FormPort® Flash

User's Guide

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Preface

This user's guide provides detailed explanations and procedures for installing, configuring and utilizing FormPort Flash (FPF) from Capella Technologies.

User Manual Overview

This user manual is organized into the following sections:

Chapter 1: Introduction to FPF – Provides an overview of the components and functions of the FPF.

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

Chapter 3: FormPort Flash Configuration – Directions and procedures for configuring FormPort Flash.

Chapter 4: FormPort Flash Operation – Using FormPort Flash.

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

In addition, the following appendixes containing handy reference material are included in the back of this user guide:

Appendix A: Paper Source PCL Tray Reference – Convenient list of codes to indicate the paper source on several supported printers.

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

Highlights procedures that if not heeded, could damage the product or adversely affect the functionality.

Provides useful information relevant to the described feature or procedure.

Offers a tip, shortcut or useful information.

Special Acknowledgment

The SCS and IPDS printer emulation software is written by I-O Corporation. Refer to the I-O 3235 SCS User's Guide and the I-O 3235 IPDS User's Guide for setup, configuration, operational and troubleshooting. For further information regarding I-O Corporation's products and services, refer to www.iocorp.com.

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Chapter 1: Introduction to FPF

The FormPort Flash (FPF) solution from Capella Technologies is an in-printer solution that gives HP LaserJet printers and LaserJet Multi-Function Printers (MFPs) the ability to automatically process the I-O 3235 converted SCS data streams to “enhanced” SCS-FormPort documents. These enhanced SCS documents can contain formatted text, barcodes, logos, images... everything one needs to output checks, invoices, statements, estimates and other graphically oriented business documents. In short, enhanced SCS documents provide a viable alternative to IPDS without the need for IPDS equipped server hardware.

Unpacking

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

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

- A DIMM or CompactFlash Card. This hardware component must be installed into the HP LaserJet printer or MFP.
- A CD-ROM containing all the required software and documentation and samples.
    - Getting Started Guide
    - Quick Installation Guides
    - CapSpool Print Spool Utility
    - FormPort Configuration Tool
    - Sample SCS Data Files and CX Player print utility
    - Sample FormPort Flash Forms and associated Data Files
    - Sample IPDS Data Files and IPDS Player and print utility

FPF Components

SCS Printer Emulation Component

The SCS (SNA Character Stream) Printer Emulation component provides a means of connecting to an IBM host system to print SCS jobs.

The SCS component converts SCS data streams from IBM's proprietary EBCDIC character set and SCS command structure to the ASCII character and PCL command language. This feature frees the host of the often-heavy overhead associated with this task.

FormPort Flash

FormPort Flash (FPF) is a complete document formatting solution that gives users the ability to automatically convert raw plain-text data streams into professional, graphics-rich documents, without modifying the host applications or data streams. The FPF solution includes printer resident storage that FormPort Flash uses to store user-defined Job Definition files (Forms) within the printer. These job definitions position the text fields output by enterprise applications and format it in a variety of fonts and sizes. Forms can also include photos, logos and other graphics, providing a completely customizable document formatting solution. For organizations that rely upon numerous forms with substantial graphics, FPF can also utilize the printer's internal hard drive, if one is available.

IPDS

The IPDS (Intelligent Printer Data Stream) component of FPF provides a means of connecting to an IBM host system and then printing native host IPDS jobs.

The IPDS Printer Emulation component converts native IBM IPDS print jobs from IBM's proprietary EBCDIC character and IPDS command structure to a LaserJet compatible format. This feature frees the host of the often-heavy overhead associated with this task.

The IPDS component functions by itself whereas the SCS and FormPort Flash components work together to generate "enhanced SCS" output.

Utilities

CX Player

The CX Player is a demonstration and diagnostic tool to show how a HP LaserJet printer with the FPF solution installed will print native IBM SCS print jobs.

ONLY SCS DEMONSTRATION FILES PROVIDED ON THE CD CAN BE USED WITH CX PLAYER.

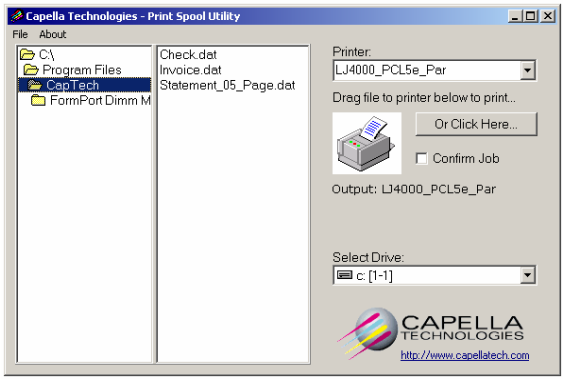
IPDS Player

The IPDS Player is a demonstration and diagnostic tool to show how a HP LaserJet printer with the FPF solution installed will print native IBM IPDS print jobs.

