EMP156

Enhanced Monochrome Publisher

VPT Configuration and Installation

N905391

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In an effort to meet the demands of a rapidly changing technology, the manufacturer is continually developing new features and functions to meet your changing printing or printer needs. Please be sure to consult all manual updates or addenda when using this product's documentation.

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Chapter 1
Introduction to VPT Network Printers

Overview

This printer that is network attached can be either a multi-protocol device or only handle applications that operate over TCP/IP. With the optional Ethernet Interface Module the following protocols are supported: TCP/IP, AppleTalk, and Novell NetWare. Without the Ethernet Interface Module, only TCP/IP is supported. In either case, a set of Virtual Printers is provided that allow an administrator access to printer options that would otherwise not be accessible to some printing applications.

One unique feature of a VPT Network Printer is the capability to be accessed by one or all of the supported network protocols over a single cable and to appear on the network as many different types of printers. Each unique Network Printer configuration is referred to as a *virtual printer.*

The Network Control software handles the network protocols and network management functions. The Network Control software accepts commands and queries from and communicates printer status to the Network Administrator.

The Print Control software interfaces with the printer's Image Controller to handle commands and queries related to the configuration of the printer. The Image controller is that part of the printer that converts the incoming page description language into a printed page and controls the operations of tray selection, paper movement, etc. The Print Control software also interfaces with the Network Control software to receive print data, commands, and queries from the network.

Network Terminology

Devices on the network can communicate with the services on the VPT Network Printer. The following terms are defined here for future use in this manual.

- **Server** A physical VPT Network Printer is defined as a *server.*
- **Virtual Printer Technology® (VPT)** The enterprise Network Printer architecture that enables a printer to become an intelligent node in a network computing environment and provide printing "services" to other network nodes through a client/server type relationship.
- **Virtual Printer** A printer configuration that has been defined for use as a *service*. The printer comes with multiple factory-defined virtual printers to support the installed options.
- **Service** Any virtual printer configured on a Network Printer is considered to be a *service.*

Features Summary

The VPT Network Printer software contains a variety of features designed to enhance system performance and simplify configuration and maintenance. These include:

- **TCP/IP compatibility** The software supports the TCP/IP network protocol as defined by the U.S. Department of Defense.
- **Host-initiated connections** Host CPU's on the network may request connections to the printer port. This allows CPU's to contend for a printer.
- **Novell compatibility** The printers support the Novell NetWare protocol. Using PCONSOLE, printers can be added to the PSERVER database and assigned to existing or new print queues.
- **AppleTalk compatibility** VPT Network Printers support the AppleTalk protocol.
- **Nonvolatile memory** All parameters on the VPT Network Printers are saved in nonvolatile memory.
- **Easy configuration** The VPT Network Printer software can be easily configured using a standard HTTP Web browser.
- **Power-up diagnostics** A complete set of internal and Ethernet cable diagnostics are run when a VPT Network Printer is powered up.
- **Complete statistics** The VPT Network Printer maintains complete statistics, including traffic and error counts that can be continuously monitored or printed.
- **Virtual Printers** Up to 64 Virtual Printers can be supported.
- **Printer language types** PostScript, PCL, PDF and TIFF emulations are supported.

- **Network download** For special circumstances, the printer can be configured to download the VPT Network Printer's operational software. This applies only when the optional NIC card is installed.

Hardware Requirements

The VPT Network Printers are compatible with both Ethernet Version 2 and IEEE 802.3 networks using 1000BaseT (standard network port only), 100BaseT or 10BaseT.

Virtual Printer Restrictions

Up to 64 Virtual Printers can be defined in a VPT Network Printer. This number is strictly the upper limit because of some restrictions with respect to the mix of protocols that can be supported.

All VPT Network Printers ship with a set of predefined factory default Virtual Printers.

TCP/IP is limited to 16 Virtual Printers when using the optional Ethernet Interface Module. This is not a hard limit, but more than this number will affect performance and Web page transfer times.

The **NetWare** Virtual Printer can be configured as either an RPrint or PServer service. Only one NetWare Virtual Printer is allowed.

