AXIS 5570e

Host-to-LAN Print Servers

User's Manual

Regulatory Information

Safety Notices — Take some time to read through the safety notices before installing the print server. Please observe all safety markings and instructions when using this product.

Important: — Observe "Important:" in the text to avoid operational impairment. Do not proceed until you have fully understood the implications.

Electromagnetic Compatibility (EMC)

USA — This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help. Shielded (STP) network cables must be used with this unit to ensure compliance with the class B limits..

Europe — This digital equipment fulfils the requirements for radiated emission according to limit B of EN55022, and the requirements for immunity according to EN55024 residential, commercial, and light industry. Compliance is not valid for unshielded network cables.

Japan — This is a class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual. Compliance is not valid for unshielded network cables.

Australia — This electronic device meets the requirements of the Radio communications (Electromagnetic Compatibility) Standard 1998 AS/NZS 3548. Compliance is not valid for unshielded network cables.

Liability — Every care has been taken in the preparation of this manual; if you detect any inaccuracies or omissions, please inform your local Axis office, which can be found on the cover of this document. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material.

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Support Services — Should you require technical assistance, please contact your Axis dealer. If your questions cannot be answered immediately, your Axis dealer will forward your queries through the appropriate channels to ensure you a rapid response. On the Internet you can find online manuals, technical support, software updates, application software, corporate information, etc..

Patent information — Axis AB has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the patents listed at http://www.axis.com/patent.htm and one or more additional patents or pending patent applications in the US and other countries.

Software Acknowledgments — This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.

USER'S MANUAL AXIS 5570e EN

Part No. 28051, Revision 2.6

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This manual applies to the AXIS 5570e with firmware version 7.10 or higher.

Table of Contents

Section 1 Introduction

Thank you for purchasing the AXIS 5570e print server. This product has been developed to connect your printers anywhere in your network, allowing all network users access to the shared printer resources.

The AXIS 5570e is a LAN attached multi-protocol print server that prints IBM and ASCII data streams to any ASCII printer. Supporting IBM Mainframes, AS/400, NetWare, UNIX, LAN Server Manager, Windows and Apple EtherTalk, these products are ideal for IBM Mainframe and AS/400 sites that are migrating from pure IBM networks to LAN environments.

About this Manual

This manual is applicable for the AXIS 5570e with firmware version 7.10 or higher, providing introductory information as well as detailed instructions on how to set up and manage the print server in various network environments. It is intended for everyone involved in installing and managing the print server. To fully benefit from this manual, you should be familiar with basic networking principles.

These instructions are based on the settings in a new and unconfigured print server. To reload the default parameters, you can perform a Factory Default, which will restore most of the settings. See *"Performing a Factory Default"* on page 212.

Support Services

Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your Axis reseller will forward your queries through the appropriate channels to ensure a rapid response.

If you are connected to the Internet, you can:

- Download user documentation and firmware updates
- Find answers to previously resolved problems in the FAQ database. Search by product, category or phrase
- Report problems to Axis support staff by logging in to your private support area
- Visit the Axis support Web at www.axis.com/techsup

Supported Environments

The Axis Network Print Server is the ideal print server in mixed environments as it can communicate with all the major computer systems and network protocols including:

- IBM Mainframe and AS/400
- Windows
- NetWare
- UNIX
- Windows clients connected to LANtastic networks
- Macintosh
- Internet via any standard Web browser

Section 2 Product Overview

Package Contents

Verify that nothing is missing from the AXIS 5570e package by using the check list below. Please contact your dealer if anything is missing or damaged. All packing materials are recyclable.

AXIS 5570e

Axis Print Server	Model	Power Adapter
AXIS 5570e	TCP/IP	PS-H
	IPDS SNA	

Item	Title
CD	AXIS Network Product CD
Warranty Sheet	Warranty Axis Servers (USA) Warranty Axis Servers (other countriesl
Printed Material	AXIS 5570e Installation Guide
Adhesive Holder & Clip	ACC AXIS 5500 CLIPS K
USB Cable*	70 cm

* The USB cable supports USB Low-Speed and Full-Speed. Hi-Speed is not supported.

Protocols and Datastreams

The AXIS 5570e is available in two versions; IPDS SNA and TCP/IP. The table below shows the functionality of each version.

AXIS 5570e

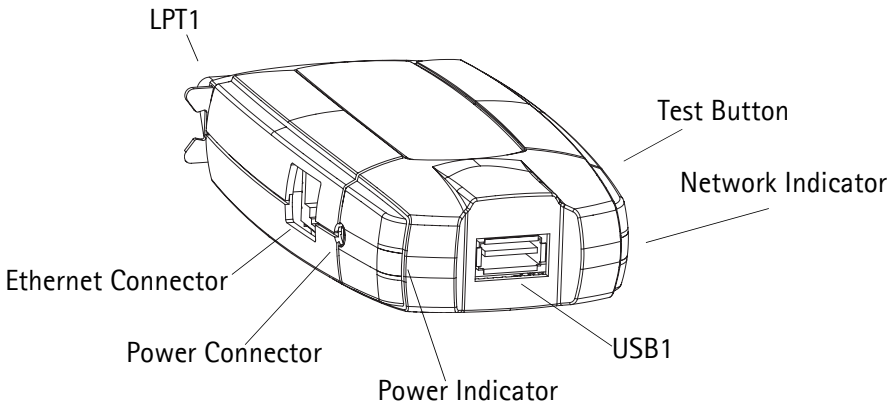
AXIS 5570e	IPDS SNA (part no. 0193)	TCP/IP (part no. 0188)
IPDS support	●	
SCS support	●	●
3270DS support	●	●
TN3270E	●	●
TN5250E	●	●
SNA support	●	
Digital Copier Support	●	

Note:

All models may not be available in all countries in which Axis operates. Please contact your local sales representative for more information.

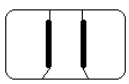
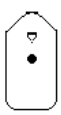
Physical Description

AXIS 5570e

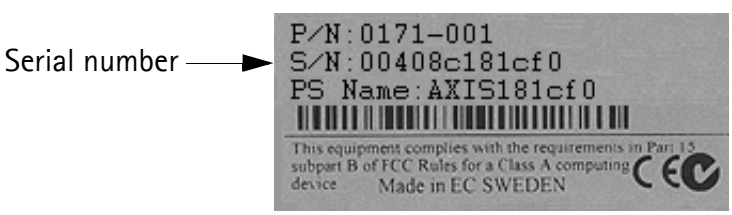


Mounting the AXIS 5570e

Using the supplied clip and holder, the AXIS 5570e can be mounted e.g. on the back of the printer or on a wall.

Adhesive Clip		Fasten to print server by peeling off adhesive tape.
Adhesive Holder		Fasten to mounting surface by peeling off adhesive tape.

Backside Label on Print Server



Network Connector

The AXIS 5570e is designed for 10baseT Ethernet or 100base TX Fast Ethernet networks and is connected to the network via a standard RJ-45 (Category 5 or 6 twisted pair) cable.

Printer Ports

AXIS 5570e

AXIS 5570e is equipped with one USB port that is USB 1.1 and 2.0 Low- and Full-Speed compliant, and one high-speed IEEE 1284 compatible parallel port.

Test Button The test button is used for:

- **Printing a test page** to check the connection to the printer.
- **Printing the parameter list** showing the print server settings.
- **Performing a Factory Default of** the print server, which will restore most of the parameters and settings to their factory default values.

See *Performing a Factory Default*, on page 212.

Network Indicator The network indicator flashes to indicate network activity.

Power Indicator The power indicator is lit while power is applied. If it is not lit, or if it flashes, there is a problem with the print server or its Power Adapter.

Compatible Printers Any standard printer can be used except host-based printers (also known as CAPT, GDI, PPA or Windows-based printers).

Configuration and Management The print server can be configured and managed from its internal Web pages, using HTTP as well as HTTPS in the secure mode. These Web pages offer you a platform independent management tool that is suitable for all supported network environments. See *Using a Web Browser for Print Server Management*, on page 131.

AXIS Network Product CD

The AXIS Network Product CD provides an easy-to-use electronic catalog, that includes Axis software, firmware and user documentation. If your computer is set to French, German, Italian or Spanish, the information will automatically be presented in that language, otherwise you will see the English version.

To read the PDF documents you need an Acrobat Reader, which can be fetched at http://www.adobe.com/products/acrobat/readermain.html

Start-up Procedures for Windows If your computer is configured to autostart CDs, the AXIS Network Product CD will start automatically when inserted into a local CD drive on Windows platforms. You can also navigate to the CD root directory and start the *index.htm* file from within the Windows file manager.

Start-up Procedures for UNIX/Linux, and Mac OS Using your preferred file manager application, navigate to the CD root directory and click *index.htm*

Latest Versions The latest version of Axis documentation, software and firmware is available on www.axis.com

Print Server Features and Benefits

Reliability The Axis Network Print Server print server provides high performance and reliability combined with low power consumption. The electronic circuits are based on the AXIS ETRAX 100LX chip, which comprises an integrated 32 bit RISC processor and associated network controllers.

