select**.
4. Press **Menu>** to display **SCS OPTIONS**. Press **Select**.
Press **Menu>** until you find the following setting:

SCS Dev. Addr. 0
(Address can be "0" – "6" or "Disable")

Note: If the IPDS emulation and the SCS emulation in the Adapter for SCS are given the same address, the SCS emulation in the Adapter for SCS is used and the IPDS emulation is ignored. The word **DUPLICATE** is displayed in the operator panel.

10.10 IPDS Device Address and IPDS Buffer Sizes Settings

These settings for the Adapter for SCS only appear when the IPDS emulation is detected in the printer.

The **IPDS Device Address** is used to select the twinax address for the IPDS emulation or to disable the IPDS emulation. **IPDS Buffer Sizes** is used to select the size of the data/command buffer used by the IPDS emulation when receiving data/commands from the twinax host.

From the operator panel, do the following:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** to display **NETWORK OPTION 1**. Press **Select**. (This example assumes the Adapter for SCS is installed in option connector 1.)
3. Press **Menu>** to display **SCS MENU 1**. Press **Select**.
4. Press **Menu>** to display **IPDS OPTIONS**. Press **Select**. Press **Menu>** until you find the following settings:

IPDS Dev. Addr. 2
(Address can be “0” – “6” or “Disable”)

Note: If the IPDS emulation and the SCS emulation are given the same address, the SCS emulation will be used and the IPDS emulation will be ignored. The word **DUPLICATE** will display in the operator panel.

IPDS Buf. Size 256
(256 or 1024)

Note: The 1024 byte buffer has the fastest transfer rate, but it isn't compatible with some older IBM equipment.

IPDS Buf. Size appears as an option in the printer panel only if the **IPDS Dev. Addr.** is enabled (address = 0 - 6).

10.11 Changing the Twinax Timeout Value (For Reference Only)

If necessary you can change the Twinax Timeout value by following these steps:

1. Press **Menu>** until **NETWORK MENU** displays. Press **Select**.
2. Press **Menu>** until **NETWORK OPTION 1**, **NETWORK OPTION 2** or **NETWORK OPTION 3** displays. The number corresponds to the number of the option connector the Adapter for SCS occupies. Press **Select**.
3. Press **Menu>** until you see **SCS MENU 1**, **SCS MENU 2** or **SCS MENU 3**. Press **Select**.
4. Press **Menu>** until you see **SCS OPTIONS**. Press **Select**.
5. Press **Menu>** until you see **Twinax Timeout**. Press **Select**. The default is 10 seconds. You can specify how long the adapter will wait before closing the connection to the host.

10.12 Twinax device description

When you let the AS/400 auto-create your IPDS device, you will need to alter the following parameters to enable full IPDS printing:

"default" values:

Advanced Function Printing	AFP	*NO
Form Feed	FORMFEED	*CONT

"altered" values:

Advanced Function Printing	AFP	*YES
Form feed	FORMFEED	*AUTOCUT

10.12.1 Example CRTDEVPR for OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1 (locally attached)

```

Device description . . . . . DEVD          > IPDSPRT
Device class . . . . . DEVCLS          > *LCL
Device type . . . . . TYPE            > *IPDS
Device model . . . . . MODEL          > 0
LAN attachment . . . . . LANATTACH    *LEXLINK
Switched line list . . . . . SWTLINLST
LAN remote adapter address . . . . . ADPTADR
Adapter type . . . . . ADPTTYPE      *INTERNAL
Adapter connection type . . . . . ADPTCNNTYP *PARALLEL
Emulated twinaxial device . . . . . EMLDEV
Advanced Function Printing . . . . . AFP          > *YES
AFP attachment . . . . . AFPATTACH    *WSC
Port number . . . . . PORT           > 2
Switch setting . . . . . SWTSET       > 0
Local location address . . . . . LOCADR
Auxiliary printer . . . . . AUXPRT
Emulating ASCII device . . . . . EMLASCII      *NO
Physical attachment . . . . . ATTACH
Online at IPL . . . . . ONLINE        *YES
Attached controller . . . . . CTL      > CTL01
Language type . . . . . LNGTYPE      *SYSVAL
Print quality . . . . . PRTQLTY      *STD
Font:
  Identifier . . . . .                > 11
  Point size . . . . .                *NONE
Form feed . . . . . FORMFEED         > *AUTOCUT
Separator drawer . . . . . SEPDRAWER *FILE
Separator program . . . . . SEPPGM    *NONE
  Library . . . . .
Number of drawers . . . . . NBRDRAWER
Printer error message . . . . . PRTERMSG    *INQ
Message queue . . . . . MSGQ          QSYSOPR
  Library . . . . .                  *LIBL
Maximum length of request unit . . . . . MAXLENRU *CALC
Application type . . . . . APPTYPE     *NONE
Activation timer . . . . . ACTTMR      > *NOMAX
Inactivity timer . . . . . INACTTMR   *ATTACH
SNA pass-through device desc . . . . . SNPTDEV *NONE
SNA pass-through group name . . . . . SNPTGRP *NONE
Host signon/logon command . . . . . LOGON *NONE
Pacing . . . . . PACING               7
Line speed . . . . . LINESPEED        *TYPE
Word length . . . . . WORDLEN         *TYPE
Type of parity . . . . . PARITY       *TYPE
Stop bits . . . . . STOPBITS          *TYPE
Host Print Transform . . . . . TRANSFORM *NO
Manufacturer type and model . . . . . MFRTYPMDL
Paper source 1 . . . . . PPRSRC1      *MFRTYPMDL

```

10.12.2 Example CRTDEVPRT for OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1 (locally attached, continued)

```

Paper source 2 . . . . . PPRSRC2          *MFRTYPMDL
Envelope source . . . . . ENVELOPE        *MFRTYPMDL
ASCII code page 899 support . . ASCII899  *NO
Maximum pending requests . . . . . MAXPNDRQS 6
Print while converting . . . . . PRTCVT     *YES
Print request timer . . . . . PRTRQSTMR    *NOMAX
Form definition . . . . . FORMDF          F1C10110
Library . . . . .                          *LIBL
  Character identifier:                CHRID
  Graphic character set . . . . .        *SYSVAL
  Code page . . . . .
Remote location:                      RMTLOCNAME
  Name or address . . . . .
Local location . . . . . LCLLOCNAME       *NETATR
Remote network identifier . . . . . RMTNETID *NETATR
Mode . . . . . MODE                      QSPWTR
Workstation customizing object WSCST     *NONE
  Library . . . . .
Authority . . . . . AUT                  *LIBCRTAUT
User-defined options . . . . . USRDFNOPT  *NONE
User-defined object:                  USRDFNOBJ
  Object . . . . . > IPDSPRT
  Library . . . . . > QGPL
  Object type . . . . . > *PSFCFG
Data transform program . . . . . USRDTATFM *NONE
  Library . . . . .
User defined driver program . . . . . USRDRVPGM *NONE
  Library . . . . .
System driver program . . . . . SYSDRVPGM
Text 'Description' . . . . . TEXT        > 'IPDS PRINTER'
Dependent location name . . . . . DEPLOCNAME *NONE

```

Additional Information

Please refer to the *Adapter for SCS, Coax/Twinax Connection, Installation and User's Guide* for a detailed description on how to set up the Adapter for SCS.