ONLY IPDS DEMONSTRATION FILES PROVIDED ON THE CD CAN BE USED WITH IPDS PLAYER.

CapSpool Print Spool Utility

CapSpool (shown in the figure below) is a convenient Windows utility that can be used to send the Multi-Host Print Test files and Firmware Update Files to the printer without typing commands from a command prompt. The LaserJet Embedded Web Server's *Print* function may also be used from a browser to send the test files to the FPF printer.



Supported Printers

FPF is currently available for numerous HP printers. To see a list of currently supported printers, refer to the README.TXT file located on the installation disc.

Installation Overview

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

1. Installing the hardware component of FPF onto a LaserJet DIMM, CompactFlash card, or Hard Disk.

2. Setup and Configuration of SCS, FormPort Flash or IPDS. See the component specific Configuration Sections for specialized instructions.

3. Validation of the Installation.

Chapter 2: Installation

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

Hardware Installation

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

The following steps will guide you through the installation of the FPF CompactFlash in the LaserJet. It is suggested that you refer to your LaserJet's User's Guide for specific steps of installing optional CompactFlash cards.

1. Turn the printer on and print a LaserJet Configuration Page. Keep the Configuration page(s) until you have successfully installed the FPF solution.

2. **Power off the printer**.

3. Open the LaserJet's access door or if applicable, remove the formatter board.

4. Install the DIMM or CompactFlash:

    a. For DIMMs, hold the DIMM by the edges (don't touch the connector edge) and insert the DIMM into an available slot. Make sure that the retaining clips on each side are securely locked into place.

    b. For CompactFlash cards, hold the CompactFlash card by its edges and line up the groove in the side of the card with the tabs in the CompactFlash slot. Slide the CompactFlash into place.

Do not put the DIMM or CompactFlash into a slot reserved for printer system firmware.

5. Close the access door or re-install the printer's formatter board.

6. Power on the printer.

7. After the printer has completely booted and is once again ready, verify the installation was successful by printing a Hewlett-Packard configuration page. The "Installed Personalities and Options" section on the Configuration page should contain the following new entries:

   IOF 4(-): SCS(active) . . .
   IOF 15(-): FPF FPF Mgr(active) . .
   IOF 20(-): FormPort SCS(active). . .

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

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

   - The CompactFlash or DIMM does not support the HP LaserJet model in which it was installed.

8. Set the following LaserJet printer options from the printers Control Panel or by using the printers Embedded Web Server:

   - "Default Personality" set to "Auto."

   - I/O time out value set to 30 (this is a LaserJet setting not an IPDS or SCS menu setting)

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

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

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

1. Start a Telnet session with the JetDirect card.
2. Type: menu, press **ENTER**.
3. Select option 2. TCP/IP Menu, press **ENTER**.
4. Select option 2. TCP/IP Print Options, press **ENTER**.
5. Select Y to change settings, press **ENTER**.
6. Set Buffer Packing to 1 = Enabled, press **ENTER**.
7. Select 0 to return to the Main Menu, press **ENTER**.
8. Select 0 to Exit Telnet, press **ENTER**.
9. Select Y to Save Settings, press **ENTER**.

9. After completing these steps, you will still need to perform additional configuration of the LaserJet printer and IBM host by following the detailed steps described later in this User's Guide.

Sample Data Files (optional)

The CD contains a set of SCS and IPDS data files.

The SCS data files can be used along with the CX player to demonstrate the SCS capabilities. Here is a description of the files contained with-in the SCS directory on the CD:

README	Instruction on how to use CX Player.
CXplayer.exe	The CX player executable.
Check.dmp	Sample Data file.
Invoice.dmp	Sample Data file.

THE SCS SAMPLE DATA FILES CAN BE CONVERTED TO "enhanced" SCS FILES BY CONFIGURING FORMPORT FLASH WITH THE SAMPLE FORMS. PLEASE SEE THE FORMPORT CONFIGURATION CHAPTER FORM MORE DETAILS.