Flexibility In the IBM Mainframe and AS/400 environment, the Axis Network Print Server can emulate IBM twinax and coax print and control functionality. This means that the Axis Network Print Server can effectively replace coax/twinax attached printers and control units on the LAN.

It supports printing in all the major computer systems and environments, including five different print methods in the TCP/IP environment. The integrated IPP (Internet Printing Protocol) function allows for printing from LAN to LAN via a WAN, such as the Internet.

Speed The AXIS ETRAX 100LX chip has been specifically designed for LAN products. It supports data transfer rates of up to 200 Mbit/s (100 Mbit Ethernet full duplex). High speed Centronics communication such as ECP, Hewlett-Packard Fast Mode, High Speed and IBM Fast Byte is supported.

Easy to Install The print server installs, operates and is managed in a reliable and easy fashion.

Security You can assign a password to restrict login and printer access. It is also possible to disable protocols and to configure a secure mode (https). See “Enabling Secure Web Services – SSL/TLS” on page 167.

Monitoring The internal print server Web pages and AXIS ThinWizard allow you to continuously monitor printer status. The Web pages are used to monitor single Axis units while AXIS ThinWizard can be used to monitor multiple Axis units. Integrity of your printing is also monitored via interactive communication with the IBM host.

The AXIS 5570e additionally supports SNMP for remote monitoring.

Futureproof The firmware stored in the print server Flash memory can be upgraded over the network. This allows you to quickly update and enhance its operational features when new print server software becomes available. See “Upgrading the Firmware” on page 173.

NetWare Packet Signature The print server supports NetWare Packet Signature Level 1, 2, 3, which protects servers and clients using the NetWare Core Protocol services. NCP packet signature prevents packet forgery by requiring the server and the client to sign each NCP packet. See your Novell NetWare documentation for detailed information.

Section 3 Basic Installation

Quick Overview

Follow these steps to make your printer network ready:

1. *Connect the Hardware*, on page 14
2. *Setting the IP Address*, on page 16
3. *"Installation Guide"* on page 15

Connect the Hardware

1. Make sure that the printer is switched off and that the Power Adapter is disconnected from the print server.
2. Locate the **serial** number, found on the underside label of the print server, and write it down. *Example: S/N: 00408c181cf0*
3. Connect the printer(s) to the print server.
4. Connect the print server to the network (Ethernet Connector) using a twisted pair RJ45 cable (of category 5 or better).
5. Switch on the printer and make sure it is ready for printing (display showing "Online", "Ready", etc.).
6. Connect the Power Adapter to the print server. The power indicator lights up. When the network indicator starts to flash, the print server is correctly connected to the network.
7. Wait 1 minute and press the test button once. A **test page** will be printed on the connected printer – keep it handy during the installation. The test page will show the assigned IP address of the print server.

The print server can now be installed in your network using one of the methods detailed in the *Installation Guide*, on page 15.

Notes:

- The test page includes a list of the most important parameters, including the network speed and the firmware version number.
- Each print server is pre-configured with a unique node address that is identical to the serial number. The node address can be changed using any standard Web browser. Please refer to ***Management and Configuration***, on page 131, for more information.
- The AXIS 5570e uses high speed Centronics communication. For use with older printers not supporting high speed, this function can be disabled by using any standard Web browser. Please refer to ***"Management and Configuration"*** on page 131, for more information.

Installation Guide

After connecting the Axis Network Print Server to your network, you are now ready to perform the basic setup procedures. The method of installation that you choose should be dictated by your printing requirements and the type of network into which you are integrating.

1. Start out with setting an IP address on the print server, described in *"Setting the IP Address"* on page 16.
2. Refer to the table below to determine which setup procedures that are relevant to your network environment.

Environment	Data Stream	Network Configuration	Actions
AS/400	SCS / IPDS	SNA	*"SNA Printing - 5494 Mode"* on page 22
	SCS	TN5250E (TCP/IP)	*"TN5250E Printing (SCS over IP)"* on page 29
	IPDS	PPR/PPD (TCP/IP)	*"PPR/PPD Printing - IPDS Data Streams"* on page 31
IBM Mainframe	SCS / IPDS	SNA	*"SNA Printing"* on page 36
		TN3270E (TCP/IP)	*"TCP/IP TN3270E Printing"* on page 42
	IPDS	PPR/PPD (TCP/IP)	*"PPR/PPD Printing - IPDS data streams"* on page 50
Windows		TCP/IP, NetBIOS/NetBEUI	*"Adding Printers in Windows"* on page 63
NetWare		TCP/IP IPX/SPX	*"Adding Printers in NetWare"* on page 92
Macintosh		TCP/IP, AppleTalk	*"Adding Printers in Macintosh"* on page 85
UNIX		TCP/IP	*"Adding Printers in UNIX/Linux"* on page 118
OS/2		TCP/IP	*"TCP/IP Printing"* on page 128
		NetBIOS/NetBEUI	*"NetBIOS/NetBEUI Printing in OS/2"* on page 129

Installation Tools

The recommended installation tools and management methods for the Axis Network Print Server are summarized here:

Protocols	Operating Systems	Configuration method	Management method
TCP/IP	Windows 2000/XP/Vista/2003	AXIS AddPrinter Wizard	Web browser, FTP, Telnet, SNMP AXIS ThinWizard
	Windows 98/NT/Me	AXIS Print Monitor software and Windows Add Printer Wizard	Web browser, FTP, Telnet, SNMP
	Mac OS X	Native Mac OS X tool	Web browser
	UNIX	Native Unix/Linux tools	Web browser, FTP, Telnet, SNMP
IPX/SPX	NetWare	Novell Utilities	Novell Utilities
NetBIOS NetBEUI	Windows 95/98 NT/Me/2000/2003	AXIS Print Monitor	Web browser. FTP, Telnet, SNMP
AppleTalk	Macintosh	Bonjour, Web browser, Mac-FTP	Web browser, Mac-FTP

Setting the IP Address

Dynamic IP Address Assignment

Method	Server required	Comment
AXIS AddPrinter Wizard		See *"Adding Printers in Windows 2000 / XP / Vista / 2003 using AXIS AddPrinter Wizard"* on page 64
DHCP	DHCP server	Dynamic assignment of IP addresses. See *Dynamic IP Address Assignment*, on page 16
RARP	RARP server	Static assignment of IP addresses. Cannot be used over routers. See *Dynamic IP Address Assignment*, on page 16
BOOTP	BOOTP server	Static assignment of IP addresses. See *Dynamic IP Address Assignment*, on page 16
Auto-IP	No server required.	Automatic assignment of IP addresses for Windows environments. See *Dynamic IP Address Assignment*, on page 16

Manual IP Address Assignment

Method	Platform	Comment	See
arp/ping	Windows	Requires the IP address for each device to be downloaded individually. Cannot be used over routers. You must define the **Default Router** and **Subnet Mask**. Log in to the print server's Web pages and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network**| **Default Router** and **Subnet Mask.** DHCP, Auto-IP, BOOTP and RARP must first be set to **No**	*Setting the IP Address using arp/ping*, on page 18
	UNIX Mac OS X		*Setting the IP Address using arp/ping*, on page 18
AXIS AddPrinter Wizard	Windows 2000, XP, Vista, 2003	Axis software that allows you to find print servers in your network and assign an IP address to them.	*Adding Printers in Windows 2000 / XP / Vista / 2003 using AXIS AddPrinter Wizard*, on page 64
AXIS ThinWizard	Windows 2000/XP	Axis software that assists in setting the IP address of multiple print servers simultaneously. This software is recommended for large organizations and enerprise networks.	*Using AXIS ThinWizard for Print Server Management*, on page 136

Dynamic IP Address Assignment

Obtaining an IP Address through DHCP

If you have a DHCP server on your network, your print server will receive an IP address automatically. The IP address will then appear on the test page printed when you press the test button once.
You should now be able to access the print server's internal Web pages as described on *Accessing the Web Pages*, on page 132

If you are not working in a DHCP network, you need to set the IP address of the print server manually. See "Manual IP Address Assignment" on page 16.

Obtaining an IP Address through Auto-IP

Auto-IP may be used to set the IP address automatically in the absence of a DHCP server.
The default Auto-IP address structure is: **169.254.xxx.xxx.**

Important:

The Auto-IP function will only function when the DHCP parameter is enabled in the print server.