10.12.3 Example CRTPSFCFG for OS/400 V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1

```

PSF configuration . . . . . PSFCFG      > IPDSPRT
  Library . . . . .                > QGPL
User resource library list . . . . . USRRSCLIBL  *JOBLIBL
Device resource library list . . . . . DEVRSLIBL  *DFT
IPDS pass through . . . . . IPDSPASTHR  > *YES
Activate release timer . . . . . ACTRLSTMR  *NORDYF
Release timer . . . . . RLSTMR          > *SEC15
Restart timer . . . . . RESTRTMR        *IMMED
SNA retry count . . . . . RETRY         2
Delay time between SNA retries . . . . . RETRYDLY 0
Text 'description' . . . . . TEXT       > 'IPDS Printer'

```

Additional Parameters

```

Blank page . . . . . BLANKPAGE        *YES
Page size control . . . . . PAGESIZCTL  *NO
Resident fonts . . . . . RESFONT       *YES
Resource retention . . . . . RSCRET      *YES
Edge orient . . . . . EDGEORIENT       *NO
Remote location:
  Name or address . . . . .           > *NONE
TCP/IP port . . . . . PORT             > *NONE
TCP/IP activation timer . . . . . ACTTMR 170
Use outline fonts . . . . . USEOUTLFNT  *NO           (See note 1 below)
Capture host fonts at printer . . . . . FNTCAPTURE *NO           (See note 2 below)
PSF defined option . . . . . PSFDFNOPT  *NONE
Replace . . . . . REPLACE              *YES
Authority . . . . . AUT                 *LIBCRTAUT

```

Note 1: Use outline fonts controls the type of fonts downloaded to the printer. When set to *YES, outline fonts are downloaded to the printer. When set to *NO, raster fonts are downloaded to the printer. When the outline or raster fonts are marked eligible for capture on the host, the host will send fonts which can be captured at the printer.

Note 2: Capture host fonts at printer must be set to *YES and fonts must be marked eligible to be captured before the host will send fonts which can be captured to the printer. See 3.10.1 *Capture Fonts* on page 57 and 7 *Font Capturing* on page 79 for more details.

11 Printer Messages and Problems

Review these problems and solutions for possible answers to your questions.

Use the table below if you are searching for information on a printer message.

Message (bold) or Problem	Problem Reference	Page
1565 EMUL ERROR	15	162
36 Resolution Reduced	2	154
38I Memory Full	5	157
Adapter for SCS	6	158
Bad Memory System	10	160
Busy	1	150
Connector Locations for Options	6	158
Fatal Error	1	150
Intervention Required messages	9	159
Job Buffering	11	160
Memory Full	5	157
Menus Disabled	4	150
Not enough memory for IPDS	12	160
PostScript jobs don't print	7	158
PCL jobs don't print	7	158
Recycle PWR to activate value	13	161
Remote output queue	8	159
Resources Lost	14	161
Timeout (IPDS Timeout; Busy Timeout etc.)	1	150

Problem 1: fatal error in print queue; incorrect Busy / Timeout

The print queue stops with a fatal error which requires operator intervention or the printer stays Busy and displays IPDS even when no IPDS jobs are printing.

Solution to Problem 1

The host still has control of the printer.

You need to adjust **the Adapter for SCS timeout**, the **end-of-job timeout on your network adapter**, the printer **IPDS Timeout** value, the **host port value**, or the **appropriate timer/timeout value on your IPDS host**.

You may have to adjust a combination of these to solve the problem.

Adapter for SCS timeout

See page 140 for a description of how to change the **Coax Timeout** value for the Adapter for SCS.

See page 145 for a description of how to change the **Twinax Timeout** value for the Adapter for SCS.

Standard Network port, MarkNet internal print server or MarkNet X2000 external print server end-of-job-timeout

The recommended setting for the **Standard Network port, MarkNet internal print server** or MarkNet X2000 **external print server end-of-job-timeout** is 0 (disabled). This allows the **host timer/timeout** value or printer **IPDS Timeout** value (when using the Standard Network port or a MarkNet internal print server only) to control when print jobs from another protocol, interface, server, or host can be started.

You may set the Standard Network port, MarkNet **internal print server** or MarkNet X2000 **external print server end-of-job-timeout** to a value greater than the **host timer/timeout value** or printer **IPDS Timeout** value (only when using Standard Network port or MarkNet internal print server). Errors are very likely to occur when the printer requires user intervention and the intervention is not cleared before the **end-of-job-timeout** occurs.

Setting the **Standard Network port**, MarkNet **internal print server** or MarkNet X2000 **external print server end-of-job-timeout** smaller than the **host timer/timeout value** or printer **IPDS Timeout** value (only when using the Standard Network port or a MarkNet internal print server) will result in communication errors after the job has printed.

For additional information on setting the **end-of-job-timeout**, refer to *9 Using the IPDS Emulation with a LAN Print Server* on page 99.

MarkNet X2000 Busy Timeout

The recommended setting for the MarkNet X2000 **Busy Timeout** is 0 (disabled). This allows the **host timer/timeout** value to control when print jobs from another protocol, interface, server, or host can be started.

You may set the MarkNet X2000 **Busy Timeout** to a value greater than the **host timer/timeout** value. Errors are very likely to occur when the printer requires user intervention and the intervention is not cleared before the **end-of-job-timeout** occurs.

Setting the MarkNet X2000 **Busy Timeout** smaller than the **host timer/timeout** value will result in communication errors after the job has printed.

For additional information on setting the **Busy Timeout**, refer to

9.3.4 Setting the MarkNet X2000 Busy Timeout on page 105.

IPDS Timeout = Host Controlled (when using Standard Network port, MarkNet internal print server or MarkNet X2000)

Note: The printer defaults to **Host Controlled** when receiving IPDS jobs on port 9100 or 9102.

If you selected any other **IPDS Timeout** value, go to *IPDS Timeout = 15 seconds to 10 minutes* on page 152.

If you selected the **IPDS Timeout** value of **Host Controlled** to allow the host to directly control ending (disconnecting) a LAN session, follow the steps below to correct the problem.

1. Adjust the **Standard Network port**, MarkNet **internal print server** or MarkNet X2000 **external print server timeout** value to 0 (disabled). See 9 *Using the IPDS Emulation with a LAN Print Server* on page 99 for additional information.