Default Virtual Printers

The following default Virtual Printers are preset at the factory:

- **TEXT** uses all the factory default settings for the PCL emulation with emulation sensing enabled. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 9100. It is also accessible from LPR/LPD using the queue name “TEXT”.
- **vp-pcl** uses all of the factory default settings for the PCL emulation. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3101. It is also accessible from LPR/LPD using the queue name “vp-pcl”.
- **postscript** uses all of the factory default settings for the PostScript emulation and is preset only if the optional PostScript PDL is installed. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3102. It is also accessible from LPR/LPD using the queue name “postscript”.
- **ascii_portrait** uses all of the factory default settings for the PCL emulation. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3104. It is also accessible from LPR/LPD using the queue name “ascii_portrait”.
- **ascii_landscape** uses all of the factory default settings for the PCL emulation. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3105. It is also accessible from LPR/LPD using the queue name “ascii_landscape”.

- **lp_portrait** uses all of the current default settings for the HP PCL emulation except:
  - Typeface is Line Printer.

  This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3106. It is also accessible from LPR/LPD using the queue name “lp_portrait”.
- **lp_landscape** uses all of the current default settings for the PCL 5 emulation except:
  - Pitch is 15 cpi.
  - Typeface is Line Printer.
  - Orientation is Landscape.

  This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3107. It is also accessible from LPR/LPD using the queue name “lp_landscape”.
- **pdf** is included for printing Adobe Portable Document Format (PDF) files when the PDF printing option is installed. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3109. It is also accessible from LPR/LPD using the queue name “pdf”.
- **tiff** is included for printing Tagged Image File Format (TIFF) encoded documents when the TIFF printing option is installed. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3110. It is also accessible from LPR/LPD using the queue name “tiff”.
- **pclxl** is provided for printing HP Printer Control Language Extended (PCLxL or PCL6) documents. This Virtual Printer is enabled for TCP/IP, with the TCP port set to 3112. It is also accessible from LPR/LPD using the queue name “pclxl”.
- **PSAxxxxxx** is a PostScript printer with both the bidirectional and binary modes enabled. The field xxxxxx is the last 6 ASCII characters that define the Ethernet address of the Ethernet Interface Module. This Virtual Printer is enabled only for the AppleTalk protocol.
- **PSNxxxxxx** is a PostScript printer configured with all of the factory defaults. The field xxxxxx is the last 6 ASCII characters that define the Ethernet address of the Ethernet Interface Module. This Virtual Printer is enabled only for the Novell NetWare protocol or raw SPX and only when the optional PostScript PDL is installed.
- **LJNxxxxxx** uses all the factory default settings for the PCL emulation. The field xxxxxx is the last 6 ASCII characters that define the Ethernet address of the Ethernet Interface Module. this Virtual Printer is enabled only for the Novell NetWare protocol or raw SPX and only when the optional PostScript PDL is not installed.
- **prt2file** is configured to store the received data on disk and will not print. This feature is included as a trouble-shooting aid and is not intended for normal customer operation. It is configured for TCP/IP, with the TCP port set to 7101. It is also accessible from LPR/LPD using the queue name “prt2file”.

Virtual Printer Upgrades

When a new feature is added to the printer that is supported by default Virtual Printers, the necessary Virtual Printers are automatically added to the existing set. If a Virtual Printer already exists with the same name as the default to be added, a "-1" will be appended to the name of the added default. (e.g. If a Virtual Printer named **tiff** currently exists, the default TIFF Virtual Printer will be named **tiff-1**.) Similarly, if the port number normally assigned to the default Virtual Printer is in use, the port number for the added default will be increased by 100. (e.g. If port number 3109, normally assigned to the **pdf** Virtual Printer, is currently assigned to a user defined Virtual Printer, **pdf** will use port number 3209.)

NOTE:
The availability of 64 Virtual Printers was an optional feature prior to version 3.0 of the printer software.

If the Virtual Printer option was not previously installed in the printer, all default Virtual Printers will automatically be added to the existing set. The **Auto-select** Virtual Printer, which was included when the Virtual Printer option was not installed, will not be removed. The default **vp-pcl** will be added and, unless the **Auto-select** port assignment has been changed and port 3101 is available, **vp-pcl** will be assigned TCP port 3201.

