FormPort Flash

Quick Start Guide

The Capella Technologies "FormPort Flash" is a **printer-resident** document formatting solution that gives users the ability to have Hewlett-Packard printers automatically detect and convert plain text data streams into professional looking, graphics-rich documents.

The standard FormPort Flash solution includes the following three components:

- **FormPort "Forms Manager"** *(Installed onto the Printer)*
  Used to automatically detect plain-text data streams that are associated with printer-resident Form Definition Files and then direct them to the FormPort "Print Engine".
- **FormPort "Print Engine"** *(Installed onto the printer)*
  Used to convert plain-text printer streams into high-quality FormPort Document Jobs.
- **FormPort "Configuration Manager"** *(Installed onto a Windows PC)*
  Used to configure FormPort Flash printers and load Form Definition files onto the printers from any Windows PC that is on the same network that the printers are on.

FormPort Flash is currently available for the following HP printers:

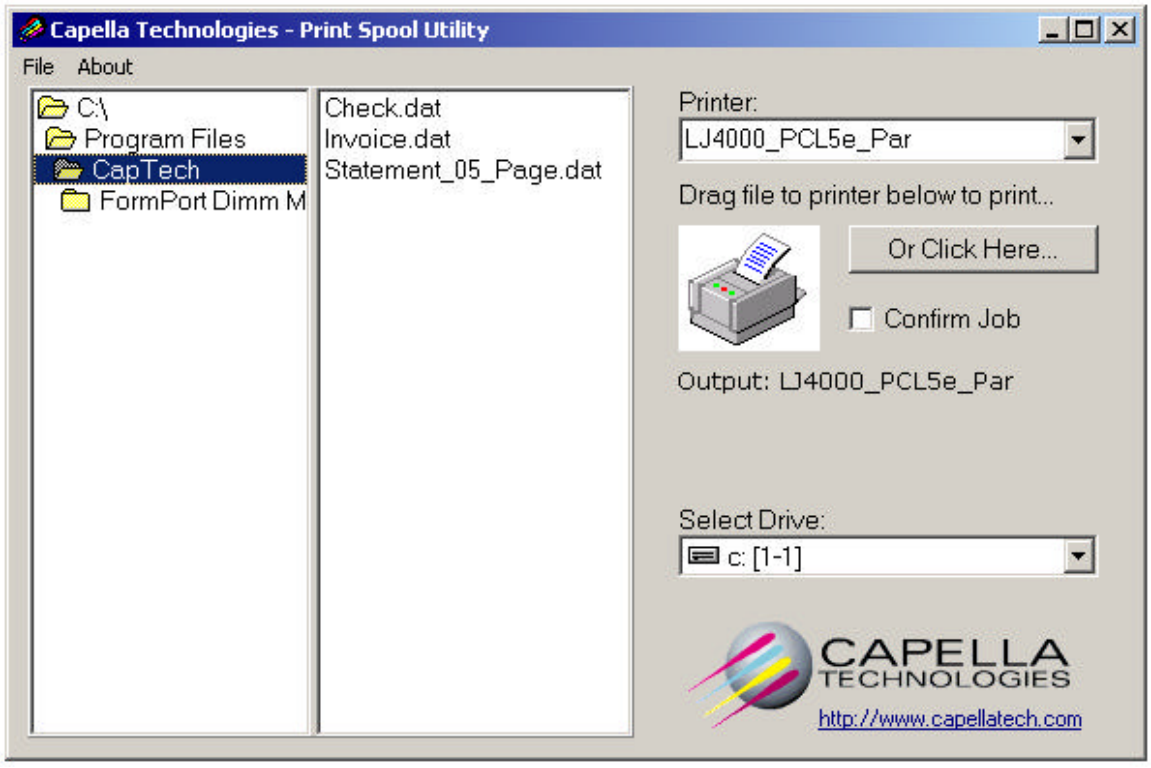
- LJ 2300
- BIJ 3000
- CLJ 3700
- LJ 4100
- LJ 4100mfp
- LJ 4200
- LJ 4300
- CLJ 4550
- CLJ 4600
- CLJ 4650
- CLJ 5500
- LJ 9000
- LJ 9000mfp
- LJ 9055mfp
- LJ 9065mfp
- CLJ 9500

FormPort Flash Installation Overview

FormPort Flash is installed onto an HP printer using the following procedure:

1) Install the two FormPort Flash "IO Filters" **onto the printer**.
2) Install the FormPort Flash "Configuration Manager" **onto a Windows PC.** This will allow you to load Form Definition files onto any FormPort Flash printer and to configure the printer-resident Forms Manager from a Windows PC.
3) Install Sample Form/Job Definitions onto the printer. This is an **Optional Step** (see the following "*Installing the Sample Forms*" section).
4) Send a FormPort Job to the printer to test the FormPort Flash installation.