2. Adjust the MarkNet X2000 **Busy Timeout** to (0) disabled. See

9.3.4 *Setting the MarkNet X2000 Busy Timeout* on page 105 for additional information.

3. Change the **host port setting** to 9100, 9102, or 9600. Refer to 3.3.14 *IPDS Timeout* on page 32 for further information on the selection of ports.

4. Correct the appropriate **host timer/timeout** value as shown below.

PSF/400 with OS/400 V3R1 or V3R6

WRKAFP2: Inactivity Timer (INACTTMR) *SEC15 or *SEC30

PSF/400 with OS/400 V3R2, V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, or V5R1

CRTPSFCFG: Release Timer (RLSTMR) *SEC15 or *SEC30

PSF/MVS

PSF Startup Proc: Disconnect Interval (DISCINTV) 15 seconds

PSF/2

TCP/IP Settings: Connect Timeout 30 seconds

Tuning Option: Job Interval Shutdown Timer 30 seconds

PSF/AIX

SMIT Printer Def: Connect Timeout 30 seconds

IPDS Timeout = 15 seconds to 10 minutes (when using the Standard Network port or a MarkNet internal print server only)

If you selected the **IPDS Timeout** value of **Host Controlled** to allow the host to directly control ending (disconnecting) a LAN session, go to *IPDS Timeout = Host Controlled* on page 151.

If you selected an **IPDS Timeout** value of **15 seconds** to **10 minutes** to allow the printer IPDS emulation to determine when an IPDS LAN session times out, follow the steps below to correct the problem.

1. Adjust the **Standard Network port** or MarkNet **internal print server end-of-job timeout** value to 0 (disabled). See *9 Using the IPDS Emulation with a LAN Print Server* on page 99 for additional information.
2. Change the **host port setting** to 9600. Refer to *3.3.14 IPDS Timeout* on page 32 for further information on the selection of ports.
3. Correct the appropriate **host timer/timeout** value as shown below.

Note: The host timer/timeout values below should not be used with a host port value of 9100 or 9102.

PSF/400 with OS/400 V3R1 or V3R6

WRKAFP2: Inactivity Timer (INACTTMR) *NOMAX

PSF/400 with OS/400 V3R2, V3R7, V4R1, V4R2, V4R3, V4R4, V4R5 or V5R1

CRTPSFCFG: Release Timer (RLSTMR) *NOMAX

PSF/MVS

PSF Startup Proc: Disconnect Interval (DISCINTV) 0

PSF/2

TCP/IP Settings: Connect Timeout 0

Tuning Option: Job Interval Shutdown Timer 9999

PSF/AIX

SMIT Printer Def: Connect Timeout 0

Problem 2: 36 Resolution Reduced

The message **36 Resolution Reduced** displays and the printer stops.

Solution to Problem 2

The printer memory is full and the page cannot be printed at the selected IPDS Resolution. Press **Go** and the page is printed at a lower resolution. If this is a constant problem and you want to print at the higher resolution, you need to add more memory to the printer.

This message is an informational message on some models. The printer will display the message and continue printing the job without operator intervention. If this message continues to appear when printing jobs, add more memory to the printer.

For information on the minimum recommended installed memory, see *Appendix C. Recommended memory* on page 189.

Problem 3: IPDS memory exception

Sometimes an IPDS memory exception is reported to the host.

Solution to Problem 3

The memory may be used by PCL or PostScript. It cannot be used by IPDS. You need to do one or more of the following:

- A.** Set **Resource Save** to “Off” to allow permanent downloaded resources from PostScript and PCL jobs to be deleted. Resource Save is found under **SETUP MENU** on the printer operator panel. Try reprinting the job after powering the printer OFF and ON.
- B.** There may be insufficient printer memory to print the IPDS job with the selected IPDS resolution. Select a lower IPDS Resolution and try reprinting the job. If using the Adapter for SCS, you must power the printer OFF and ON for this change to take effect.
- C.** There may be insufficient printer memory to temporarily store IPDS resources and print non-IPDS jobs. Add more memory to the printer. For information on the minimum recommended installed memory, see *Appendix C. Recommended memory* on page 189.
- D.** The host may be downloading more IPDS resources than can be held in the printer’s memory. Add more memory to the printer. For information on the minimum recommended installed memory, see *Appendix C. Recommended memory* on page 189.

Problem 4: Can't cancel job; menus disabled

I can't cancel an IPDS job from the printer operator panel. When I try to enter the menus with <Menu or Menu>, I get the message **Menus Disabled**.

Solution to Problem 4

You must be in an IPDS session (IPDS displayed on the front panel) to cancel an IPDS job. To cancel an IPDS job you press **Stop, Stop, Select, Go**.

For further information, refer to *6 IPDS Job Cancel* on page 77.

Problem 5: Memory Full; 38I Memory Full

Sometimes the messages (**38I Memory Full** or **Memory Full**) display on the printer operator panel and the connection with the printer is lost. What do these messages mean? What should I try?

Solution to Problem 5

38I Memory Full - this message is generated when there is insufficient memory to print the page.

Memory Full - this message means the printer could not reestablish connection to PSF, the resources have been lost. The printer is disconnected from the host.

These messages appear because there is insufficient memory to print the IPDS job or to temporarily store the resources. The memory is probably being used to store PostScript, PCL and/or IPDS resources.

- A. Set **Resource Save** to “Off” to allow permanent downloaded resources from PostScript and PCL jobs to be deleted. **Resource Save** is found under **SETUP MENU** on the printer operator panel. Try reprinting the job after powering the printer OFF and then ON.
- B. Add more memory to the printer.
- C. If a LAN connection is used through the Standard Network port or a MarkNet internal print server card, try setting **IPDS Timeout** to **Host Controlled** and set the **host release timer** to a small value. This means that the host deletes the downloaded IPDS resources when disconnecting. When a new IPDS job is sent from the host new IPDS resources are downloaded to the printer.

Problem 6: Slot Locations for Options (Adapter for SCS)

If I want to work with the menus for the Adapter for SCS, how do I know whether to choose **NETWORK OPTION 1**, **NETWORK OPTION 2** or **NETWORK OPTION 3**?

Solution to Problem 6

- A. Press **Menu>** until you see **UTILITIES MENU**. Press **Select**.
- B. Press **Menu>** until you see **Print Menus**. Press **Select**. The operator panel displays the message **Printing Menu Settings**. A listing of the menu settings indicating what options are installed in the different connectors prints.

Tip: Place a label on the front of the printer indicating the connector locations of all installed options.

Problem 7: Large or complex PostScript or PCL jobs don't print after installing IPDS emulation

Before installing the IPDS emulation, my PostScript and PCL jobs printed correctly. Now some large PostScript and PCL jobs don't print.