This function is enabled automatically upon installation of a brand new print server. If you perform a Factory Default using the test button on the print server and you do not have a DHCP server on your network, Auto-IP will automatically set the IP address of the print server.
The **DHCP Enabled** parameter is enabled/disabled in the print server's Web pages: **Admin => Network Settings => Detailed View => TCP/IP Network => DHCP Enabled: Yes/No.**

Notes:

- Use a Web browser with JavaScript support and Java enabled.
- The Axis Network Print Server supports WINS (Windows Internet Name Service), which is recommended when setting the IP address using DHCP in Windows environments.
- If you are working in a WINS/ DDNS network, you can access the print server's Web pages using its default host name: In the Web browser's **Location/Address** field, enter the default print server name **AXISxxxxxx** (*xxxxxx* are the last six digits of the serial number, found on the print server's underside label). **Example:** If the serial number is 00 40 8c 18 16 36, type **AXIS181636** and press **Enter**.
- DHCP, RARP and BOOTP can be used to set the IP address in UNIX.
- If you are working in a network that does **not** use dynamic IP address assignment, refer to *"Manual IP Address Assignment"* on page 16 to assign an IP address to the print server manually.

Manual IP Address Assignment

To establish communication with the TCP/IP network, an IP address must be assigned to your Axis Network Print Server. Choose the appropriate method according to your network:

- **arp/ping** - use this method to set the IP address for each new print server individually.
  This method cannot be used over routers.
  Refer to *"Setting the IP Address using arp/ping"* on page 18.
- **AXIS ThinWizard** software is the primary recommended tool for large organizations.
  It can set IP addresses, discover and group print servers, install new firmware and configure multiple Axis products concurrently.
  Refer to *"Using AXIS ThinWizard for Print Server Management"* on page 136

Note:

If you are using host names, you can map a unique host name to the IP address. Refer to your system manuals for instructions on how this is performed on your system.

Setting the IP Address using arp/ping

Refer to the appropriate section below to assign an IP address to your Axis Network Print Server using arp/ping:

Windows

Open a Command Prompt and enter the following syntax:

	Syntax	Example
1.	arp -s <Internet address> <Ethernet address>	arp -s 192.168.3.191 00-40-8c-18-16-36
2.	ping <Internet address>	ping 192.168.3.191

The host will return **reply from 192.168.3.191**, or a similar message. This indicates that the address has been set and that communication is established. You are now ready to print.

UNIX, Mac OS X

Open a Terminal and enter the following syntax:

	Syntax	Example
1.	arp -s <Internet address> <Ethernet address>	arp -s 192.168.3.191 00:40:8c:18:16:36
2.	ping <Internet address>	ping 192.168.3.191

The host will return **psname is alive**, or a similar message. This indicates that the address has been set and that communication is established. You are now ready to print.

Important!

You must define the **Default Router** and **Subnet Mask** when you set a static IP address. Log in to the print server's Web pages and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** | **Default Router** and **Subnet Mask.**
DHCP, Auto-IP, BOOTP and RARP must first be set to No!

Notes:

- The Ethernet address is equal to the serial number, which is located on the underside label of the **AXIS 5570e**.
- The arp command varies between different UNIX systems. Some BSD type systems expect the host name and node address in reverse order. Furthermore IBM AIX systems will require the additional argument ether.
  Example:
  arp -s ether <host name> 00:40:8c:10:00:86 temp
- When you execute the ping command for the first time, you may experience a significantly longer response time than usual.
- The ability to set the IP address with ARP and PING will only be enabled the first 10 minutes after restarting the print server.

Using RARP in UNIX/Linux

Follow the instructions below to set the IP address using RARP.

1. Append the following line to your Ethernet Address table. This is typically located in the `/etc/ethers` file:

```
<Ethernet address> <host name>
```

Example:

```
00:40:8c:10:00:86 npsname
```

2. Update, if necessary, your host table and alias name databases, as required by your system.
3. If it is not already running, start the RARP daemon. This is typically performed using the `rarpd -a` command.
4. Restart the AXIS 5570e to download the IP address.

Notes:

- The Ethernet address is equal to the serial number, which can be found on the underside label of the AXIS 5570e.
- If you are a IBM AIX user, you will probably not have access to a RARP daemon. If this is the case, you can use either the arp or BOOTP methods instead.

Using BOOTP in UNIX/Linux

Follow the instructions below to set the IP address using BOOTP:

1. Append the following entry to your boot table. This is typically performed by editing the file: `/etc/bootptab`

```
<host name>:ht=<hardware type>:vm=<vendor magic>:\
:ha=<hardware address>:ip=<IP address>:\
:sm=<subnet mask>:gw=<gateway field>
```

Example:

```
npsname:ht=ether:vm=rfc1048:\
:ha=00408c100086:ip=192.168.3.191:\
:sm=255.255.255.0:gw=192.168.1.1
```

The Axis Network Print Server can automatically download a customized config file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your boot table. The config file is downloaded immediately after the Axis Network Print Server receives its IP address.

Notes:

- The Axis Network Print Server supports WINS (Windows Internet Name Service), which is recommended when setting the IP address using DHCP in Windows environments.
- The Ethernet Address is the same as the serial number, found on the print server's underside label. Enter the Ethernet Address in the same format as in the example above.
- Setting the IP address with `arp` and `ping` is only possible in the first 10 minutes after re-booting the print server.
- When you execute the `ping` command for the first time, you may experience a significantly longer response time than usual.
- The `arp` command varies between different UNIX systems.
- You need root privileges on your UNIX system in order to execute the `arp` command and run *axinstall*.
- Some BSD type systems expect the host name and serial number in reverse order. Furthermore IBM AIX systems will require the additional argument `ether`.
  Example: `arp -s ether` <host name> <Ethernet Address> `temp`

Managing DHCP

Follow the instructions below to download the IP address using DHCP:

1. Edit or create a scope in the DHCP manager of the DHCP daemon. The entries included in this scope should contain the following parameters:
   - range of IP addresses
   - subnet mask
   - default router IP address
   - WINS server IP address(es)
   - lease duration
2. Activate the scope.

The Axis Network Print Server will automatically download the DHCP parameters.

If you are using WINS, you must include at least one WINS server IP address in the DHCP scope. Immediately after the IP address has been received, the Axis Network Print Server registers its host name and IP address on the WINS server.

The Axis Network Print Server can automatically download a customized config file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your DHCP scope. The config file is downloaded immediately after the Axis Network Print Server receives its IP address.

System Privileges

You need root privileges on your UNIX system, or administrator privileges on a Windows NT server.

Ethernet Address

You need to know the Ethernet address of your AXIS 5570e to perform the installation. The Ethernet address is based upon the serial number of your print server. This means, for example, that a print server with the serial number 00408C100086, will have the corresponding Ethernet address of 00 40 8C 10 00 86. The serial number is located on the underside label of the print server.

IP Address

If you do not have a DHCP server on your network, you must obtain an unused IP address from your network administrator.

Important:

DO NOT use the IP addresses used in the following examples when installing your Axis Network Print Server. Always consult your network administrator before assigning an IP address to your Axis Network Print Server.

Registering and Resolving Host Names

In order to register the host name of the Axis Network Print Server in networks with dynamic IP address settings, WINS (Windows Internet Name Service) and DDNS (Dynamic Domain Naming System) are supported. It is recommended that at least one of these methods be used when setting the IP address of the Axis Network Print Server using DHCP.

The host name of the Axis Network Print Server is specified by the PS_NAME parameter. Refer to *The Parameter List*, on page 220.

WINS Host Name Rules

WINS only supports 15 character long host names. If your host name is longer than 15 characters, the Axis Network Print Server truncates the host name to 15 characters when registering with a WINS server. You can view the Axis Network Print Server host name that is registered at a WINS server, in the print server's Web interface. Refer to *Section 11 Management and Configuration*, on page 131.

DDNS Host Name Rules

DDNS supports 53 character long host names, but they can only consist of the characters 'A-Z', 'a-z' and '-'. If your host name consists of any other characters, they are converted to '-', when registering with a DDNS server. You can view the Axis Network Print Server host name that is registered at a DDNS server, in the print server's Web interface. Refer to *Section 11 Management and Configuration*, on page 131.

If the host name matches another entry in the DDNS data base, the Axis Network Print Server deletes the entry before registering.

Notes:

- The host name limitations conclude that if you want to register the same host name at a WINS server and a DDNS server, the host name should be no longer than 15 characters and it should only contain the characters:
  'A - Z', 'a-z' and '-'
- Refer to your system manuals or to your network administrator for instructions on how host name resolutions are performed on your system.
- If the host name has not been mapped to the IP address, you can still perform the following instructions on how to download the IP address. In this case, simply replace the host name entry with the IP address wherever required.

Section 4 Setting Up - AS/400 (iSeries)

This section describes how to configure the Axis Network Print Server for printing SCS and IPDS data streams using SNA and TCP/IP transport protocols in the AS/400 (iSeries) environment.

Note:

SNA is only available for print server models with the SNA option installed. Please refer to *Protocols and Datastreams*, on page 10

A number of protocols and print methods are available. Looking at SCS over TCP/IP printing, we strongly recommend the TN5250E alternative. This print method offers superior control and management features as well as automatic configuration and high throughput using the Axis Network Print Server.

If you have decided to use SNA, we recommend the 5494 mode. Compared to the 3174 mode, this alternative yields better text formatting options as well as automatic configuration.