The IPDS data file can be used along with the IPDS player to demonstrate the IPDS capabilities. Here is a description of the files contained with-in the IPDS directory on the CD:

README	Instruction on how to use IPDS Player.
IPDSplayer.exe	IPDS Player executable.
Sun Seed Invoice.hex	Sample Data file.

Chapter 3: FormPort Flash Configuration

This chapter contains information and instructions to configure FormPort Flash after installation. In general, configuration of the FormPort Flash component consists of loading Forms definition files and setting triggers for those forms. There are two methodologies for configuring FormPort Flash:

- Web Configuration
- Using CapSpool to copy installation files to the printer.

Web Configuration

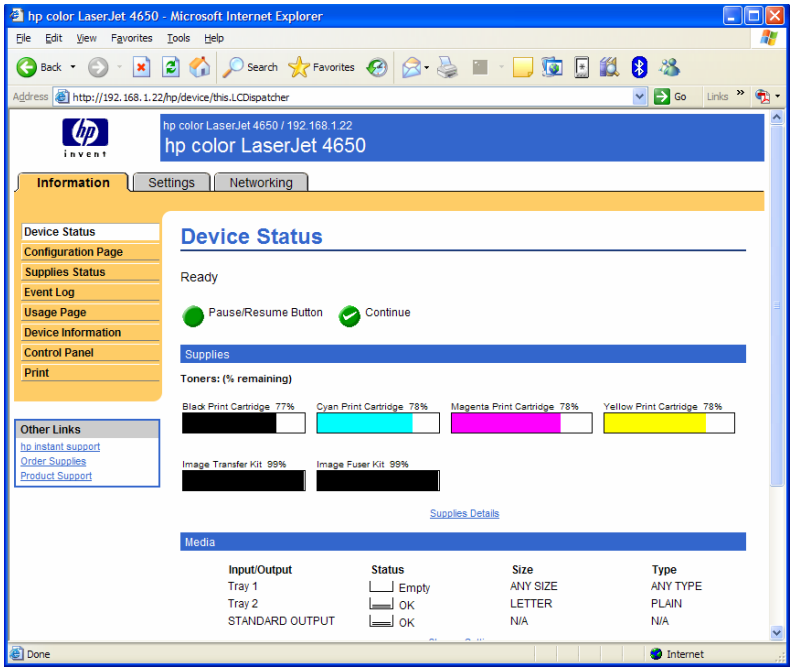
To configure the FormPort Flash via the printer's internal Web server, use a Web browser on a PC to navigate to the printer's URL (the printer's IP address).

Generally you will find the FormPort Flash menu under the Settings tab. However, because the Web pages differ from printer model to printer model, you may need to search around on the printer's Web pages to locate the FormPort Flash configuration page.

The following steps are required to install Form Definition Files:

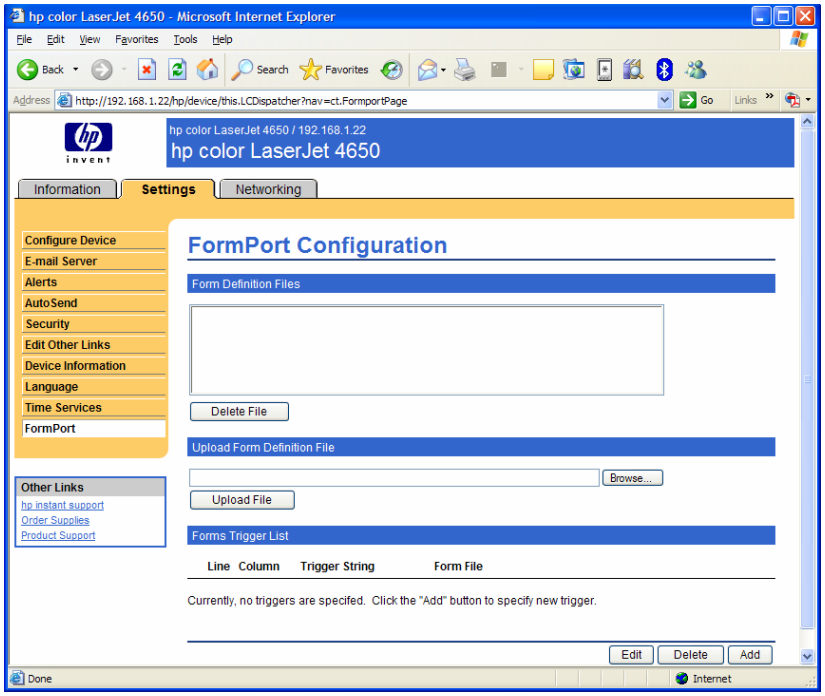
1. Start your Web Browser.