Solution to Problem 7

- A. If you have set host and printer settings to temporarily store IPDS resources when printing non-IPDS jobs, change these settings to allow the host to delete the IPDS resources before printing non-IPDS jobs. See *IPDS Timeout* on page 32 for more information on setting printer values and the appropriate host installation section to change the host timeout value.
- B. Add more memory to the printer. This will allow IPDS resources to be temporarily stored and more complex non-IPDS jobs to print.

Problem 8: Remote output queue (name clash)

I'm trying to set up a remote printer with the Standard Network port or a MarkNet internal print server or MarkNet X2000 external print server (named IPDSPRT) from my AS/400. When I try to print to it, I get an error message such as:

“All sessions ended for device IPDSPRT”

“Bind sense code ... received for mode QSPWTR device IPDSPRT”

“Writer...did not end normally”

Solution to Problem 8

A remote output queue created using CRTOUTQ and a PSFCFG device created using WRKAFF2 or CRTPSFCFG have the same user defined name. You must use a unique name for the remote output queue for an ASCII device using TCP/IP and the AS/400 Host Print Transform. This cannot be the same name used to define the printer as an IPDS printer with WRKAFF2 or CRTPSFCFG.

Problem 9: Intervention Required messages

Intervention Required messages (printer offline, paper jam, out of paper, cover open, etc.) from the printer are causing problems on the IPDS host.

Solution to Problem 9

You can suppress this message reporting by selecting "Do Not Report" for **Intervention Required**. You would then rely on users noticing the status of the printer.

Problem 10: Bad Memory System

The message **Bad Memory System** displays and the printer stops.

Solution to Problem 10

The IPDS memory has been corrupted. Power the printer OFF and then ON.

Problem 11: Job Buffering (= On or = Off?)

IPDS jobs will not work with **Job Buffering** set to **On**.

Solution to Problem 11

The host expects immediate responses from the printer during IPDS job processing. Buffering an IPDS job to the disk delays the return of these responses.

Set **Job Buffering** to **Off** under the **STANDARD NETWORK** or **NETWORK OPTION X** menu.

Problem 12: Not enough memory for IPDS

I get the message **Not enough memory for IPDS**.

Solution to Problem 12

The IPDS emulation requires a minimum of 16 MB of installed memory. Add additional memory to activate IPDS printing. If less than 16 MB is installed, the **IPDS Menu** settings can still be accessed and configured, but IPDS jobs can not be printed from the host. Jobs may be printed using other emulations.

Problem 13: Recycle PWR to activate value

I get the message **Recycle PWR to activate value**.

Solution to Problem 13

A host session was established and was idle when you changed settings. The settings changed had already been reported to the host.

Power the printer OFF then ON. This causes the host to request the new printer settings.

Problem 14: Resources Lost

The message **Resources Lost** appears on the display before an IPDS job prints.

Solution to Problem 14

IPDS resources were deleted by the printer.

- A. Try to determine what is causing the resources to be deleted. See *3.3.14 IPDS Timeout* on page 32 for additional information.
- B. Non-IPDS jobs may cause IPDS resources to be deleted. Add additional memory.
- C. Refer to *Appendix C. Recommended memory* on page 189 for minimum total recommended memory for each resolution setting and for special situations.

Problem 15: 1565 EMUL ERROR LOAD EMUL OPTION

1565 EMUL ERROR LOAD EMUL OPTION appears on the display after updating the printer code.

Solution to Problem 15

The IPDS emulation version contained in the Card will not function with the printer code. Download the correct IPDS emulation version. The correct version may be found on the IBM Printing Systems home page.

12 Warranty

The limited warranty you received with your printer gives warranty terms and conditions. For warranty information, refer to your printer documentation.

Appendices

A. Technical Specifications

A.1 Printers Supported

- Infoprint 1120
- Infoprint 1125
- Infoprint 1130
- Infoprint 1140
- Infoprint 1145

This option provides customers with an affordable solution for AFP/IPDS distributed or LAN printing with IPDS emulation.

A.2 Product Description

The Card for IPDS and SCS/TNe is an option which is installed in the printer optional firmware Card connector. With the Card and either the Standard Network port (Ethernet) or a MarkNet internal print server (Ethernet or Token-Ring), MarkNet X2000 external print server (Ethernet or Token-Ring), or the Coax/Twinax Adapter for SCS, the printer becomes an IBM host workstation printer capable of printing AFP or IPDS documents from an AS/400 or System/390 computer. With the appropriate host software and this option, the printer can emulate an IBM 43xx, 311x, 3812/16 or 4028 IPDS printer.

See the *SCS/TNe Emulation User's Guide* for SCS printing capabilities.

The IPDS emulation supports scalable fonts and higher print resolutions. The default resolution is selected through an **IPDS MENU** setting.

The printer can be configured to take advantage of additional RAM memory. When attached to a LAN through a MarkNet internal print server, it can save IPDS resources to improve performance for complex IPDS print jobs.

The IPDS emulation supports the IPDS data and resource towers. Fonts and other resources can be downloaded to the printer.

If your printer supports a duplex option, duplex printing is supported for all IBM printer emulations dependent on host software. Up to five input sources are supported through Print Services Facility (PSF) except for PSF/400, which supports four input sources.

A.3 IPDS Features List

- Resource Towers: Page Segments, Overlays, and Loaded Fonts
- Data Towers: Text, Graphics, Bar Codes, IM Image, and IO Image
- IPDS Exception Reporting

A.4 Compatibility

Support Notes

1. When the IPDS emulation is set to emulate an IBM 43xx, 311x, 3812/16 or 4028, the emulated printer function depends on the IBM host software.
2. IBM 43xx printer = IBM 4312, 4317 or 4324 printer.
3. IBM 311x printer = IBM 3112 or 3116 printer.
4. IBM 381x printer = IBM 3812 or 3816 printer.

Compatible Adapters

- Standard Network port (Ethernet)
- MarkNet N2000 series internal print servers (Ethernet or Token-Ring)
- MarkNet X2000 external print server (Ethernet or Token-Ring)
- Coax/Twinax Adapter for SCS

A.5 For Direct Network Attachment

Hardware Compatibility

When the printer contains an optional Card for IPDS and SCS/TNe, it attaches to a network using the Standard Network port, a MarkNet internal print server, or a MarkNet X2000 external print server.

The optional Standard Network port supports Ethernet 10Base T/100Base-TX. The optional MarkNet internal print server and MarkNet X2000 external print server support Token-Ring (4Mbps or 16 Mbps), Ethernet 10Base-T/10 Base2 and Ethernet 100Base-TX/10Base-T with the following Network Operating Systems: Novell NetWare (including NetWare Directory Services - NDS and NDPS), IBM OS/2 Warp Server, IBM OS/2 LAN Server, Microsoft Windows NT Server, Microsoft Windows 2000 Server and Advanced Server, TokenTalk and EtherTalk, TCP/IP environments and UNIX environments with TCP/IP: Caldera OpenLinux, IBM AIX, Compaq Tru64 (Digital), HP-UX, Red Hat Linux, SCO OpenServer, SCO UnixWare, SGI IRIX, Sun Solaris, Sun Solaris x86, SuSE Linux and TurboLinux.