Virtual Printer Defaults

Parameter	Default Value
emulation type	PCL
number copies	1
paper size	defined by country code selection on OCP
mode	simplex (1-sided printing)
right margin	85 characters
top margin	3 lines
page length	60 lines
orientation	portrait
perf skip	enabled
vmi	8/48 inches (6 lpi)
hmi	12/120 inches (10 cpi)
columns	80
lpi	6
font pitch	10 cpi
font height	12 points
typeface	Courier
font number	23
symbol set	Roman 8
bidirectional (PostScript)	disabled
binary mode (PostScript)	disabled

Special Virtual Printer Features

The following Virtual Printer selectable features are used to provide unique printer operating modes or diagnostic capabilities. These features are only available with the standard network configuration (i.e. the optional Ethernet Interface Module is NOT installed).

Spooling

The spooling feature directs the print data stream to the printer's internal disk drive. After all the data for a job is transferred, the job is submitted to the print queue for processing.

Spooling provides a significant increase in the data transfer rate for all but very short jobs, since the buffer space is not limited to the amount of memory assigned to the channel. Data transfer is no longer affected by alert conditions, such as a paper out or paper jam. This feature is very useful when the printer is operating from host systems that do not have proper error recovery and restart the job when a long pause in the data transfer is detected.

Spooling can be enabled or disabled (the default) independently for each virtual printer for LPR/LPD and or direct TCP port access.

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Chapter 2
Configuration and Installation

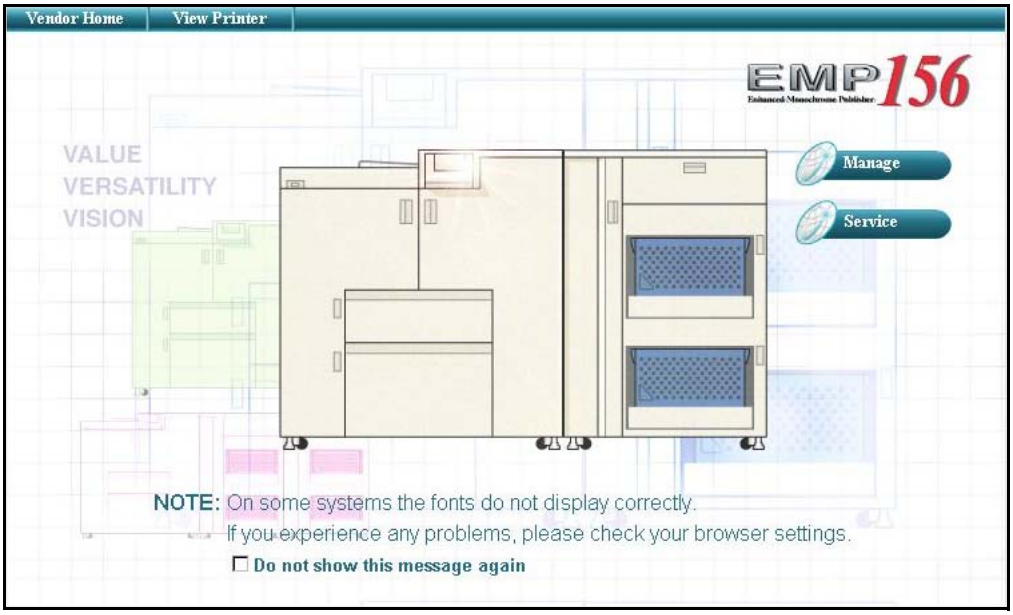
Overview

One unique feature of a VPT Network Printer is the capability of appearing on the network as many different types of printers. These types are referred to as Virtual Printers and can be configured in many different ways. The printer can be accessed by one or all of the Ethernet protocols being used on a campus network over a single cable.

Virtual Printers are created and configured using the Web pages. As there are many variations on the actions to be done to create a Virtual Printer, only the basic set will be discussed here.