Capella Technologies provides a Windows utility called "***CapSpool***" (shown below) that may be used to send the FormPort Flash Installation and Test files to the printer instead of typing commands from a "Command Prompt". Please contact Capella Technologies if you don't have CapSpool and you would like to use it with the FormPort Flash.



What is an "IO Filter"?

An "IO Filter" (IOF) is a printer-resident executable program that becomes a Firmware Extension to the existing HP printer's Operating System. Each time the printer is Powered On, the IOF and its special features are automatically incorporated into the standard features of the HP printer's Operating System.

Although it's transparent to the User, FormPort Flash uses two IO Filters.

- The first IOF is the FormPort "Flash Manager", referred to here as the "FPDM". The FPDM is described below in the "Understanding the FormPort Flash Manager" section.
- The second IOF is the FormPort Flash "Print Engine" that converts lines of text into formatted documents. This IOF is referred to here as the "FPD".

Both of the FormPort Flash IO Filters are installed onto HP printer's "FSA Device 0".

If only an FSA DIMM (sometimes referred to as a "Flash DIMM") is available then the DIMM is "FSA Device 0". If only a Hard Disk (sometimes referred to as a "Flash File

System") is available then the Hard Disk is FSA Device 0. If both a Hard Disk and an FSA DIMM are available then the Hard Disk is FSA Device 0 and the FSA DIMM is FSA Device 1.

Installing the FormPort Flash IO Filters

The IO Filter Installation file is in the "FPD6-x-x-x_####.zip" file. The "####" in the file name represents a specific Printer Model and you must use the correct file for the IOF printer installation.

When the "zip" file is unpacked, it will create the following files:

- "Ins_FPD6-x-x-x_####.pjl" Installation file for the IO Filters
- "Rem_FPD6_####_FSA0.pjl" Removal file for the IO Filters

The "Ins_FPD6-x-x-x_####.pjl" file contains the IO Filters for both the FormPort Forms Manager and the FormPort Print Engine.

When you Binary-Copy (or CapSpool) the file to the printer it will install both IO Filters at the same time. When the file is sent to the printer the following occurs:

1) New Directories will be created on FSA Device 0.
2) The FormPort Flash IO Filter and Capella Menu files will be copied to the appropriate Firmware Directories.
3) The printer will automatically Re-Boot and FormPort Flash will become an active extension to the printer's Operating System.

After the printer has rebooted and becomes *"Ready"* you should verify that the IO Filter Installation was successful by printing a Hewlett-Packard Configuration Page. The *"Installed Personalities and Options"* section should contain the following new entries:

"IOF 5(-) FPD6 Manager(active) (yyyymmdd) Rev ## © Capella Tech."