Software Compatibility

The IBM host software requirements for AFP/IPDS printing when the IPDS emulation is set to emulate an IBM 43xx, 311x, 381x or 4028 printer are as follows:

- Print Services Facility (PSF)/MVS Version 2.2 or greater
- Application System (AS)/400 Operating System (OS)/400 V3R2, V3R1, V3R6, V3R7, V4R1, V4R2, V4R3, V4R4, V4R5, V5R1 or greater through PSF/400
- PSF/2 2.0 or greater
- PSF/6000(for AIX) 2.1 or greater

Note: With AS/400 OS/400 V3R1 or OS/400 V3R6, to print IPDS over TCP/IP through PSF/400, PTF SF29249 - WRKAFF2 is required.

A.6 For Direct Twinaxial Attachment

Hardware Compatibility

When the printer contains the optional Card for IPDS and SCS/TNe and the Adapter for SCS with a twinaxial cable, the printer attaches to the following IBM hardware:

- AS/400e Servers and e-systems
- AS/400 Twinaxial Workstation Controllers
- 5494 Remote Control Unit
- 5394 Remote Control Unit

Note: There must be separate twinax addresses, one for the Adapter for SCS and another for the IPDS emulation.

Software Compatibility

The IBM host software requirements for AFP/IPDS printing when the IPDS emulation is set to emulate an IBM 43xx, 311x, 381x or 4028 printer are as follows:

- AS/400 PSF/400 V3R2, V3R1, V3R7, V3R6, V4R1, V4R2, V4R3, V4R4, V4R5, V5R1 or greater
- AS/400 OS/400 V5R1, V4R5, V4R4, V4R3, V4R2, V4R1, V3R2, V3R1, V3R7, V3R6 or greater
- AS/400 OS/400 V3R6 with System Support Program (SSP) Release 7.5*
- AS/400 SSP Release 7.1*

* IPDS Advanced Function PRPQ is required

A.7 For Direct Coaxial Attachment

Hardware Compatibility

When the printer contains the Card for IPDS and SCS/TNe and the Adapter for SCS with a coaxial cable, the printer attaches to the following IBM hardware:

- IBM 3174 Control Unit
- ES/9000 Work Station Subsystem Controller

Software Compatibility

The IBM Host software requirements for the AFP/IPDS printing when the IPDS emulation is set to emulate an IBM 43xx, 311x, 3812/16 or 4028 printer are as follows:

- PSF/MVS V2.2, V2.1.1, V2.1.0
- PSF/VSE V2.2.1, V2.2.0
- PSF/VM V2.1.1, V2.1.0 (with maintenance)
- VTAM Printer Support
(VPS - Levi, Ray & Shoup (LRS) software)
- GDDM V2.3 with APARs
- RSCS V3.2 or later

B. Font and Code Page Information

B.1 International Language Definitions

The IPDS emulation supports a variety of languages, which are grouped below into descriptions used by IBM in their materials.

B.1.1 Latin 1

Afrikaans	Belgian (French and Dutch)
Brazilian Portuguese	Canadian English
Canadian French	Catalan
Danish	Dutch
Finnish	French
German	Icelandic
Italian	Japanese English
Latin American Spanish	Norwegian
Portuguese	Spanish (Castilian)
Swedish	United Kingdom English
United States English	Swiss (German, French and Italian)

B.1.2 Latin 2/ROECE

Albanian	Croatian
Czech	East German
Hungarian	Polish
Romanian	Serbian
Slovak	Slovenian

B.1.3 Latin 3

Esperanto	Maltese
Turkish	

B.1.4 Latin 4

Estonian	Greenlandic
Lappish	Latvian
Lithuanian	

B.1.5 Latin 5

Turkish	
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B.1.6 Baltic Multilingual (Latin 6)

Latvian	Lithuanian
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B.1.7 Cyrillic

Bulgarian	Byelorussian
Macedonian	Russian
Serbo-Croatian	Ukrainian

B.1.8 Greek

Greek	
-------	--

B.2 Font Support Overview

There are four major sets of fonts supported by the IPDS emulation.

- IBM 4028 Compatibility Font Set
- IBM 38xx Compatibility Font Set
- IBM Core Interchange Font Set
- IBM Coordinated Font Set

The 4028 Compatibility Font Set is compatible with the 4028 and the 3112/16 printers. These fonts are supported as 300 dpi bitmaps. For some of these fonts the IPDS can use an equivalent scalable font. This is controlled by the **Font Type** option under **IPDS MENU**. When this option is set to **Use Scalable**, improved font quality will result, since the scalable fonts use the higher resolution of the printer. This font set is available in 4028, 3112/16 and 43xx mode.

The 3812/16 Compatible Font Set is compatible with the 3812/16 printer fonts. These 240 dpi fonts are converted to the IPDS working resolution (600 or 1200 dpi). Some of the fonts can also be replaced by Scalable Equivalents for better quality. This font set is only available in 3812/16 mode.

All printer emulations support the Core Interchange Font Set and the Coordinated Font Set.

B.3 IBM 4028 Compatibility IPDS Resident Font Set Fonts (Latin 1)

The bitmap fonts included in the 4028 Compatibility Font Set support the 300 dpi bitmap fonts in the 4028, 3112/16 and 43xx printer series. Most of these fonts support the Latin 1 languages.

Typeface	FGID	Width	Pitch/Point	Codepage support
OCR-B	3	144	10.0 *	893, 877
Courier 10	11	144	10.0 *	G2, 259
Prestige Pica	12	144	10.0 *	G2, 259
Courier Italic 10	18	144	10.0 *	G2
OCR-A	19	144	10.0 *	892, 876
Courier Bold 10	46	144	10.0 *	G2
APL 12	76	120	12.0	310
Courier 12	85	120	12.0 *	G2, 259
Prestige Elite	86	120	12.0 *	G2, 259
Courier Italic 12	92	120	12.0 *	G2
Prestige Elite Bold	111	120	12.0 *	G2
Prestige Elite Italic	112	120	12.0 *	G2
Boldface	159	120	PS	G2
Prestige PS	164	120	PS	G2
Gothic-text 13	203	108	13.3 %	G3
Prestige	221	96	15.0 *	G1
Courier 15	223	96	15.0 *	G1
Courier 17	254	84	17.1 *	G1
Prestige	256	84	17.1 *	G1
Letter Gothic 20	281	72	20.0 *	G1
Gothic-text 20	283	72	20.0 %	G3
Gothic-text 27	290	54	26.7 %	G3
Times™ Roman	5687	40	6 pt #	G3
Times Roman	5687	53	8 pt #	G3
Times Roman	5687	67	10 pt #	G3
Times Roman	5687	80	12 pt #	G3
Times Roman Bold	5707	67	10 pt #	G3
Times Roman Bold	5707	80	12 pt #	G3
Times Roman Bold	5707	93	14 pt #	G3
Times Roman Bold	5707	120	18 pt #	G3
Times Roman Bold	5707	160	24 pt #	G3
Times Roman Italic	5815	67	10 pt #	G3
Times Roman Italic	5815	80	12 pt #	G3
Times Roman Bold Italic	5835	67	10 pt #	G3
Times Roman Bold Italic	5835	80	12 pt #	G3

G1 = All code pages listed under the Core Font Set "Latin 1 Country Extended Code Pages" are supported.