Proceed to the setup section that is relevant to your network environment, as described in the table below:

Printing protocol	Data streams	Action	Comment
SNA - 5494 Mode	SCS	*SNA Printing - 5494 Mode*, on page 22	Recommended method for SNA
	IPDS		
TN5250E (TCP/IP)	SCS	*TN5250E Printing (SCS over IP)*, on page 29	Recommended method for SCS over TCP/IP
PPR/PPD (TCP/IP)	IPDS	*PPR/PPD Printing - IPDS Data Streams*, on page 31	Recommended method for IPDS over TCP/IP

If you intend to operate your Axis Network Print Server in a multi-protocol environment, you should also proceed to the other relevant sections in this manual.

SNA Printing - 5494 Mode

The 5494 mode provides a significantly richer set of features for formatting text and is the recommended emulation mode in AS/400 environments.

The 5494 mode supports DBCS which accommodates printing from AS/400 host systems using languages that employ double-byte character sets, namely Chinese, Japanese and Korean. Refer to *DBCS Support*, on page 201 for further information.

The AXIS print server supports printing SCS and IPDS data streams via the SNA transport protocol.

Note:

SNA is only available for print server models with the SNA option installed. Please refer to *Protocols and Datastreams*, on page 10.

Configuring for SNA printing in 5494 Mode is described in three separate stages:

- The AS/400 Host System Checklist
- Configuring the Axis Network Print Server
- Verifying the communication

The AS/400 Host System Checklist

If you are using AS/400 Version 3 Release 1 or higher, the AS/400 host in 5494 CU mode is automatically configured. The instructions in this section describe this automated configuration procedure.

If you are using a pre-version 3 release, you must perform the configuration procedure manually. If this is the case, please refer to the Axis Web site for further documentation.

Note:

You will find an AS/400 Parameter checklist in the AXIS 5570e User's Guide where you can enter the values described in this section for future reference.

1. Type `DSPNETA` on the AS/400 command line and press **Enter**. For future reference, note the values of the `Local network ID` and `Default local location` parameters. Press **F3**.

Example:

```
DSPNETA

Display Network Attributes

System:   S1032BB0
 Current system name  . . . . . . . . . . . . . . . :   S1032BB0
 Pending system name  . . . . . . . . . . . . . . . :
 Local network ID . . . . . . . . . . . . . . . . . : > APPN
 Local control point name . . . . . . . . . . . . . :   S1032BB0
 Default local location . . . . . . . . . . . . . . : > S1032BB0
 Default mode . . . . . . . . . . . . . . . . . . . :   BLANK
 APPN node type . . . . . . . . . . . . . . . . . . :   *ENDNODE
 Data compression . . . . . . . . . . . . . . . . . :   *NONE
 Intermediate data compression  . . . . . . . . . . :   *NONE
 Maximum number of intermediate sessions  . . . . . :   200
 Route addition resistance  . . . . . . . . . . . . :   128
 Server network ID/control point name . . . . . . . :   *LCLNETID
*ANY



 Press Enter to continue.                             More...

 F3=Exit   F12=Cancel
```

The required parameter values are highlighted in bold.

2. Type `WRKLIND *ELAN` and press **Enter:**
to get a list of all line descriptions on the system. Type `5` in front of the line description and press **Enter.**

3. Press **F11** to display keywords.

```
Display Line Description     S44A6643

 Line description . . .: LIND           ETHLINE
 Option . . . . . . . .: OPTION         *BASIC
 Category of line . . .:                *ELAN

 Resource name  . . . .: RSRCNAME       LIN061
 Online at IPL . . . . : ONLINE         *YES
 Vary on wait . . . . .: VRYWAIT        *NOWAIT
 Network controller . .: NETCTL         ETHLINET
 Local adapter address : ADPTADR      08005AB77D49
 Exchange identifier . : EXCHID         056A6643
 Ethernet standard  . .: ETHSTD         *ALL
 Line speed . . . . . .: LINESPEED      10M
 Enable only for TCP/IP: TCPONLY        *NO
 Current line speed . .:                10M
 Duplex . . . . . . . .:   DUPLEX       *HALF
 Current duplex . . . .:                *HALF
 Maximum controllers. .:   MAXCTL       50

Press Enter to continue.                More...

 F3=Exit   F11=NonDisplay keywords   F12=Cancel
```

4. For future reference, note the values of the `Local Adapter Address (ADPTADR)` and `Maximum Controllers (MAXCTL)` parameters. Press **Enter** to view the active switched controllers display.

```
Display Line Description              S44A6643

 Line description . . : LIND     ETHERNET
 Option . . . . . . . : OPTION   *ACTSWTCTL
 Category of line . . :          *ELAN



 --------------Active Switched Controllers--------
 CONTROLER1
 CONTROLER2
 CONTROLER3

Press Enter to continue.                 Bottom

 F3=Exit   F11= Nondisplay keywords   F12=Cancel
```

5. Press **Enter** to display the SSAP list. Make sure that there is at least one SSAP entry dedicated for SNA. For your future reference, note the SSAP value for this entry.
   Verify that the number of controllers displayed on this screen does not exceed the value for maximum controllers (MAXCTL) from above.

```
Display Line Description                          S44A6643

 Line description .: LIND        ETHLINE
 Option . . . . .  : OPTION      *SSAP
 Category of line .:             *ELAN
 SSAP List. . . . .: SSAP


 ----Source Service Access Points------
SSAP      Maximum Frame    Type
 04            1496        *SNA
 12            1496        *NONSNA
 AA            1496        *NONSNA
 C8            1496        *HPR
 08             1496       *SNA

 Press Enter to continue.                Bottom

 F3=Exit   F11=Nondisplay keywords   F12=Cancel
```

Note:

The SNA entry is normally set to SSAP 04.

6. Press **Enter** to display the `Autocreate controller (AUTOCRTCTL)` parameter. Ensure that the `AUTOCRTCTL` parameter is set to `*YES`. Press **F3** to return to the command line.

```
Display Line Description                          S44A6643

 Line description . . :    LIND          ETHERNET
 Option . . . . . . . :    OPTION        *APPN
 Category of line . . :                  *ELAN

 Link speed . . .  . .:    LINKSPEED     10M
 Cost/connect time . .:    COSTCNN       0
 Cost/byte  . . . . . :    COSTBYTE      0
 Security for line. . :    SECURITY      *NONSECURE
 Propagation delay. . :    PRPDLY        *MIN
 User-defined 1 . . . :    USRDFN1       128
 User-defined 2 . . . :    USRDFN2       128
 User-defined 3 . . . :    USRDFN3       128
 Autocreate controller:    AUTOCRTCTL    *YES
 Autodelete controller:    AUTODLTCTL    1440

Press Enter to continue.                Bottom

  F3=Exit   F11=Nondisplay keywords   F12=Cancel
```

7. Type `DSPSYSVAL QCHRID` on the command line and press **Enter.** Note the code page for future reference. Press **F3** to exit.

8. Type DSPSYSVAL QAUTOCFG on the command line and press **Enter**. Make sure the Autoconfigure device parameter is turned on (1). Press **F3** to exit.

```
Display System Value

 System value . . . . . :   QAUTOCFG
 Description  . . . . . :   Autoconfigure devices


 Autoconfigure device . :   1          0=Off
                                       1=On
```

9. Type DSPSYSVAL QAUTORMT on a command line and press **Enter.** Make sure the Autoconfigure remote controller parameter is turned on(1). Press **F3** to exit.

```
Display System Value

 System value . . . . . :   QAUTORMT
 Description  . . . . . :   Autoconfigure of remote controllers


 Autoconfigure remote controller :   1          0=Off
                                                1=On
```

10. Type DSPMODD QRMTWSC on the command line and press **Enter**. Press **F11** to display the keywords. Verify that the mode description exists on the system and that it is configured as presented in the example below. Use the command
WRKMODD QRMTWSC if you need to change a value.
Press **F3**.

```
Display Mode Description                          S44A6643

Mode description . . . . . :MODD       QRMTWSC

Class-of-service . . . . . :COS        #CONNECT
Maximum sessions . . . . . :MAXSSN     57
Maximum conversations. . . . :MAXCNV   57
Locally controlled sessions. . :LCLCTLSSN 56
Pre-established sessions. . . .:PREESTSSN 0
Maximum inbound pacing value. .:MAXINPAC  *CALC
Inbound pacing value . . . . . :INPACING  7
Outbound pacing value  . . . . :OUTPACING 7
Maximum length of request unit.:MAXLENRU  *CALC
Data compression . . . . . :DTACPR     *NETATR
Inbound data compression . . . :INDTACPR  *RLE
Outbound data compression  . . :OUTDTACPR *RLE
Session level encryption . . . :SLE        *NONE
Text . . . . . :TEXT       This Mode
is IBM Supplied

Press Enter to continue.                  Bottom


F3= Exit   F11=Nondisplay keywords    F12=Cancel
```