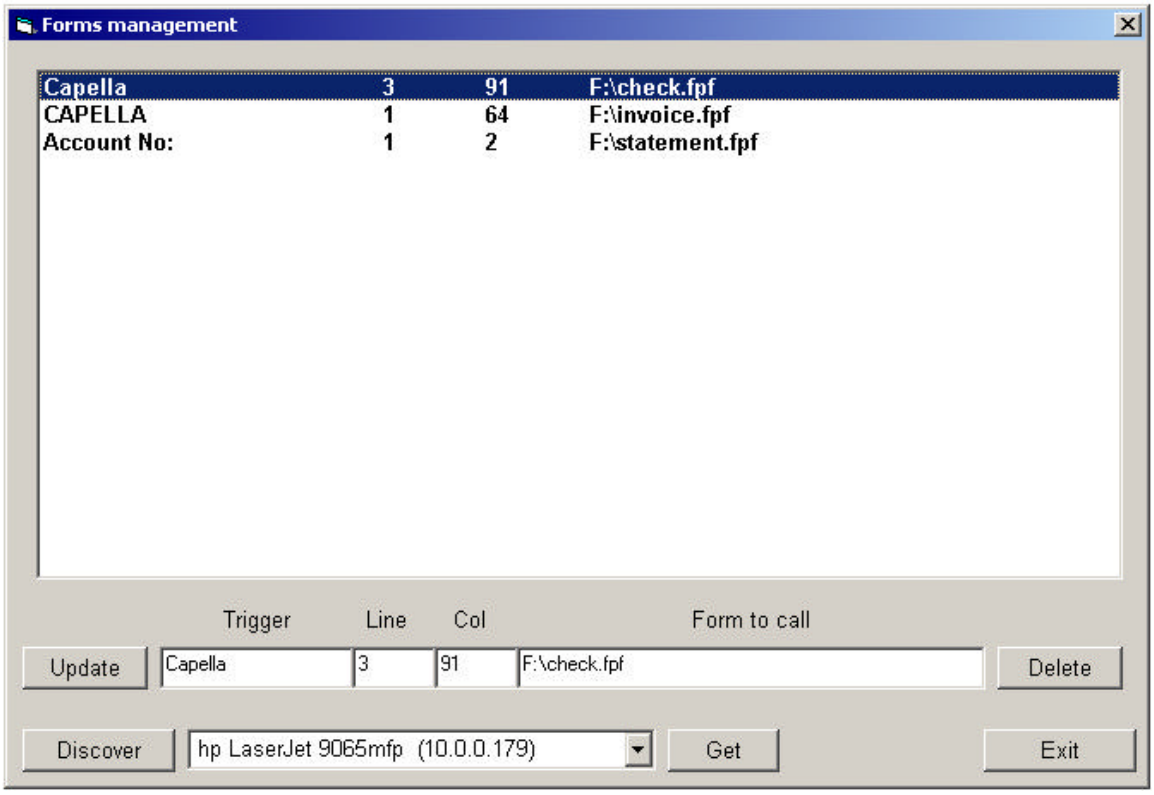
"IOF 8(-) FormPort(active) (yyyymmdd) Rev ## © Capella Tech."

If the above two lines are not present on the HP Configuration Page then the IOF Installation was not successful. This could be due to one or more of the following reasons:

1) Using the wrong PJL file for your printer.
2) Trying to install FormPort Flash on a printer that doesn't have an FSA device.
3) Using a "**copy** *Ins_FPD6-x-x-x_####.pjl"* command instead of a "**copy /b** *Ins_FPD6-x-x_####.pjl"* command from a Command Prompt.

Installing the Windows Configuration Manager

The Capella Windows Configuration Manager (shown below) is a Windows program that is used to configure the FormPort Flash Manager “Job/Form Triggers”.



The file that is used to install the Windows Configuration Manager is contained in the “FPD_WinManager.zip” file. When the file is unpacked, it will create a new “FPD_WinManager” directory that contains the Windows Installation files.

Go to the new “FPD_WinManager” directory and run the “Setup.exe” program. After a successful installation, the FormPort Flash Windows Configuration program will be in the Windows “FormPort Dimm Management” Menu.

The Windows Configuration program can now be used to configure any FormPort Flash printer that is on the same network that the PC is on. It is also used to load new Form Definition files onto a FormPort Flash printer.

Installing the Sample Forms

The Sample Forms should NOT be Installed or Removed if you are Upgrading a previous version of FormPort Flash or if you have your own Forms installed in the printer because you will lose your Existing Form Definition Settings.

The file that is used to install the FormPort Flash Sample Forms is contained in the "FPD6_Sample_Forms.zip" file. When the file is unpacked, it will create the following files:

- "Ins_FPD6_SampleForms_xx.pjl" Installation file for Sample Forms
- "Rem_FPD6_SampleForms.pjl" Removal file for Sample Forms
- "Check.dat" Sample Data file for the CHECK Form
- "Invoice.dat" Sample Data file for the INVOICE Form

Sample Forms are installed by Binary-Copying the "Ins_FPD6_SampleForms_xx.pjl" file to the printer using either CapSpool or from a Command Prompt. The printer Data Light will blink while the Forms are being stored in the printer and then the printer will go *"Ready"*. The printer does **not** re-boot when the Sample Forms are installed.