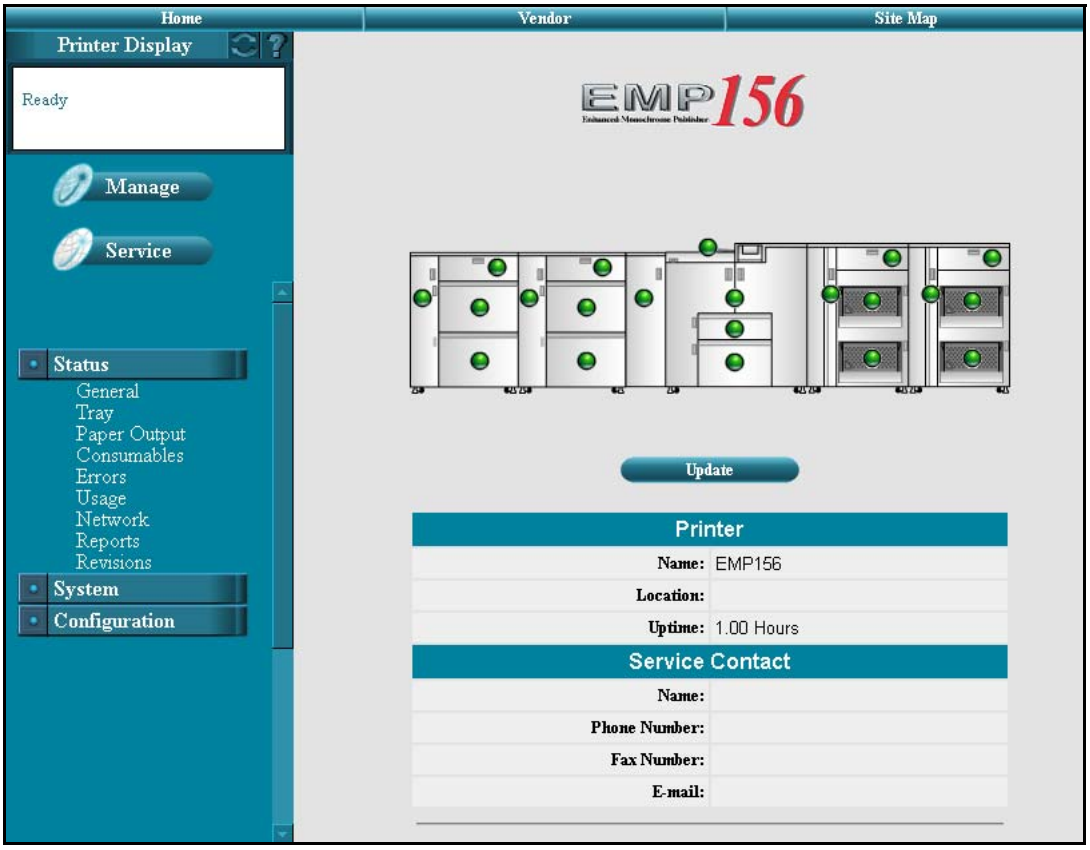
Using the Web Pages

1. Start your Internet browser application.
2. To display the Home Page, enter the IP address or DNS name of the printer. (See your System Administrator for this information, or print a Configuration Report using the printer Operator Control Panel.) A sample Home Page is shown below.



You can make a selection from the Home Page or wait 90 seconds for the Status General page to be automatically displayed.

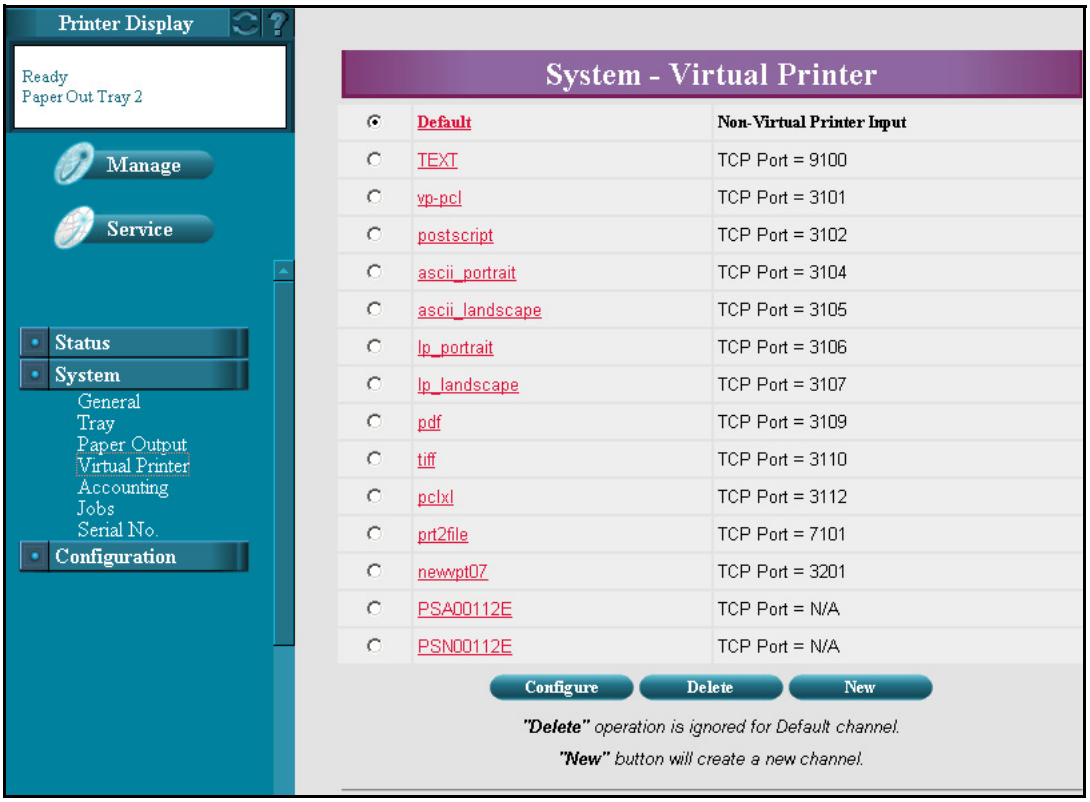
The Manage Status-General page, shown below, displays the status of the print engine, the paper trays, and any options currently installed. (Shown with the Additional Stacker and High Capacity Feeders.