2. In the URL field, enter the IP address of the LaserJet that contains the FPF product.

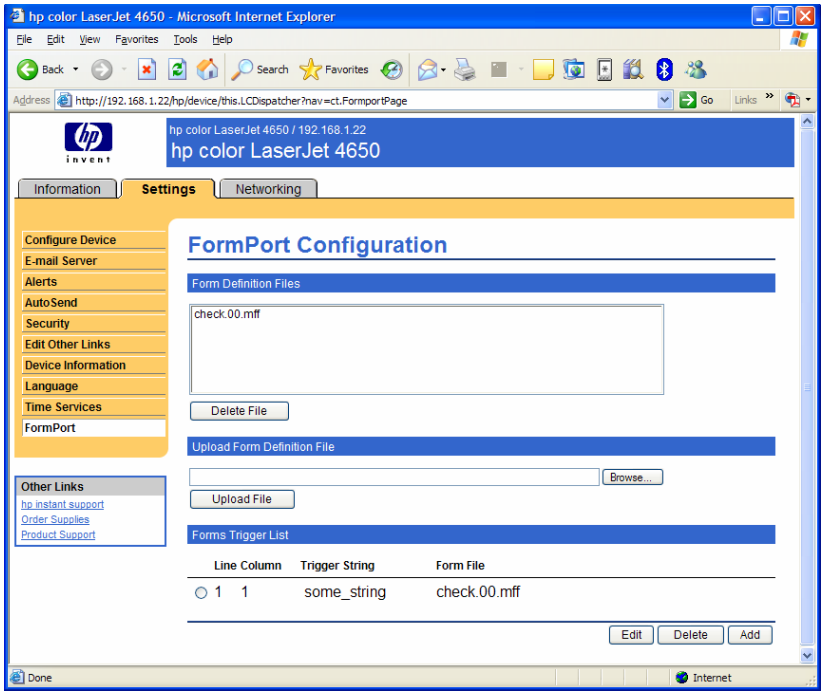


3. Click on the Settings tab, then on the FormPort option in the left navigation bar.

Users may need to first log in using the administrator's password for the Settings tab to be visible.



4. Use the control buttons on the page to Upload Files, Delete Files, or add Form Triggers.



Installing Sample Forms (optional)

The Sample Forms should never be installed or removed by "sending a file to the printer" if you are upgrading a previous version of FormPort Flash, or if you currently have forms installed in the printer. Doing so will cause any previous Form Definition settings to be lost.

The CD contains a set of sample forms within the FormPort Flash directory. Here is a description of the files contained with-in the directory:

Ins_FPD6_SampleForms_xx.rfu	File to Install the Sample Forms and Triggers.
Rem_FPD6_SampleForms.rfu	File to Remove the Sample Forms and Triggers.
check.fpf	Sample CHECK Form.
invoice.fpf	Sample INVOICE Form.
Check.txt	Sample Data file for the CHECK Form.
Invoice.txt	Sample Data file for the INVOICE Form.

Using Web Configuration to Install Sample Forms

Follow "Web Configuration" steps outlined above to upload Sample Forms (.fpf files) and configure Triggers. Below are appropriate Trigger settings for the associated forms:

Form Name	Row	Column	Trigger String
check.fpf	3	91	Capella
invoice.fpf	8	9	Attn:

Using CapSpool to Install the Sample Forms

Sample Forms can be installed in the printer by sending the **Ins_FPF_SampleForms.rfu** file to the printer. The printer data light will blink while the Forms are stored in the printer, and then a list of the installed Forms and their associated Triggers will be printed..

The **Check.txt** and **Invoice.txt** files are text-only files that will automatically trigger the previously-loaded Sample Forms. Verify the FormPort Flash installation by copying the **Check.txt** and the **Invoice.txt** files to the printer using CapSpool or through a command prompt. These files will produce a check or an invoice document.

The Sample Form files may be removed from the printer by sending the **Rem_FPF_SampleForms.rfu** file to the printer.

Once the sample forms and trigger have been configured on the device, the CapSpool can be used to send the Sample Data files (.txt) .