Testing the FormPort Flash Installation

The "Check.dat" and "Invoice.dat" files are text-only files that will automatically trigger the previously loaded Sample Forms. The FormPort Flash installation should be tested by copying the "Check.dat" and the "Invoice.dat" files to the printer. These files will produce a formatted Check or a formatted Invoice document.

The "Evaluation Version" of the FormPort Flash is a fully functional version of the Standard FormPort Flash except that the text ***"Not Licensed"*** will be printed diagonally across each printed page of the FormPort jobs.

Please contact Capella Technologies if you are using an Evaluation version and you wish to upgrade to a Standard version by purchasing a License Agreement for your existing product.

Understanding the FormPort Flash Manager (FPDM)

A FormPort Job is defined as:

> ***"an Unbound, plain text job that contains information that is intended to be used with an existing Printer-Resident Form to first Format and then Print a finished FormPort document"***.

When application software uses an HP Print Driver to print a job, the job is sent to the printer as a "Well-Bound Job". A "Well-Bound Job" means that the job will start with a PJL Command such as "`@PJL ENTER LANGUAGE=xxx`" and the job will end with a "`UEL`". The FormPort Flash will automatically recognize these jobs as being non-FormPort jobs and they will be printed as if FormPort Flash was not installed in the printer.

FormPort jobs however, must be sent to the printer as "Unbound Jobs". An "Unbound Job" means that the job ***does not*** start with a PJL Command such as "`@PJL ENTER LANGUAGE=PCL`". Additionally, the printer must be set to "`PERSONALITY=AUTO`" mode or the job will ***not*** be recognized by the FormPort Flash Manager as a "FormPort Job".

The FormPort Flash Manager (FPDM) parses all Unbound jobs that are sent to the printer and it looks for matches between the input printer data stream and the information that is contained in pre-defined "Job/Form Triggers".

The Job/Form is triggered by identifying the following:

- Trigger String
- Row Number
- Column number

The input data is read one line at a time until one of the following conditions occurs:

1) A matching form has been identified.

   If the current Unbound Job appears to be FormPort-type data, and the data matches one of the printer's internal Forms, then the job is directed to the FPD IOF where it is converted into a FormPort Document and then printed.

2) It's determined that the data doesn't match any of the printer's internal forms.

   If the current Unbound Job appears to be FormPort-type data, but the data doesn't match any of the printer's internal Forms, then the **unmodified** job will be sent to the printer.

3) It's determined that the current data stream doesn't consist of FormPort-type data.

If the current Unbound Job does not appear to be FormPort-type data then the entire job is ignored by the FPDM and it will be printed normally.

The following criteria is used in determining that an input job is **not** a FormPort Job:

- A UEL Command is found in a line before a 'LF' character is found.
- A 'NULL' character is found in a line before a 'LF' character is found.
- The line is too long (1000 characters were read without finding a 'LF').

Using FormPort Job Triggers

The FPD Manager (FPDM) Job Triggers are listed in the "*Internal Form Definitions:*" Section on 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

The FPDM uses this sort-order priority to insure that different printers that have the same definitions in the FPDM Configuration file, but entered in a different line-entry order, will always use the same Form when a FormPort Flash Job is being printed.

It's possible that a Job/Form Definition will be listed on the page but that it will never be used to Trigger a Form. This situation can occur 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 FPDM Internal Form Definitions list.

Using a Default Form

Normally the FPDM "Trigger-Line" numbers range from 1-225; "Trigger-Column" numbers range from 1-512; and the FPD Manager will only select the Form that is specified by "Form-Name" 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 FPD Manager 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" will be treated as a **Default Form** and the "Trigger-String" field will subsequently be ignored.

If a Default Form has been specified, and a job is determined to be a FormPort Job but the input data does not match any of the pre-defined "Trigger-String" entries, then instead of ignoring the job the FPDM will direct the job to the FPD IO Filter using the Default Form name for the job.