11. Type `DSPUSRPRF QUSER` and press **Enter**. Make sure that the `QUSER Status` is `*ENABLED`.

```
Display User Profile - Basic

 User profile . . . . . :   QUSER
 Previous sign-on . . . . . :
 Sign-on attempts not valid . . . . . :   0
 Status . . . . . :   *ENABLED
 Date password last changed . . . . . :   08/08/00
 Password expiration interval . . . . . :   *SYSVAL
 Set password to expired . . . . . :   *NO
 User class . . . . . :   *USER
 Special authority . . . . . :   *NONE
 Group profile . . . . . :   *NONE
 Owner . . . . . :   *USRPRF
 Group authority . . . . . :   *NONE
 Group authority type . . . . . :   *PRIVATE
 Supplemental groups . . . . . :   *NONE
 Assistance level . . . . . :   *SYSVAL
 Current library . . . . . :   *CRTDFT

More...
```

12. Page forward to the next screen by pressing **Enter** and verify that the `Maximum Storage Allowed` parameter is set to `*NOMAX`. Press **F3**.

```
Display User Profile - Basic

 User profile . . . . . :   QUSER

 Initial program . . . . . :   *NONE
   Library . . . . . :
 Initial menu . . . . . :   MAIN
   Library . . . . . :     *LIBL
 Limit capabilities . . . . . :   *NO
 Text . . . . . :   Work Station User

 Display sign-on information . . . . . :   *SYSVAL
 Limit device sessions . . . . . :   *SYSVAL
 Keyboard buffering . . . . . :   *SYSVAL
 Maximum storage allowed . . . . . :   *NOMAX
   Storage used . . . . . :     832
 Highest scheduling priority . . . . . :   3
 Job description . . . . . :   QDFTJOBD
   Library . . . . . :     QGPL

More...
 Press Enter to continue.

 F3=Exit   F12=Cancel
```

Use the command `WRKCFGSTS *CTL xxxx*` (where `xxxx` is the first `4` characters of the Axis Network Print Server `5494 LU Name`) and press **Enter** to delete any previously created Controller and Device descriptions specific to your Axis Network Print Server. Delete the Device Descriptions (indented text) first and then the Controllers. Print a test page if you are unsure of the Axis Network Print Server `5494 LU Name`.

```
Work with Configuration Status                S1032BB0

 Position to  . . . . .               Starting characters

 Type options, press Enter.
   1=Vary on   2=Vary off   5=Work with job   8=Work with description
   9=Display mode status    13=Work with APPN status...

 Opt  Description       Status                -------------Job--------------
      FSIOP             ACTIVE
        ETHERNET        ACTIVE
          AXIS11        ACTIVE
            AXIS11      ACTIVE
              AXIS11    ACTIVE/TARGET         SHEILA      QUSER       010190
              AXIS11    ACTIVE/SOURCE         SHEILA      QUSER       010190
              AXIS11    ACTIVE/SOURCE         SHEILA      QUSER       010190
              AXIS11    ACTIVE/SOURCE         SHEILA      QUSER       010190
```

Configuring the Axis Network Print Server

To perform the instructions presented in this section, you should first assign an IP address to your Axis Network Print Server using one of the methods presented in **Setting the IP Address,** on page 16.

After you have completed the procedures in the AS/400 Host system checklist above, follow the instructions below to configure the Axis Network Print Server for SNA printing in the AS/400 environment using a Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Note:

To protect the **Admin** pages and the **Configuration Wizard** from unauthorized use, enter a password (default Pass) in the **Root Password** field under **Admin** | **General Settings**.

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This will start the **Configuration Wizard** which is a step-by-step guide through the required IBM configuration settings.

Notes for SCS printing:

- In the Configuration Wizard's IBM Printer Emulation window, 38xx is the value used for LaserWriter printers and all other values are used for matrix printers.
- In the Configuration Wizard Printer Driver window, PCL is used for LaserWriter printers, all other values apply to matrix printers.

Note for IPDS printing:

In the Configuration Wizard, you can choose between PCL or PostScript printing. Choose the printer language that corresponds to your printer.

Verifying the Communication Link

1. Type `WRKCFGSTS *CTL xxxx*` on the AS/400 command line (`xxxx` is the first four characters of the Axis Network Print Server `5494 LU Name`) and press **Enter**. After a couple of minutes, ensure that the following items are displayed:
   - One APPC controller with the same name as the Axis Network Print Server `5494 LU Name`.
   - One APPC device with the same name as the Axis Network Print Server `5494 LU Name`, one controller session `(QRMTWSC)` and the currently active printer sessions `(QRMTWSC)`.
   - One twinax controller named `xxxxxRMT`, where `xxxxx` are the first five characters of the Axis Network Print Server `5494 LU Name`.
   - One, two or three twinax printer devices named `xxxxPRT0z` (`xxxx` are the first four characters of the Axis Network Print Server `5494 LU Name` and `z` is the printer device number).

   The status of all items should now be `ACTIVE` or `VARIED ON`.
2. Type `STRPRTWTR xxxxPRT0z` on the AS/400 command line (`xxxxPRT0z` is the printer device name) and press **Enter**. This command starts the writer for this printer device.
3. Press the Axis Network Print Server test button once to print a test page. Ensure that the SNA status is defined on the test page as `Idle, Actv` or `LU-4`.

TN5250E Printing (SCS over IP)

TN5250E is the recommended protocol to use when printing SCS data streams over TCP/IP. This print method offers superior control, management and throughput for the Axis Network Print Server.

Before you Begin

Make sure that the AS/400 host is running OS/400 V3R2 or higher with TCP/IP support installed and configured.

Make sure that the latest PTFs are installed. Information about which PTFs to use can be obtained from:

http://as400service.rochester.ibm.com/

The AS/400 Host System Checklist

There is an AS/400 Parameter checklist in the AXIS 5570e Axis Network Print Server User's Guide where you can enter the values described in this section for future reference.

1. Type `WRKCTLD *VWS` on the AS/400 command line and press **Enter** to determine the number of auto-configured virtual devices on your AS/400 system. Press **F3.**
2. Type `DSPSYSVAL QAUTOVRT` and press **Enter.** Make sure that the value of the `QAUTOVRT` parameter is greater than the number of auto-configured virtual devices. Press **F3**.
3. Type `DSPSYSVAL QCHRID` and press **Enter.** Note the system language (code page) for future reference. Press **F3**.
4. Type `WRKTCPSTS OPTION *IFC` and press **Enter** to determine the IP address of the AS/400 server. Press **F3**.

Configuring the Axis Network Print Server

Follow the instructions below to configure the Axis Network Print Server for TN5250E printing using a Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Important:

To protect the admin pages and the Configuration Wizard from unauthorized use, enter a password (default Pass) in the Root Password field under Admin | General Settings.

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This takes you to the **Configuration Wizard** which is a step-by-step guide through the required configuration settings.

Notes:

- In the Configuration Wizard, you must choose a new and unused name for the printer (in the 'Printer Name' field) when in the 'TN5250E Protocol Configuration' window.
- In the Configuration Wizard's 'Printer Driver' window, PCL is used for LaserWriter printers, all other values apply to matrix printers.

Verifying the Communication Link

1. Type `WRKCFGSTS *DEV xxxx*`, where xxxx are the first four characters of the printer device name, on the AS/400 command line and press **Enter**. A list of printer devices will be displayed. Make sure that a virtual printer device is active.
2. Direct a printout to this printer device to check the integrity of the communication link.
3. Press the test button on the Axis Network Print Server once to print a test page. Make sure that the TN5250E status is defined on the test page as `Idle, Actv` or `LU-1.`

PPR/PPD Printing - IPDS Data Streams

Note:

> IPDS is only available for AXIS 5570e models with the IPDS option installed. For more information, refer to *Protocols and Datastreams*, on page 10.

The configuration procedures presented in this section are divided into three separate steps:

- Configuring the AS/400 host
- Configuring the AXIS 5570e
- Verifying the communication between the AXIS 5570e and the AS/400

Before you Begin

Make sure that the AS/400 host is running OS/400 V3R6 or higher with TCP/IP support installed and configured.

Make sure that the latest PTFs are installed. Information about which PTFs to use can be obtained from:

http://as400service.rochester.ibm.com/

Configuring the AS/400 Host System

When configuring the AS/400 host system you can:

- create a PSF configuration
- create a printer device description

Creating a PSF Configuration

The system uses default values but you can optionally create a PSF configuration by following the instructions below:

1. Issue the command `CRTPSFCFG`.
2. Press **F11** to display keywords.
3. Select a name for the PSF configuration and enter it at the `PSF configuration (PSFCFG)` line. The name may comprise the letters A-Z and the numerals 0-9, but must begin with a letter. A maximum of 10 characters are allowed.
4. Enter `QGPL` at the `Library` line.
5. Enter `*YES` at the `IPDS pass through (IPDSPASTHR)` line.
6. Enter `*NORDYF` at the `Activate release timer (ACTRLSTMR)` line.
7. Enter `*NOMAX` at the `Release timer (RLSTMR)` line.
8. Press the **Enter** key on your keyboard to create the PSF configuration.