- G2 = All code pages in group G1 plus code page 1002.
- G3 = All code pages in group G2 plus code pages 850 and 437.
- * = These fonts exist in both bitmapped and scalable (outline) versions dependent on the **Font Type** setting.
- # = For these fonts the scalable Times New Roman™ Typefaces in the appropriate sizes from the Core Font Set are always used.
- % = These fonts only exist in scalable versions.

In addition to the above set of fonts, a number of other FGIDs are also recognized by the IPDS printer emulation. These are simulated by substitution with one of the above fonts or by bolding one of the above fonts. See *B.9 Font Substitution* on page 185.

If an FGID is not available, the font will be mapped to another font either at the host or in the printer using a font best-fit algorithm.

B.3.1 Special Code Pages Supported by the 4028 Compatibility Font Set

Codepage	GCSGID	Language / Function
259	340	Symbol Set 7
310	963	APL
892	968	OCR-A
893	969	OCR-B
1002	1132	DCF Rel. 2 Compatibility

B.4 IBM 3812/16 Compatibility Font Set

When the 3812/16 emulation is selected, these bitmap fonts replace the 4028 Compatibility Font Set.

Typeface	FGID	Width	Pitch/Point	Codepage support
OCR-B	3	144	10.0 *	893
Orator	5	144	10.0	**
Courier 10	11	144	10.0 *	**
Courier Italic 10	18	144	10.0 *	**
OCR-A	19	144	10.0 *	892
Gothic-text 10	40	144	10.0	**
Katakana-gothic 10	44	144	10.0	290
APL 10	45	144	10.0	293
Gothic-text 12	66	120	12.0	**
Gothic Italic 12	68	120	12.0	**
Script 12	84	120	12.0	**
Courier 12	85	120	12.0 *	**
Prestige 12	86	120	12.0 *	**
Letter-gothic 12	87	120	12.0 *	**
Prestige Italic 12	112	120	12.0	**
Boldface Italic	155	120	PS	**
Essay	160	120	PS	**
Essay Italic	162	120	PS	**
Essay Light	173	120	PS	**
Document	175	120	PS	**
Gothic-text 13	204	108	13.3	**
Gothic-text 15	230	96	15.0	**
Courier 5	244	288	5.0	**
Courier 17	252	84	17.1 *	**
Courier 17ss	254	84	17.1	**
APL 20	280	72	20.0	293
Gothic-text 20	281	72	20.0	**
Gothic-text 27	290	54	26.7	**
Sonoran serif	751/4407	54	8 pt *	**
Sonoran serif	1051/4407	66	10 pt *	**
Sonoran serif bold	1053/4427	66	10 pt *	**
Sonoran serif italic	1056/4535	66	10 pt *	**
Sonoran serif	1351/4407	78	12 pt *	**
Sonoran serif bold	1653/4427	108	16 pt *	**
Sonoran serif bold	2103/4427	162	24 pt *	**

* = These fonts exist in both bitmap and scalable (outline) versions. Use depends on the **Font Type** setting. For the Sonoran fonts the character escapement values may not match the host values when the scalable versions are selected.

** = Most of the 3812/16 Compatibility fonts support the Latin 1 set of code pages. This includes the euro code pages 1140 – 1149.

In addition to the above set of fonts a number of other FGIDs are also recognized by the IPDS. These are simulated by substitution with one of the above fonts or by bolding one of the above fonts.

B.4.1 Special Code Pages Supported by the 3812/16 Compatibility Font Set

Codepage	GCSGID	Language / Function
290	332	Japan Katakana
293	380	APL
892	968	OCR-A
893	969	OCR-B

B.5 IBM Core Interchange Resident Scalable Font Set

The typefaces defined for the IBM Core Set font provide support for the following groups of languages and are supported in the printer: Latin 1 including DCF, Latin 2, Latin 3, Latin 4 and Latin 5, Cyrillic, Baltic, Greek and symbols. Symbols are provided in medium and bold typefaces only.

IBM Typeface	FGID
Courier Italic Bold	428
Courier Italic Medium	424
Courier Roman Bold	420
Courier Roman Medium	416
Helvetica™ Italic Bold	2307
Helvetica Italic Medium	2306
Helvetica Roman Bold	2305
Helvetica Roman Medium	2304
Times New Roman Bold	2309
Times New Roman Italic Bold	2311
Times New Roman Italic Medium	2310
Times New Roman Medium	2308

These fonts are supported through country or language extended code pages as defined on the next pages.

To access the IBM Core Set, the FGIDs above with a font width or point size value must be used. If an FGID is not available, the font is mapped to another font either at the host or in the printer using a font best-fit algorithm.

B.6 IPDS Core Font Set Code Page Support

The code pages supported by the Core Font Set are listed below.

A selection of these code pages can be set as default from the front panel. See **IPDS MENUS** on page 25 for those code pages, which can be selected.

B.6.1 Latin 1 Country Extended Code Pages

Languages	Codepage	GCSGID
Austrian / German	273	697
Austrian / German	1141	695
Austrian / German Alternate	286	317
Belgian	274	697
Brazilian Portuguese	275	697
Canadian French	260	341
Danish / Norwegian	277	697
Danish / Norwegian	1142	695
Danish / Norwegian Alternate	287	321
English (English / US / Canadian / Dutch / Portuguese)	037	697
English (UK / US / Canadian / Dutch / Portuguese)	1140	695
English (UK)	285	697
English (UK)	1146	695
Finnish / Swedish	278	697
Finnish / Swedish	1143	695
Finnish / Swedish Alternate	288	325
French / Catalan	297	697
French / Catalan	1147	695
French Alternate	276	277
Icelandic	871	697
Icelandic	1149	695
International #1	256	337
Italian	280	697
Italian	1144	695
Japanese (English)	281	697
Latin 0 (EBCDIC, euro support)	924	695
Multilingual (Belgian / Dutch / Swiss)	500	697
Multilingual (Belgian / Dutch / Swiss)	1148	695
Portuguese	282	697
Spanish	284	697
Spanish	1145	695
Spanish Alternate	289	329
US (ASCII 7 bit) in EBCDIC	038	103

* Code pages 1140 – 1149 support the euro symbol.