If there is more than one entry with a "Trigger-Line/Trigger-Column" specified as 0 in the FPDM Configuration file, then as previously discussed in the "JOB/FORM TRIGGERS" section only the Default Form at the Top of the Definition List will be used.

Printing the Printer-Resident Job/Form Definitions

There are several ways that the Job/Form Definition information that is 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) If the printer is a LJ 2300, BIJ 3000, CLJ 3700, LJ 4100mfp, LJ 4200, LJ 4300, CLJ 4600, CLJ 5500, LJ 9000mfp, LJ 9055mfp, LJ 9065mfp, or LJ 9500 then connect to the printer's Web Server and select the "Settings Tab".

   Under "Configure Device" select "CAPELLA TECH. SUPPORT INFO".

   Click the Box in the "Print Capella Support Info" Section and then click the "Apply Button". The Cappella Configuration Page will be printed.

3) 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 case you need to contact Capella Technologies.

Removing the FormPort Flash IO Filters

The FormPort Flash IO Filters may be Removed from your printer by using one of the PJL files that was previously "un-zipped" from the "FPD6-x-x-x_ ####.zip" file.

When you Binary-Copy the appropriate "Rem_FPD6_####.pjl" file to the printer the following will occur:

1) The IO Filter and Capella Menu files will be deleted from the appropriate Firmware Directories.

2) The FormPort Flash firmware Directories will be removed from FSA Device 0.

3) The printer will automatically Re-Boot so that the FormPort Flash will become inactive.

Removing the FormPort Flash IO Filters does not remove the Chai Configuration Tool and it does not remove any Forms that have been installed in the printer.

Removing the FormPort Sample Forms

The Sample Forms should NOT be Installed or Removed if you are Upgrading a previous version of FormPort Flash or if you have your own Forms installed in the printer because you will lose your Existing Form Definition Settings !!!

The FormPort Flash Sample Form files may be removed from the printer by Binary-Copying the "Rem_FPD6_SampleForms.pjl" file to the printer. This will remove the sample Check Form, Invoice Form, and "forms.cfg" file from FSA Device 0.

Removing the Windows Configuration Manager

The Windows Configuration Manager is removed from your PC by using the standard Windows Control Panel "Add/Remove Programs" and selecting the "FormPort DIMM Management" item.

APPENDIX

When using the FormPort Flash you may encounter one or more of the following messages on the printer's Front Panel. It's also possible that you will encounter a Front Panel or Printed error message that isn't included here.

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

Errors that are Displayed on the Printer's Front Panel

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 '##'

Errors that will Re-Assign the Trigger Line and Column Numbers

If the FPDM 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.***

The cause of the Error is indicated on the FPDM Configuration Page in the *"Internal Form Definitions"* section. The FPDM 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 ****