Many of the settings presented in the following panel example can be left at their default settings. However, the settings that you must change are highlighted in **bold** text and the settings that you must enter exactly as shown in the example are highlighted in **bold underlined** text.

Example:

```
Create PSF Configuration (CRTPSFCFG)

Type choices, press Enter.

PSF configuration. . . . . PSFCFG         > AXISPR1
  Library  . . . . . .                    > QGPL
User resource library list . . . USRRSCLIBL       *JOBLIBL
Device resource library list . . DEVRSCLIBL       *DFT
                          + for more values
IPDS pass through. . . . . IPDSPASTHR     > *YES
Activate release timer . . . . . ACTRLSTMR      > *NORDYF
Release timer. . . . . RLSTMR         > *NOMAX
Restart timer. . . . . RESTRTMR         *IMMED
APPC and TCP/IP retry count. . . RETRY            15
Delay between APPC retries . . . RETRYDLY         90
Automatic session recovery . . . UAUTOSSNRCY      *NO
Acknowledgment frequency . . . . ACKFRQ           100
Text 'description' . . . . . TEXT             *BLANK
                                                    Bottom
```

Creating a Printer Device Description

Create a printer device description by following the instructions below:

1. Issue the command `CRTDEVPRT` and press **Enter**.
2. Press **F11** to display keywords.
3. Select a name for the printer device and enter it at the `Device Description (DEVD)` line. The name may comprise the letters A-Z and the numerals 0-9, but must begin with a letter. A maximum of 10 characters are allowed. In the following instructions the printer device name will be referred to as AXISPR1.
4. Enter `*LAN` at the `Device class (DEVCLS)` line.
5. Enter `*IPDS` at the `Device type (TYPE)` line.
6. Enter `0` at the `Device model (MODEL)` line.
7. Enter `*IP` at the `LAN attachment (LANATTACH)` line.
8. Enter a port number at the `Port number (PORT)` line. The Axis print server is pre-configured with the port numbers 5001, 5002 and 5003 for IPDS printing.
9. Enter a FGID number at the `Font Identifier (FONT)` line, e.g. 11 (Courier).
10. Define the `Remote location (RMTLOCNAME)`. Use the IP address of the Axis Network Print Server.
11. (Optional) Enter the name of the previously created PSF configuration at the `User-defined object (USRDFNOBJ): Object` line.
12. (Optional) Enter the library of the previously created PSF configuration at the `User-defined object (USRDFNOBJ): Library` line.
13. (Optional) Enter `*PSFCFG` at the `User-defined object (USRDFNOBJ): Object type` line.

14. Press the **Enter** key on your keyboard to create the printer device description.

Many of the settings presented in the following panel example can be left at their default settings. However, the settings that you must change are highlighted in **bold** text and the settings that you must enter exactly as shown in the example are highlighted in **bold underlined** text.

Create Device Desc (Printer) (CRTDEVPRT)

```
Type choices, press Enter.

Device description . . . . . DEVD          > AXISPR1
Device class . . . . . . . . . DEVCLS       > *LAN
Device type  . . . . . . . . . TYPE         > *IPDS
Device model . . . . . . . . . MODEL        > 0
LAN attachment . . . . . . . . LANATTACH    > *IP
Advanced function printing . . . AFP          *YES
Port number  . . . . . . . . . PORT         > 5001
Online at IPL  . . . . . . . . ONLINE         *YES
Font:                          FONT
  Identifier . . . . . . . . .                > 11
  Point size . . . . . . . . .                  *NONE
Form feed. . . . . . . . . . . FORMFEED       *FILE
Separator drawer . . . . . . . SEPDRAWER      *FILE
Separator program  . . . . . . SEPPGM         *NONE
  Library  . . . . . . . . . .
Printer error message  . . . . . PRTERRMSG      *INQ
                                                    More...

Message queue  . . . . . . . . MSGQ           QSYSOPR
  Library  . . . . . . . . . .                *LIBL
Activation timer . . . . . . . ACTTMR         170
Image configuration. . . . . . IMGCFG         *NONE
Maximum pending requests . . . MAXPNDRQS      6
Print while converting . . . . PRTCVT         *YES
Print request timer. . . . . . PRTRQSTMR      *NOMAX
Form definition. . . . . . . . FORMDF         F1C10110
  Library. . . . . . . . . . .                *LIBL
Remote location: . . . . . . . RMTLOCNAME
  Name or address. . . . . . .                > '192.168.5.23'

User-defined options . . . . . USRDFNOPT      *NONE
                         + for more values

                                                        More...
```

```
User-defined objects . . . . . USRDFNOBJ
    Object . . . . . .              > AXISPR1
       Library . . . . . .          > QGPL
    Object type. . . . . .          > *PSFCFG
Data transform program . . . . . USRDTATFM      *NONE
    Library. . . . . .
User-defined driver program. . . USRDRVPGM      *NONE
    Library. . . . . .
Text 'description' . . . . . TEXT           IPDS over PPR/PPD

More...
```

Configuring the Print Server

Follow the instructions below to configure your AXIS 5570e using a standard Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the AXIS 5570e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5570e will appear.

Note:

To protect the **Admin** pages and the Configuration Wizard from unauthorized use, enter a password (default Pass) in the Root Password field under **Admin** | **General Settings.**

Note for IPDS printing:

In the Configuration Wizard, you can choose between PCL or PostScript printing. Choose the printer language that corresponds to your printer.

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This takes you to the **Configuration Wizard** which is a step-by-step guide through the required configuration settings.

Verifying the communication

Follow the instructions below to verify the communication by sending a print job to the AXIS 5570e:

AXISPR1 is an example. Refer to *Creating a Printer Device Description*, on page 32 **for details.**

1. Type `WRKCFGSTS *DEV AXISPR1` on the AS/400 command line and press **Enter** to display the previously created printer device. The status of the printer device should be `VARIED OFF`.
2. Vary on the printer device by typing `1` in the `Opt` field. Press **ENTER**.
3. Press **F5** to refresh the display. The printer device should now be `VARIED ON`.
4. Start the printer writer by typing `STRPRTWTR AXISPR1` on the AS/400 command line. Press **Enter**.
5. Press **F5** to refresh the display. The printer device should now be `ACTIVE/WRITER`.

6. Direct a printout to this printer device. A successful printout verifies the communication link between the AS/400 and the AXIS 5570e.

The AXIS 5570e is now ready for printing in the AS/400 environment.

Section 5 Setting Up - IBM Mainframe (zSeries)

This section describes how to configure the Axis Network Print Server for printing SCS, 3270 and IPDS data streams using SNA and TCP/IP transport protocols in the IBM Mainframe (zSeries) environment.

Proceed to the setup section that is relevant to your network environment, as described in the table below:

Printing protocol	Data streams	Action
SNA	SCS	*SNA Printing*, on page 36
	3270DS	
	IPDS	
TN3270E (TCP/IP)	SCS	*TCP/IP TN3270E Printing*, on page 42
	3270DS	
	IPDS	
PPR/PPD (TCP/IP)	IPDS	*PPR/PPD Printing - IPDS data streams*, on page 50

Notes:

- IPDS is only available for print server models with the IPDS option installed.
- SNA is only available for print server models with the SNA option installed.

  Please refer to *"Protocols and Datastreams"* on page 10.

If you intend to operate your Axis Network Print Server in a multi-protocol environment, you should also proceed to the other relevant sections in this manual.

SNA Printing

The Axis Network Print Server supports printing of SCS, 3270 and IPDS data streams via the SNA transport protocol.

Important:

The Axis Network Print Server must be set up to emulate an IBM 3174 (3174 CU mode) in the Mainframe/VTAM environment.

Configuring for SNA printing in 3174 CU Mode is described in three separate stages:

- Configuring the IBM Mainframe Host system
- Configuring the Axis Network Print Server
- Verifying the communication

Configuring the Mainframe Host System

These procedures are compulsory for printing in the IBM Mainframe environment.

Configuring the host system requires you to do the following:

- Make sure that a VTAM Logon-mode entry is available for your Axis Network Print Server.
- Create the VTAM Definition for the Major Node where the Print Server definition is to be placed.

Before you Begin

Make note of the Axis Network Print Server serial number that is found on the underside label of the print server.

Important:

When using a concentrator gateway between the host and your print server, it is not necessary to define separate VTAM Major Node and PU definitions for the Axis Network Print Server. You will instead be working with the gateway VTAM definitions. Since the Axis Network Print Server will appear to the host as one or several LU's attached to the gateway PU, you need only add LU definitions to the gateway major node definition and then proceed to item 3 below.

1. Define a `VTAM Major Node Definition` where the Print Server definitions will be placed. Using a channel attached 3174 as a gateway to the host, this definition is typically defined as a `Local Major Node`. If you are using a remotely attached gateway via a 37X5 communications controller or a LAN attached 3172, you will be working with a `Switched Major Node definition`.
2. Add the Print Server `PU` and `LU` definitions to the major node definition.