3. From the left bar, click Manage, then System, then Virtual Printer. This part of the Web pages is password protected, so the following window is displayed.

4. Enter the user name **system**, the appropriate password, and click OK.

5. When your user name and password are accepted, the following Web page is displayed.



"Default" is not a virtual printer (it is an internal channel for using the offline printing), and it is not recognized on the network.

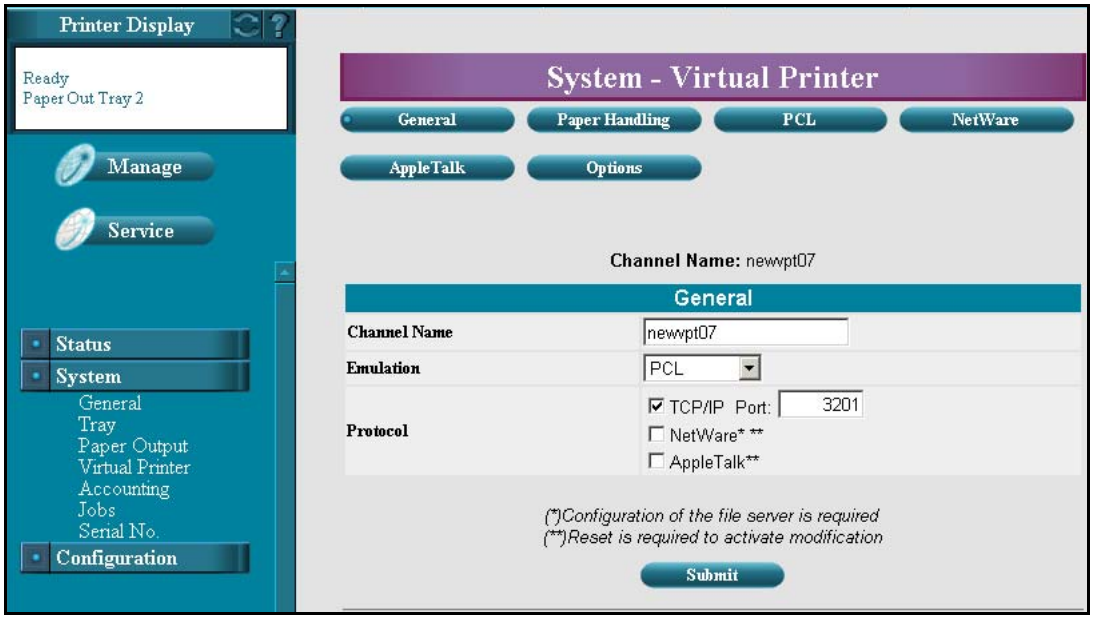
"newvpt07" is not a default virtual printer. It is an example of the user-defined virtual printer.