Chapter 4: FormPort Flash Operation

Understanding FormPort Flash

A FormPort Job is defined as:

> *"Any SCS or plain text job that contains information that is intended to be used with an existing Printer-Resident Job Definition (Form) to first Format and then Print a finished FormPort document."*

The FormPort Flash component of FPF parses SCS and plain text jobs that are sent to the printer and looks for matches between the input printer data stream and the information contained in pre-defined Form and Job Triggers.

The printer must be configured to PERSONALITY=AUTO mode or the job won't be recognized by FormPort Flash.

FormPort Job Triggers

The FormPort Flash Job Triggers are listed in the ***Internal Form Definitions*** section of the Capella Technologies Configuration Page.

The Job/Form Definitions are printed with the Highest-Order Definition First, and the Lowest-Order Definition Last. The Search Criteria for "Auto-Triggering" a FormPort Job/Form is as follows:

Highest Priority
Trigger Line
Trigger Column
Trigger String (upper/lower case, case sensitive)
Form Name (upper/lower case, case sensitive)
Lowest Priority

This sort-order priority is used to insure that different printers with the same definitions in the FormPort Flash Configuration file—but entered in a different line-entry order—always use the same form when a FormPort Flash Job is printed.

It's possible that a Job/Form Definition is listed on the page but is never used to trigger a form. This situation occurs if there is more than one entry with the same line, column, and search-string, but different form names. In this case, the "tie" is always broken by the Form-Name that is the closest to the top of the FormPort Flash Internal Form Definitions list.

Using a Default Form

Normally the FormPort Flash "Trigger-Line" numbers range from 1-225 and the "Trigger-Column" numbers range from 1-512. A Form is only selected for printing if the input data at the Trigger-Line/Trigger-Column position exactly matches the text specified by the Trigger-String.

In certain cases (such as printing reports), a Trigger-String can't be uniquely specified even though the format for the printed document is always the same. The FormPort Flash provides a Default Form capability to cover these situations. By specifying the Trigger-Line and the Trigger-Column as position 0 (zero), the Form-Name is treated as a Default Form and the Trigger-String field is subsequently ignored.

If a Default Form has been specified, and a job is determined to be a FormPort Job but the input data doesn't match any of the pre-defined Trigger-String entries, then instead of ignoring the job the FormPort Flash formats the job using the Default Form.

If there is more than one Default Form specified, only the Default Form at the top of the Definition List is used.

Printing the FormPort Job/Form Definitions

There are several ways that the Job/Form Definition information contained on the Capella Technologies Configuration Page may be printed:

1. From the printer Front Panel, select the “Print Capella Support Info” item in the “Capella Tech. Support Menu”

2. Connect to the printer’s Web Server and select the Settings Tab.

   Under Configure Device, select ***Capella Tech. Support Info***.

   Check the box in the “Print Capella Support Info” Section and then click the Apply button to print the Cappella Configuration Page.

3. Manually send the following “Print Capella Configuration” command to the printer:

   <Esc>%-12345X@PJL
   @PJL ENTER LANGUAGE=PCL
   <Esc>%-20001X<Esc>%-12345X

The Capella Configuration Page also contains contact information in the event you need to contact Capella Technologies.

Chapter 5: Troubleshooting

This chapter contains solutions for problems you may encounter while using the product. If a problem persists even after you implement the solutions provided here, or if you encounter a problem not listed here, please contact your dealer, I-O Corporation, or Capella Technologies Support Group by email at support@capellatech.com.

Software Updates

Email Capella Technologies Support Group (support@capellatech.com) to arrange for an update.

FormPort Flash Error Messages

When using FormPort Flash, you may encounter one or more messages displayed on the printer's front panel. It's also possible you might encounter a printed error message that is not included here.

If you are unable to resolve the problem from the printed or displayed information, then please write down the information from the Front Panel and (if possible) print a Capella Technologies Configuration Page before contacting Capella for assistance.