For Switched Major Node definitions you need to:

- Add the IDBLK (default = E07) and IDNUM (default = last 5 digits of the Axis Network Print Server MAC address) entries to the PU definition.
- Code a PATH definition using the unit's full 12 digit MAC address.

  Example: An Axis Network Print Server with a MAC/node address of 00408C100086 will be defined as:
  PA5570e1 PATH DIALNO=010400408C100086, GID=1, FID=1, GRPNM=gggggg

Note:

'GRPNM' specifies the symbolic name of a GROUP statement in an NCP major node. That GROUP statement defines a logical group of SDLC switched lines or token-ring switched lines.

3. Make sure that the corresponding `VTAM Logon-mode` entries are available and that the appropriate `LU` session types (`LU1` or `LU3`) are used.
4. `Vary ACTive` the `VTAM Major Node` definition for the Axis Network Print Server.

Sample Sessions

The examples below are based on samples given in `VTAM Customization` (IBM part no: SC23-0112), with some changes to optimize use for Axis Network Print Server. VTAM for MVS is assumed, although the configuration for VM and VSE is similar.

Logon-mode Entry

Creating a VTAM Logon-mode entry for your Axis Network Print Server.

Logon-mode entry for LU type 1 printing:

```
*
* For application output of LU-1 SNA Character Stream (SCS)
*
             TITLE SCS5570e
SCS5570e     MODEENT LOGMODE=SCS5570e,            X
             FMPROF=X03,                          X
             TSPROF=X03,                          X
             PRIPROT=XB1,                         X
             SECPROT=XB0,                         X
             COMPROT=X3080,                       X
             RUSIZES=X8585,                       X
             PSERVIC=X01400001000000000001000000, X
             PSNDPAC=X03,                         X
             SRCVPAC=X03
```

Logon-mode entry for LU type 3 printing:

```
*
* For application output of LU-3 3270 Data Stream (3270DS)
*
             TITLE 'DSC5570e'
DSC5570e     MODEENT LOGMODE=DSC5570e,            X
             FMPROF=X'03',                        X
             TSPROF=X'03',                        X
             PRIPROT=X'B1',                       X
             SECPROT=X'90',                       X
             COMPROT=X'3080',                     X
             RUSIZES=X'8585',                     X
             PSERVIC=X'0300000000000185018507F00', X
             PSNDPAC=X'03',                       X
             SRCVPAC=X'03'
```

Switched Major Node Definitions

The example below shows how the print server PU, PATH, and LU definitions may be coded in a switched major node definition.

```
* PU definition
* E07xxxxxx is the node ID set in Axis Network Print Server.
*
PU5570e1     PUADDR=04,                          X
             PUTYPE=2,                           X
             IDBLK=E07,                          X
             IDNUM=nnnnn,                        X
             MAXPATH=1,                          X
             SSCPFM=USSSCS,                      X
             USSTAB=USSMAST,                     X
             VPACING=(0)
*
* Path definition
* xxxxxxxxxxxx is the 12 last digits of the MAC
* address of the Axis Network Print Server
*
PA5570e1     PATHDIALNO=0104xxxxxxxxxxx,         X
             GID=1,                              X
             PID=1,                              X
             GRPNM=gggggg
*
* LU definitions. Use either LU5570e1 or LU5570e3
*
* LU type 1 (SCS)
*
LU5570e1     LULOCADDR=2,                        X
             DLOGMOD=SCS5570e,                   X
             VPACING=7,                          X
             PACING=3
*
* LU type 3 (3270DS)
*
LU5570e3     LULOCADDR=2,                        X
             DLOGMOD=DSC5570e,                   X
             VPACING=7,                          X
             PACING=3
```

Note:

In the PU definition, IDNUM should be set to the five last digits of the Axis Network Print Server node address, NODE_ADDR. By default NODE_ADDR stands for the five last digits of the Axis Network Print Server serial number.

In the path definition, PATH DIALNO should be comprised with its first two digits equal to the place holder, the next two set to the SAP and the remaining twelve digits set to the Axis Network Print Server Ethernet or Node address. By default the Ethernet/Node address is identical to the Axis Network Print Server serial number. A valid GRPNM must also be supplied.

In the LU definition, the LOCADDR number maps to the Logical Printer number of the Axis Network Print Server. The first eight Local Addresses pass the printout through Logical Printer 1-8. However, some IBM systems do not allow Local Address 1 to be used for printing. Refer to ***"Logical Printers for Customized Printing"*** on page 157 for more information about logical printers.

Node Definitions

The example below shows how the print server PU and LU definitions may be coded in a local major node definition:

```
* 5570e DSPU DEFINITION
DSPU5570e5570ePU CUADDR=E31,                      X
            MODETAB=MODE3290,                     X
            PUTYPE=2,ISTATUS=ACTIVE,MAXBFRU=1
DSPULU02 LU  LOCADDR=2                            X
            SSCPFM=USSSCS,                        X
            USSTAB=USSTAB,                        X
            PACING=1,                             X
            VPACING=2,                            X
            ISTATUS=ACTIVE,                       X
            LOGAPPL=MWTC,                         X
            DLOGMOD=SCS5570e
DSPULU03 LU  LOCADDR=3,                           X
            SSCPFM=USSSCS,                        X
            USSTAB=USSTAB,                        X
            PACING=1,                             X
            VPACING=2,                            X
            ISTATUS=ACTIVE,                       X
            LOGAPPL=MWTC,                         X
            DLOGMOD=SCS5570e
```

Note:

If the LAN media at the remote (Print Server) location differs from that at the host location (e.g. Remote LAN = Ethernet and Host LAN = Token Ring), the MAC address definitions must be modified, as outlined below:

Print Server Modifications:

The Axis Network Print Server Host MAC address (H1_MAC_ADDR) must be bit-order reversed for each byte,
e.g. if the host address is 08005AB77D49 the converted address will be 10005AEDBE92

Host Modifications:

The required Host modifications are dependent upon the VTAM definition for the Major Node where the Print Server definition is placed.

Case 1:
VTAM Major Node definition is a Switched Major Node.
The MAC address of the Axis Network Print Server must be bit-order reversed in the PATH entry. An Axis Network Print Server with a MAC/node address of 00408C1B06D4 will be defined using the MAC/node address 000231D8602B as follows:

Case 2:
VTAM Major Node definition is a Local Major Node.
When using a channel attached controller as gateway to the host, the MAC address of the Axis Network Print Server is configured in the gateway. The address must be reversed, as in case 1 above.

Configuring the Axis Network Print Server

To perform the instructions presented in this section, you should first assign an IP address to your Axis Network Print Server using one of the methods presented in **Setting the IP Address,** on page 16.

The purpose of the configuration of the Axis Network Print Server is to emulate a LAN attached IBM 3174 Control Unit running SNA PU2.0.

Follow the instructions below to configure the Axis Network Print Server using a Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Important:

To protect the Admin pages and the Configuration Wizard from unauthorized use, enter a password (default Pass) in the Root Password field under **Admin** | **General Settings.**

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This will start the **Configuration Wizard** which is a step-by-step guide through the required configuration settings.

Notes for SCS printing:

- In the Configuration Wizard's IBM Printer Emulation window, 38xx is the value used for LaserWriter printers and all other values are used for matrix printers.
- In the Configuration Wizard Printer Driver window, PCL is used for LaserWriter printers, all other values apply to matrix printers.

Note for IPDS printing:

In the Configuration Wizard, you can choose between PCL or PostScript printing. Choose the printer language that corresponds to your printer.

Verifying the Communication Link

The easiest way to test the communication is by sending a print job to the Axis Network Print Server. If there are problems, press the test button once to print the test page where you can find the present SNA link status.

Procedures

1. Power on the Print Server and wait for 2 minutes.
2. Press the test button once to print a test page and make sure that the SNA status line is defined as either:
   - Idle
   - Actv
   - LU-1
   - LU-3

Note:

Please refer to the Parameter List and FAQ on the Axis Web site, if the status line indicates that the `SNA link is not active`.

The Axis Network Print Server is now ready for use in the SNA environment.

TCP/IP TN3270E Printing

The following procedures describe how to configure the Axis Network Print Server for SCS, 3270DS and IPDS printing, using TCP/IP TN3270E.

This is achieved by establishing communication between the Axis Network Print Server and Mainframe host via a TN3270E server, using the TCP/IP transport protocol for the SCS, 3270 and IPDS data streams, as illustrated below:

IPDS is only available for print server models with the IPDS option installed. Please refer to ***"Protocols and Datastreams"*** on page 10

Configuring for TN3270E printing is described in four separate stages:

- Configuring the IBM Mainframe Host system
- Configuring the Axis Network Print Server
- Configuring the TN3270E server
- Verifying the communication

Configuring the Mainframe Host

Consult your TN3270E server documentation and make sure that the appropriate VTAM host system definitions are set up for mainframe-to-TN3270E server SNA communication.