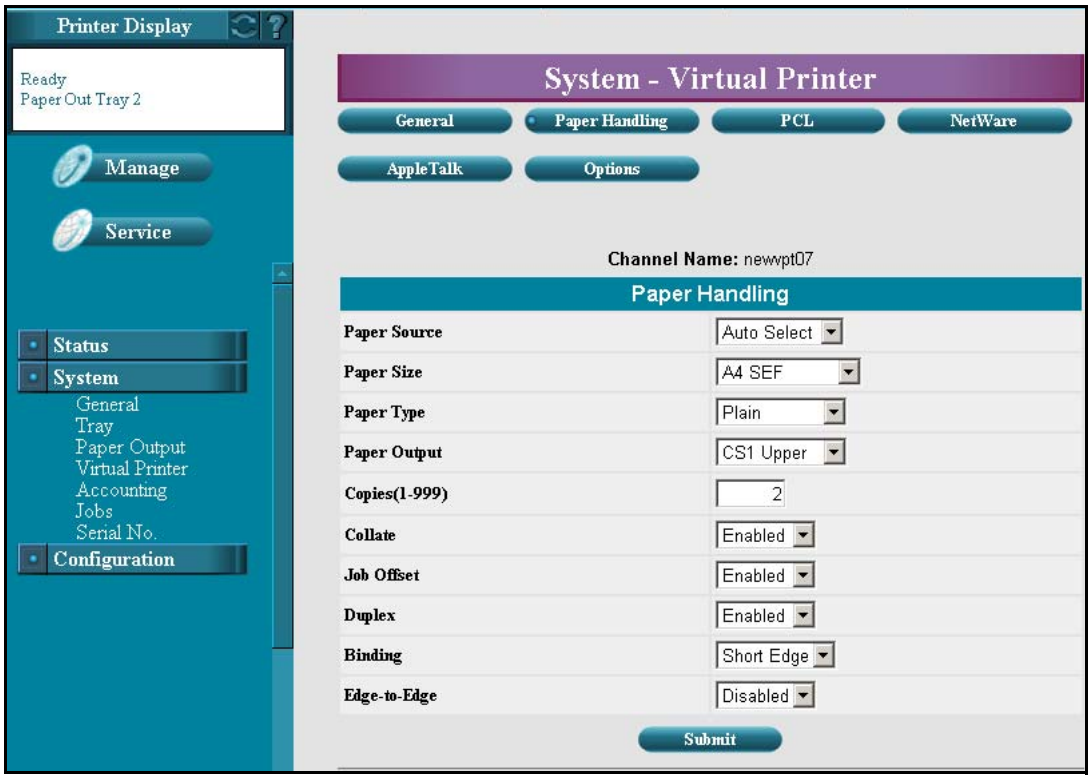
'PSAxxxxxx' and 'PSExxxxxx' are default virtual printer but these are only available when the optional NIC is installed.