Printer Front Panel Errors

FPDM ERROR: 01	Couldn't Open a Spool File
FPDM ERROR: 02	Undefined Job/Form Sort String
FPDM ERROR: 03	Couldn't Allocate Memory
FPDM ERROR: 04	FSA 0 Does Not Exist
FPDM ERROR: 05	FSA 0 Not Hard Disk or Flash DIMM
FPDM ERROR: 06	FSA 0 Write Protected
FPDM ERROR: 07	Couldn't Open the Form-Triggers file
FPDM ERROR: 08	Couldn't Find a Line Number
FPDM ERROR: 09	Couldn't Find a Column Number
FPDM ERROR: 10	Couldn't Find a Form-Name String
FPDM ERROR: 11	FSA Write Error
FPDM ERROR: 12	FSA Write Error
FPDM ERROR: 13	Couldn't Open a Spool File
FPDM ERROR: 14	Requested Line-Length would Overflow Buffer
FPDM ERROR: 15	Couldn't Open FSA Spool File
FPDM ERROR: 16	Software/Hardware Problem
FPDM ERROR: 17	Incorrect Number of Entries Were Printed
FPDM ERROR: 18	There are No FSA Devices Available
FPDM ERROR: 19	There are No Usable FSA Devices
FPDM ERROR: 20	Software/Hardware Problem

FPD ERROR: 01	FSA Write Error
FPD ERROR: 02	FSA Write Error
FPD ERROR: 03	Couldn't Open a Spool File
FPD ERROR: 04	There are No FSA Devices Available
FPD ERROR: 05	There are No Usable FSA Devices
FPD ERROR: 06	Software/Hardware Problem
FPD ABORT: ##	Print Logic Engine Aborted with Error '##'

Additional FormPort Flash Printed Error Messages

If the FormPort Flash detects an Error while reading a Form then it will re-assign the Trigger Line and the Trigger Column numbers so that the Form will be unavailable for printing (any Entry that has a Line/Column number that is greater than or equal to 700 is ignored). This temporary "reassignment of numbers" does not change the Job/Form Trigger Entry that is contained in the printer's "forms.cfg" file that is used by the EWS Configuration Tool..

The cause of the Error is indicated on the FormPort Flash Configuration Page in the "Printer-Resident Form Definitions" section. The FormPort Flash re-assignment of "Trigger Line" and "Trigger Column" numbers will correspond to one of the following Errors:

***** INVALID PAGE-PARAMETER IN FORM FILE *****	
Line/Column 701	Page 1 is Too Wide
Line/Column 702	Page 1 is Too Long
Line/Column 703	Double-Byte Not Supported Here
Line/Column 704	Page 1 Width is Less Than Page n Width
Line/Column 705	Page 1 Length is Less Than Page n Length
***** BAD STRUCTURE IN FORM FILE *****	
Line/Column 801	Error Reading DOCUMENT Structure
Line/Column 802	Error Reading AS400 Structure
Line/Column 803	Error Reading PAGE Structure
Line/Column 804	Error Reading TEXT Structure
Line/Column 805	Error Reading GRAPH Structure
Line/Column 806	Error Reading IMAGE Structure
Line/Column 807	Error Reading BARCODE Structure
Line/Column 808	Error Reading TEXTFIELD Structure
Line/Column 809	Error Reading IMAGEFIELD Structure
Line/Column 810	Error Reading BARCODEFIELD Structure
Line/Column 811	Error Reading DELETESPDATA Structure
Line/Column 812	Error Reading FONT Structure
Line/Column 813	Error Reading IMAGEDATA Structure
***** BAD OR MISSING FORM FILE *****	
Line/Column 901	Error Opening Form file
Line/Column 902	Error Reading Form file
Line/Column 903	Invalid Form Header
Line/Column 904	Invalid Form Version
Line/Column 905	Error Reading Structure Header
Line/Column 906	Invalid Form Header
Line/Column 907	Unrecognized Structure
Line/Column 908	Invalid Structure Header
Line/Column 909	Couldn't Allocate Form Memory

Appendix A: Paper Source PCL Tray Reference

Refer to the following table to determine the paper source of a particular model of printer.

Model s → Paper Source ↓	4100, 4200, 4300, 4345MFP, 9055 9065	3700	4100 MFP	4600, 4650, 5500	9000	9000MFP, 9040MFP, 9050MFP
Tray 1 – Multi-Purpose Tray	**4**	**4**	**4**	**4**	**4**	**4**
Tray 2 – 1st Cassette	**1**	**1**	**1**	**1**	**1**	**1**
Tray 3 – 2nd Cassette	**5**	**5**	**5**	**5**	**5**	**5**
Tray 4 – 3rd Cassette	**8**			**8**	**20**	**20**
Tray 5 –	**9**					
Envelope Feeder	**6**	**6**		**6**		
Manual feed, paper	**2**	**2**	**2**	**2**	**2**	**2**
Manual feed, envelope	**3**	**3**		**3**	**3**	
Auto Select	**7**	**7**	**7**	**7**	**7**	**7**