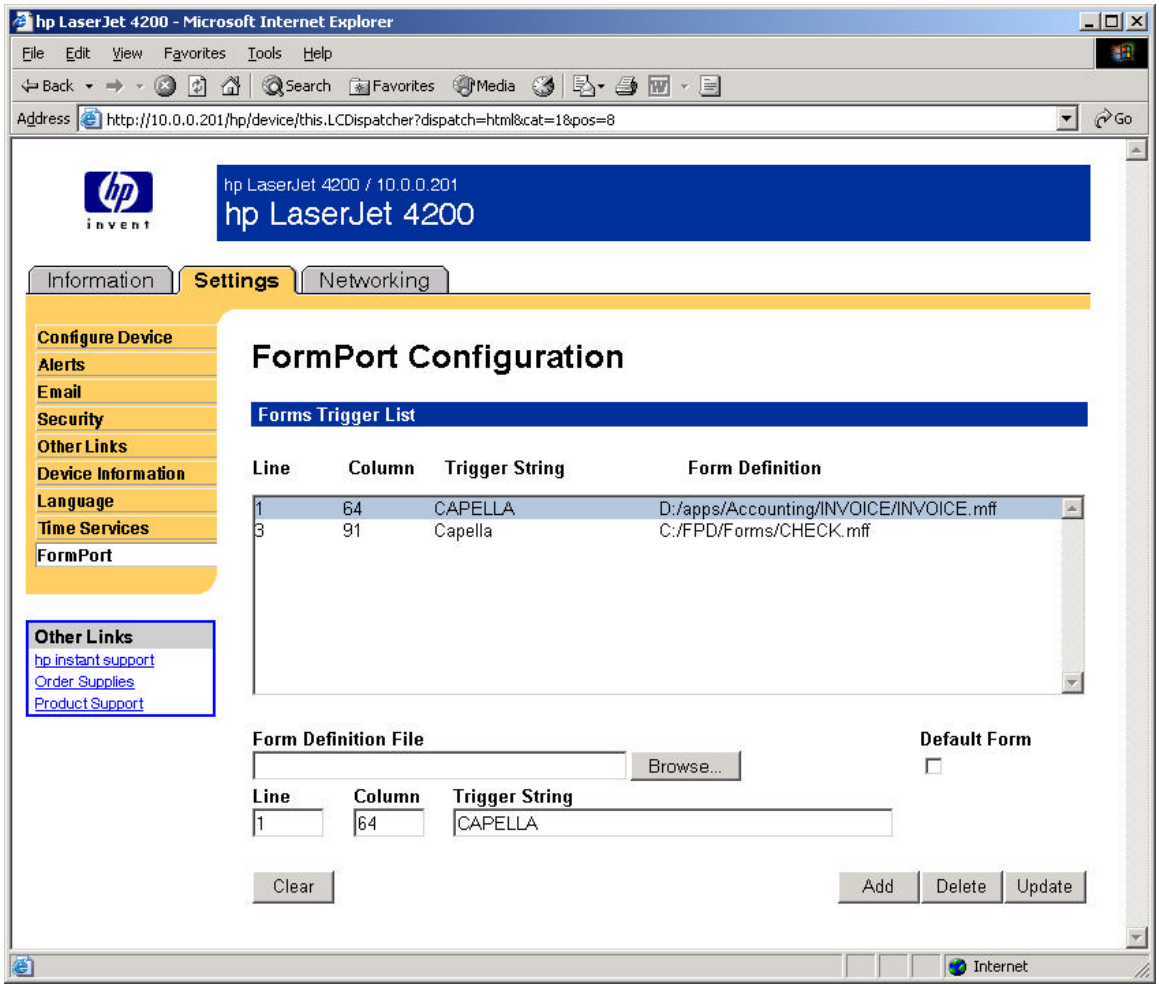
Line/Column 801 Error Reading DOCUMENT Structure
Line/Column 802 Error Reading AS400 Structure
Line/Column 803 Error Reading PAGE Structure
Line/Column 804 Error Reading TEXT Structure
Line/Column 805 Error Reading GRAPH Structure
Line/Column 806 Error Reading IMAGE Structure
Line/Column 807 Error Reading 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

Optional Installation of the "Chai Configuration Manager"

The optional use of the Capella Chai Configuration application will allow you to use a web browser to configure the Forms Manager (described in the previous *"Understanding the FormPort Flash Manager"* section). **A printer-specific version of this Manager must be installed into each FormPort Flash printer's Embedded Web Server. It may not be available for all printers that are supported by the FormPort Flash.**



The Chai application is installed by Binary-Copying the "FPConfigure-####.prn" **printer-specific file to each Printer**. After the file has been sent to the printer, the printer will automatically Re-Boot. When the printer becomes *"Ready"* the Chai application will become active. You should verify a successful installation by using a web browser to open the printer's EWS and then clicking on the *"Settings"* tab. The new FormPort Option screen will be similar to the above screen:

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IMPORTANT: Please read this License carefully before using the included "FormPort Flash Software", hereinafter referred to as "SOFTWARE". The right to use this SOFTWARE is granted only if you agree to the terms of the license. **USE OF THIS SOFTWARE INDICATES YOUR ACCEPTANCE OF THE TERMS AND CONDITIONS OF THE LICENSE AGREEMENT.**

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2. The SOFTWARE may not be disassembled, decompiled, decrypted, or reverse engineered unless prior written consent is either obtained or not required by law. Upon request, the user will provide reasonably detailed information regarding any disassembly, decompilation, decryption, or reverse engineering.

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4. We reserve the right to terminate this license upon breach. In the event of termination, all copies of the SOFTWARE must be returned or, with prior written consent, a certificate of destruction of all copies may be provided.

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