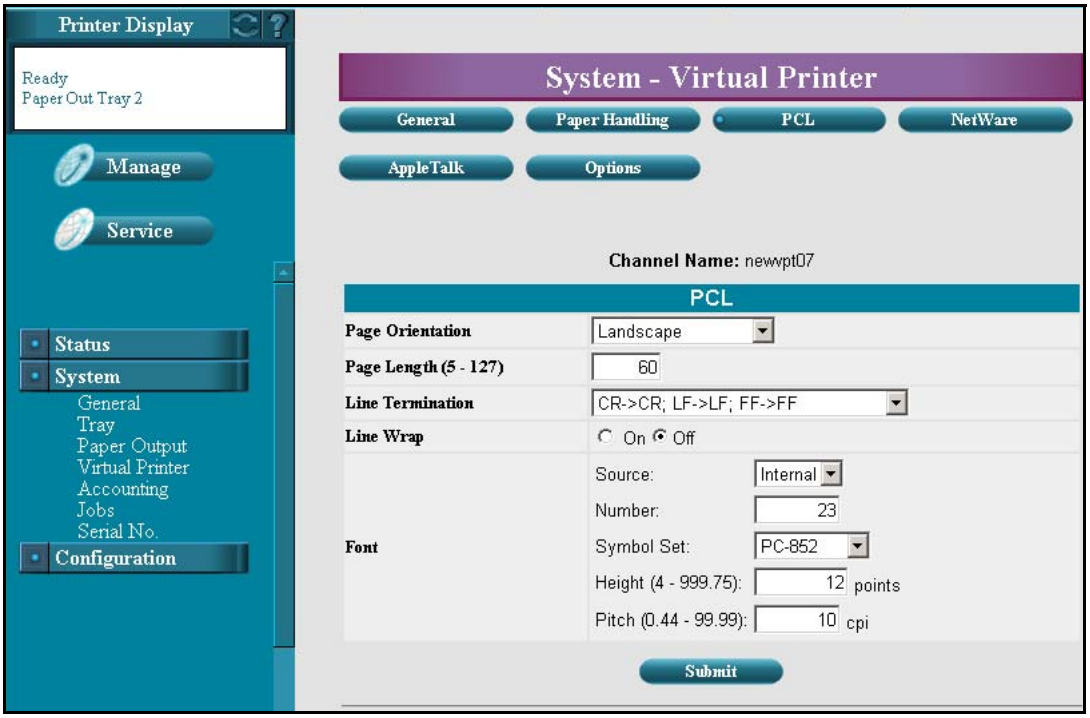
Sample Web Pages

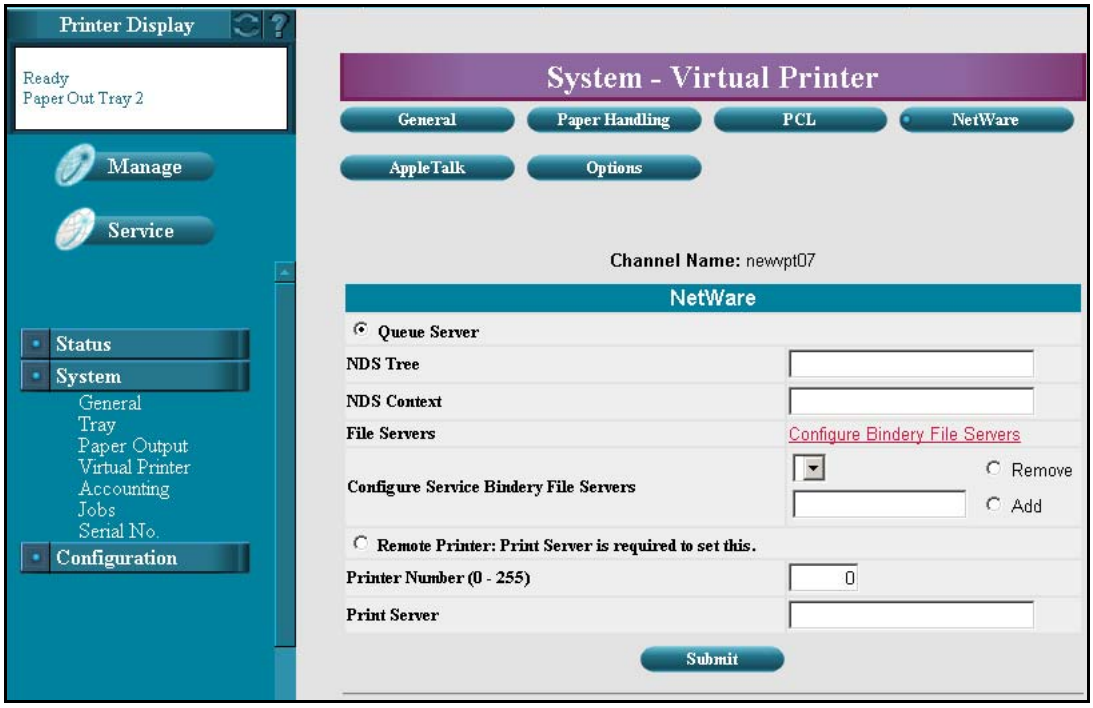
There are many types of Virtual Printers that can be configured and there are many variations on the actions that are done to create a Virtual Printer. For the sake of brevity, only one set of configuration Web pages is illustrated here.

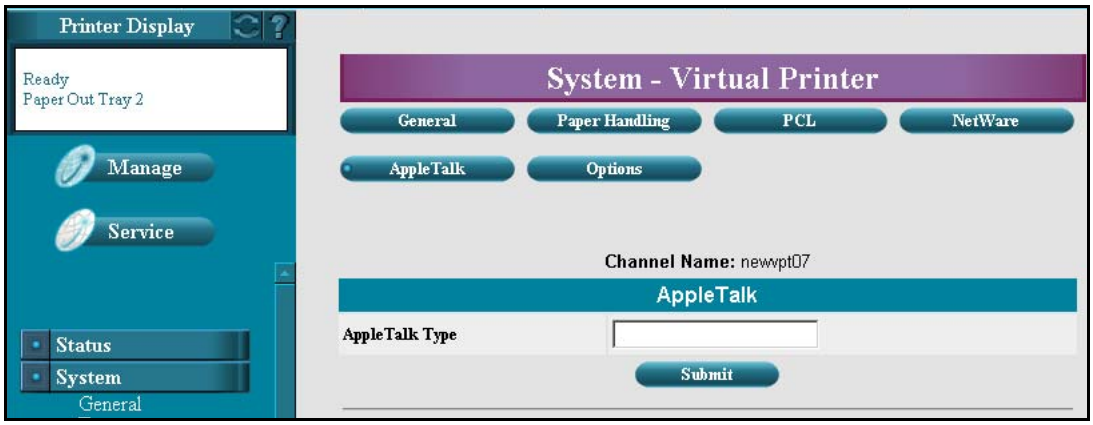
These web pages are example of user-defined PCL vertual printer named “newvpt07”.