B.6.2 Latin 1 EBCDIC Publishing Code Pages

Languages	Codepage	GCSGID
Belgian	383	1145
Brazilian Portuguese	384	1145
Canadian French	385	1145
Castilian Spanish	392	1145
Danish / Norwegian	386	1145
Finnish / Swedish	387	1145
French / Catalan	388	1145
German	382	1145
Italian	389	1145
Japanese (Latin)	390	1145
Latin America Spanish	393	1145
Multilingual (Belgian / Dutch / Swiss)	361	1145
Portuguese	391	1145
UK English	394	1145
US / Canadian English	395	1145

B.6.3 Latin 1 ASCII Code Pages

Languages	Codepage	GCSGID
ASCII (7 bit)	367	103
Canadian French PC	863	993
Icelandic PC	861	991
ISO Latin 1	819	697
Multinational PC	850	980
Multinational PC (euro)	858	988
Nordic PC	865	995
PC	437	919
PC Desktop Publishing	1004	1146
Portuguese PC	860	990

B.6.4 Latin 2, 3, 4, 5 Code Pages

Languages	Codepage	GCSGID
Eastern Europe PC	852	982
Latin 2 ISO (ANSI)	912	959
Latin 2 Multilingual	1110	1111
Latin 2 Multilingual EBCDIC	870	959
Latin 3 Multilingual EBCDIC	905	1286
Latin 3 Multilingual PC	853	983
Latin 4 EBCDIC	1069	1256
Latin 4 ISO (ASCII)	914	1256
Latin 5 EBCDIC	1026	1152
Latin 5 ISO (ANSI)	920	1152
Latin 5 PC	857	987
Latin 9	923	1353

B.6.5 Latin EBCDIC DCF Code Pages

Languages	Codepage	GCSGID
DCF Rel. 2 Compatible	1002	1132
GML List symbols	1039	1258
Text with numeric spacing	1068	1269
US Text Subset	1003	1133

B.6.6 Cyrillic, Greek and Baltic Language Code Pages

Languages	Codepage	GCSGID
Baltic Multilingual EBCDIC	1112	1305
Cyrillic #2 PC	866	996
Cyrillic ISO ASCII	915	1150
Cyrillic multilingual	880	960
Cyrillic multilingual	1025	1150
Cyrillic PC	855	985
Estonia EBCDIC	1122	1307
GML List symbols	1039	1258
Greek	875	925
Greek 183	423	218
Greek ISO (ASCII)	813	925
Greek PC	851	981
Greek PC	869	998

B.6.7 Arabic Code Pages

Languages	Codepage	GCSGID
Arabic Bilingual	420	235
Arabic ISO (ASCII)	1008	1162
Arabic PC	864	994
GML List symbols	1039	1258

Note: Arabic code pages/fonts are only supported in an optional font package. The IPDS printer emulation accesses these fonts from a user flash memory installed in the flash memory connector.

B.6.8 Hebrew Code Pages

Languages	Codepage	GCSGID
GML List symbols	1039	1258
Hebrew	424	941
Hebrew ISO / ASCII	916	941
Hebrew PC	856	986
Hebrew PC	862	992
Hebrew Publishing	1028	1199
Hebrew Set A	803	1147

Note: Hebrew code pages/fonts are only supported in an optional font package. The IPDS printer emulation accesses these fonts from a user flash memory installed in the flash memory connector.

B.6.9 Symbol Code Pages

Languages	Codepage	GCSGID
GML List symbols	1039	1258
Symbol Set 7 ASCII	899	340
Symbol Set 7 Modified PC	1092	1191
Symbols Adobe	1087	1257
Symbols Adobe ASCII	1038	1257
Symbols Set 7	259	340
Symbols Set 7 Modified	1091	1191

B.7 IBM Coordinated Font Set

The IBM Coordinated Set is supported in Latin 1 Country Extended Code Pages, Publishing, DCF code pages and Latin 1 ASCII only. See *B.5 IBM Core Interchange Resident Scalable Font Set* for a complete listing of fonts.

Typefaces in Outlines (Latin 1)	FGID	GCSGID
Gothic Text (simulated)	304	2039
Letter Gothic	400	2039
Letter Gothic Bold	404	2039
Letter Gothic Italic (Additional)	408	2039
Prestige	432	2039
Prestige Bold	318	2039
Prestige Italic	319	2039

These fonts are scalable. To access the fonts above you must select the Font Type as **Use Scalable** under the **IPDS Menu** and specify the FGID and the width or point size in the IPDS job.

Boldface and APL fonts are only supported using bitmaps from the Compatible Font Sets.

If an FGID is not available, the font will be mapped to another font either at the host or in the printer using a font best-fit algorithm.

B.7.1 OCR Scalable Font Set

These fonts are scalable. To access the fonts below you must select the Font Type as **Use Scalable** under the **IPDS Menu** and specify the FGID and the width or point size in the IPDS job.

Typefaces in Outlines	FGID	Code Page	GCSGID
OCR A	305	876, 892	968
OCR B	306	877, 893	969

B.8 POSTNET Font Support

Typeface	FGID
POSTNET	4094

Code pages that can be used with FGID 4094 include the following.

Codepage	GCSGID	Function
1301	1451	POSTNET bar code
1302	1452	Facing Identification Marks
1303	1453	Business Reply Bar

In addition the POSTNET font can also be used to replace numeric characters on other code pages.

B.9 Font Substitution

If a font is not available, a different font is substituted using a best-fit algorithm. This substitution is based on the FGID and the font width.

If any of the font IDs in the following tables are used in a document, they are mapped to the substituted font id given.

B.9.1 4028 / 31xx / 43xx Font substitution

The following substitution IDs are used if the **Font Type** option is set to **Use Scalable**.

Typestyle	Original FGID	Substituted FGID/Font Width	
		FGID	Font Width
Gothic Text 12 Bold	69	85 b	120 fw
Gothic Text 13	204	203	108 fw
Light Gothic 12	91	112	120 fw
Math Symbol 12	80	86	120 fw
Roman Text	41	12	144 fw
Serif Text 10 Italic	43	18	144 fw
Serif Text 12 Bold	72	85 b	120 fw
Serif Text 12 Italic	71	92	120 fw
Sonoran-Serif 8 pt	751 or 4407 54 fw	5687	53 fw
Sonoran-Serif 10 pt	1051 or 4407 66 fw	5687	67 fw
Sonoran-Serif 12 pt	1351 or 4407 78 fw	5687	80 fw
Sonoran-Serif.Bold 10 pt	1053 or 4427 66 fw	5707	67 fw
Sonoran-Serif.Bold 16 pt	1653 or 4427 108 fw	5707	108 fw
Sonoran-Serif.Bold 18 pt	1803 or 4427 120 fw	5707	120 fw
Sonoran-Serif.Bold 24 pt	2103 or 4427 162 fw	5707	60 fw
Sonoran-Serif.Italic 10 pt	1056 or 4535 66 fw	5815	67 fw
Times Roman 6 pt	760	5687	40 fw
Times Roman Bold 12 pt	761	5707	80 fw
Times Roman Bold 14 pt	762	5707	93 fw
Times Roman Bold Italic 10 pt	764	5835	67 fw
Times Roman Bold Italic 12 pt	765	5835	80 fw
Times Roman Italic 12 pt	763	5815	80 fw

b = Bold

The following table applies only if the **Font Type** option is set to **Use Bitmaps**.