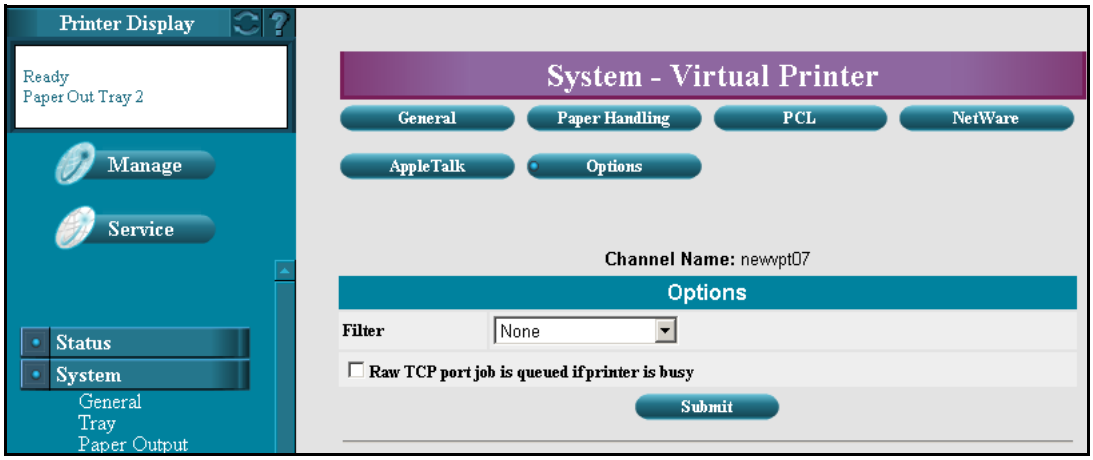





Printer Display
Ready
Paper Out Tray 2
Manage
Service
Status
System
General
Tray
Paper Output
Virtual Printer
Accounting
Jobs
Serial No.
Configuration
System - Virtual Printer
General
Paper Handling
PCL
NetWare
AppleTalk
Options
Channel Name: newvpt07
PCL
Page Orientation
Landscape
Page Length (5 - 127)
60
Line Termination
CR->CR; LF->LF; FF->FF
Line Wrap
On
Off
Font
Source:
Internal
Number:
23
Symbol Set:
PC-852
Height (4 - 999.75):
12
points
Pitch (0.44 - 99.99):
10
cpi
Submit


Printer Display
Ready
Paper Out Tray 2
Manage
Service
Status
System
General
Tray
Paper Output
Virtual Printer
Accounting
Jobs
Serial No.
Configuration
System - Virtual Printer
General
Paper Handling
PCL
NetWare
AppleTalk
Options
Channel Name: newvpt07
NetWare
Queue Server
NDS Tree
NDS Context
File Servers
Configure Bindery File Servers
Configure Service Bindery File Servers
Remove
Add
Remote Printer: Print Server is required to set this.
Printer Number (0 - 255)
0
Print Server
Submit


Printer Display
Ready
Paper Out Tray 2
Manage
Service
Status
System
General
System - Virtual Printer
General
Paper Handling
PCL
NetWare
AppleTalk
Options
Channel Name: newpt07
AppleTalk
AppleTalk Type
Submit


Printer Display
Ready
Paper Out Tray 2
Manage
Service
Status
System
General
Tray
Paper Output
System - Virtual Printer
General
Paper Handling
PCL
NetWare
AppleTalk
Options
Channel Name: newpt07
Options
Filter
None
Raw TCP port job is queued if printer is busy
Submit