Typestyle	Original FGID	Substituted FGID/Font Width	
Courier 12 Bold	108	85 b	120 fw
Courier 17.1 Bold	253	254 b	84 fw
Letter Gothic 12	87	85	120 fw
Letter Gothic 12 Bold	110	85 b	120 fw
Prestige Pica Bold	60	12 b	144 fw

b = Bold

B.9.2 3812/16 Font substitution

The following substitution IDs are used if the **Font Type** option is set to **Use Scalable**.

Typestyle	Original FGID	Substituted FGID/Font Width	
Matrix Gothic 10	26	40	144 fw
Roman Text	41	40	144 fw
Serif Text 10	42	40	144 fw
Serif Text 10 Italic	43	68	144 fw
Serif Text 12	70	66	120 fw
Serif Text 12 Italic	71	68	120 fw
Serif Text 12 Bold	72	69	120 fw
Math Symbol 12	80	86	120 fw
Light Gothic 12	91	112	120 fw
Elite 12	107	85	120 fw
Bold PS	176	159	120 fw
Bold Italic PS	177	155	120 fw
Math Symbol 15	225	86	120 fw

The following table applies only if the **Font Type** option is set to **Use Bitmaps**.

Typestyle	Original FGID	Substituted FGID/Font Width	
Prestige Pica Bold	60	12 b	144 fw
Courier 12 Bold	108	85 b	120 fw
Letter Gothic 12 Bold	110	87 b	120 fw
Courier 17.1 Bold	253	252 b	84 fw

C. Recommended memory

The IPDS emulation **requires** a **minimum** of 16 MB memory in the printer.

Infoprint 1120, 1125, 1130, and 1140 recommended memory:

300 dpi/600 dpi/1200 Image Q	Simplex/Duplex	32 MB
300 dpi/600 dpi/1200 Image Q	Simplex and saving IPDS resources*	40 MB
300 dpi/600 dpi/1200 Image Q	Duplex and saving IPDS resources*	48 MB
1200 dpi	Simplex/Duplex	48 MB
1200 dpi	Simplex and saving IPDS resources*	48 MB
1200 dpi	Duplex and saving IPDS resources*	56 MB

* Saving of IPDS resources is activated when the host timeout and printer **IPDS Timeout** values are properly set. See section *3.3.14 IPDS Timeout* on page 32 and the appropriate host operating system setup section for more information.

Additional memory above the minimum recommended may be required for printing complex IPDS jobs or if printer memory is used to save other emulation resources or hold other emulation jobs for later printing.

Infoprint 1145 - recommended memory

300 dpi/600 dpi/1200 Image Q	Simplex/Duplex	64 MB
300 dpi/600 dpi/1200 Image Q	Simplex and saving IPDS resources*	64 MB
300 dpi/600 dpi/1200 Image Q	Duplex and saving IPDS resources*	72 MB

The Infoprint 1145 printer may require additional memory when printing on paper sizes 11 x 17 in. and A3.

Additional memory above the minimum recommended may be required for printing complex IPDS jobs or if printer memory is used to save other emulation resources or hold other emulation jobs for later printing.

D. Related Publications

D.1 IBM Publications

<i>Print Services Facility/MVS: Update Guide Version 2, Release 2, Modification 0</i>	<i>G544-3984-01</i>
<i>Print Services Facility/MVS: System Programming Guide Version 2, Release 2, Modification 0</i>	<i>S544-3672-03</i>
<i>PSF V3R1 for OS/390: Customization</i>	<i>S544-5622-00</i>
<i>PSF V3R1 for OS/390: Licensed Program Specifications</i>	<i>G544-5626-00</i>
<i>PSF V3R1 for OS/390: Messages and Codes</i>	<i>G544-5627-00</i>
<i>PSF V3R1 for OS/390: User's Guide</i>	<i>S544-5630-00</i>
<i>IBM AIX PSF/6000: Print Administration Version 1.2.0</i>	<i>S544-3817</i>
<i>IBM AIX PSF/6000: Print Service Facilities for AIX Users Version 1.2.0</i>	<i>G544-3814</i>
<i>IBM AS/400 Printing V</i>	<i>SG24-2160</i>
<i>PSF/2: Getting Started</i>	<i>G544-3767</i>
<i>IBM Intelligent Printer Data Stream Reference</i>	<i>S544-3417</i>
<i>AS/400 Advanced Series: Printer Device Programming</i>	<i>Ver. 3, SC41-3713</i>
<i>OS/400 Printer Device Programming V4R4 Version 4</i>	<i>SC41-5713</i>

Glossary

Abend	Verb which means to end a process abnormally.
AFP	Advanced Function Presentation or Printing.
AIX	IBM's implementation of the UNIX operating system. The RISC System/6000, among others, runs the AIX operating system.
BOOTP	BOOTstrap Protocol. A TCP/IP protocol that enables a workstation on a network to find its IP address.
Form Definition	Form definitions define, among other things, the aspects about how data is placed on the physical page, from which bin the paper is to be fed, the number of sides of the sheet to be printed (simplex/duplex), and the print direction and rotation of the data.
Gateway	The connecting device between the LAN and other equipment from minicomputers to main frames.
Host	The main computer on a network allowing the use of data files and programs to all workstations.
IP Address	A 32-bit address defined by the Internet Protocol RFC 791 usually represented in dotted decimal notation, e.g. 157.184.67.102.
IPDS	IBM's Intelligent Printer Data Stream.
MTU	Maximum Transmission Unit The largest possible unit of data that can be sent on a given physical medium in a single frame on a LAN.
Netmask	See <i>Subnet mask</i> .
PPR/PPD	Page Printer Requester/Page Printer Daemon. A non-standard bi-directional TCP/IP protocol allowing IPDS data to be transmitted over a TCP/IP network.

RFC	Request for Comments The document series that describes a part of the Internet suite of protocols and related experiments. All Internet standards are documented as RFC's.
Server	A network device that allows sharing of resources such as programs, storage and printers between multiple LAN workstations.
Subnet Mask	For Internet sub-networking, a 32-bit mask used to identify the sub-network address bits in the host portion of an IP address.
TCP/IP	Transmission Control Protocol/Internet Protocol.

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