Configuring the Axis Network Print Server

Follow instructions below to configure the Axis Network Print Server using a Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Important:

To protect the Admin pages and the Configuration Wizard from unauthorized use, enter a password (default Pass) in the Root Password field under **Admin** | **General Settings.**

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This will start the **Configuration Wizard** which is a step-by-step guide through the required configuration settings.

Notes for SCS printing:

- In the Configuration Wizard, Non-IPDS Printer Emulation uses value structure 38xx for LaserWriter printers. All other values can be used for matrix printers.
- In the Configuration Wizard's Printer Driver window, PCL is used for LaserWriter printers, all other values apply to matrix printers.

Note for IPDS printing:

- The AXIS 5570e supports eight concurrent TN3270E host sessions.
- In the Configuration Wizard, you can choose between PCL or PostScript printing. Choose the printer language that corresponds to your printer.

Configuring the TN3270E server

The TN3270E server may be implemented as a software package running on the mainframe itself, a router or other server hardware.

Configuration examples for two popular TN3270E-capable servers are described below, namely:

- Microsoft SNA Server
- Novell NetWare for SAA.

Typical Axis Network Print Server TCP/IP TN3270E Network Configuration

Note:

- Configuration procedures can differ from other TN3270E servers.
- For additional information about configuring other TN3270E servers, refer to the Support pages on www.axis.com

Microsoft SNA Server

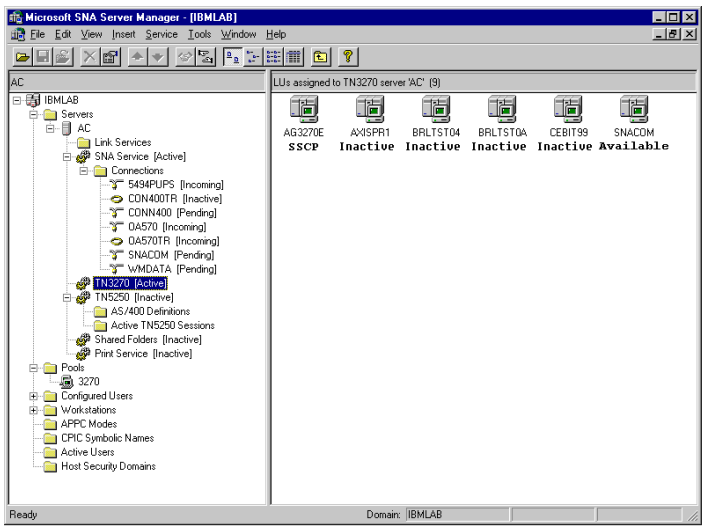
Communication is established in two separate stages, SNA Server-to-Host connection and SNA Server to Axis Network Print Server connection, as described below:

SNA Server-to-Host Connection

Follow the steps below to set-up a SNA Server-to-Host connection for the Axis Network Print Server:

1. Start Microsoft SNA Server Manager and click the Servers folder. The Main SNA Server Manager Window is featured in the illustration below.
2. Insert a new Connection to the host under Connections. Refer to the online help for assistance on how to configure the connection.
3. Select the new connection and Insert a 3270 Application LU (LUA) to this connection.
4. Set the LU Number to the LU Number specified in the host.
5. Set the LU Name to the name you want to use for the printer device. This is the same name that you specify in the TN3270E Printer Name parameter of the Axis Network Print Server.

6. Click OK.



SNA Server Manager Main Window

SNA Server - Axis Network Print Server connection

1. Select the new LUA and drag it to the TN3270 connection definition (highlighted in the SNA Server Manager Window above).
2. Select the properties of the LUA.
3. Click the **TN3270** tab in the properties popup window.
4. Select Generic Printer Type.
5. Click the **IP Address List** tab.
6. Specify the IP Address of the client(s) that you want to assign to this LU. This is the IP address of the Axis Network Print Server, i.e. the same as the `INT_ADDR` parameter in the Print Server.
7. Click **OK**.

Verifying the Communication:

1. Activate the connection you created in step 2 of the above *SNA Server - Axis Network Print Server connection* procedures. The status of the connection should be "active".
2. Make sure the corresponding LU in the host is activated.
3. Activate the TN3270 connection to the Axis Network Print Server. The LUA should change status to `SSCP`.
4. Check that the printer is connected to the Axis Network Print Server.
5. Send a print job from the host.

The Axis Network Print Server is now ready for use.

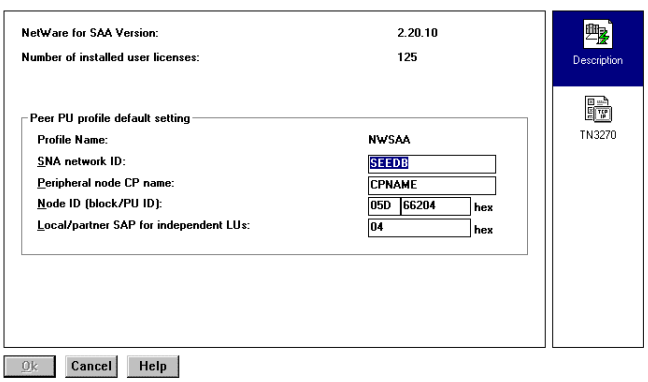
Notes:

- You can check the status of the TN3270E connection by printing a test page from the Print Server. This is done by pressing the test button once. Make sure the TN3270E status (St:) line for your server connection is defined as either:
- SSCP
- LU-1
- LU-3
- For additional information about configuring other TN3270E servers, refer to the Technical Notes on www.axis.com

NetWare for SAA Server

To set-up a TN3270E connection to the Axis Network Print Server you have to set up PU and LU definitions. This is done by following the steps below:

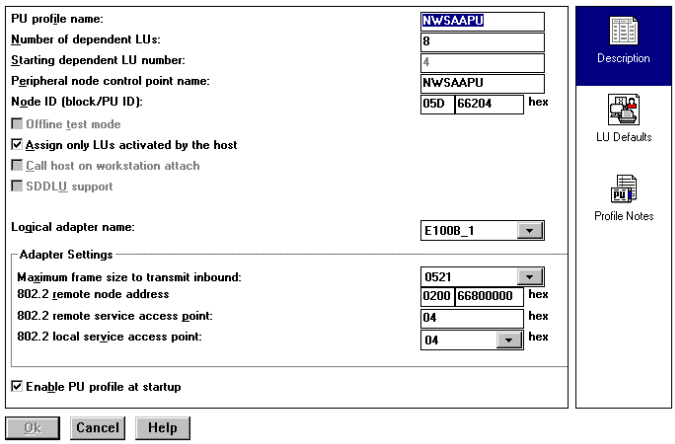
1. Start the NWSAA Administrator.
2. Double-click the NWSAA Node. The panel below will appear.
3. Enter the Node ID for the host.
4. Leave the rest at their default settings.



Peer PU profile

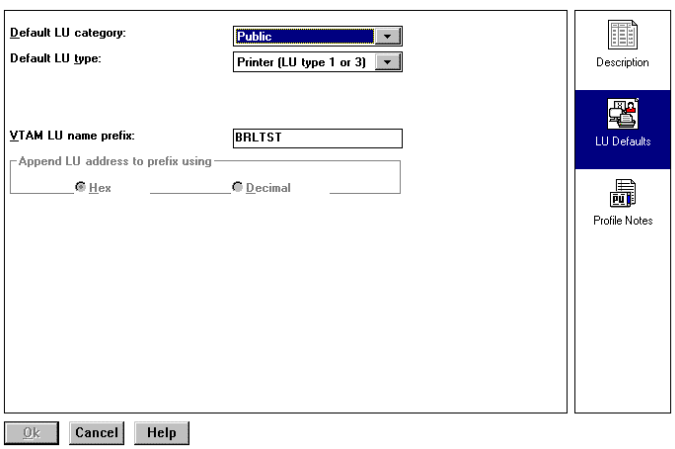
5. Click the **TN3270** icon. The panel below will appear.
6. Select All Available Host PU profiles.
7. Enter the user name, from the User List, that you want all TN3270 clients to use.
8. Specify the maximum number of TELNET connections you want to allow each TN3270 client.

9. Leave the rest at their default settings and click OK.



PU profile name and Logical adapter

10. Press the "insert" key to create a new Host PU Profile. Choose Host PU Profile from the list displayed in the dialog. Then the panel below will appear.



Printer LU

11. Enter a unique name as PU profile name.
12. Enter the number of dependent LUs you want for this PU.
13. Enter the starting LU number.
14. Enter the Node ID (the same ID as for item 3 above).
15. Choose logical adapter.
16. Set maximum frame size to transmit inbound to match the `MAXDATA` in the host definition.
17. Enter the host node address.
18. Leave the rest at their default settings.
19. Click the LU Defaults icon. The panel below will appear
20. Set Default LU category to Public.

21. Set Default LU type to `Printer (LU type 1 or 3).`
22. Specify the VTAM LU name prefix. Click OK.

Notes:

- When the LUs are created the default names for the Printer Devices will be <name prefix> followed by a two digit number starting at the number you entered in the starting dependent LU number field.
- In the example below, eight LUs are created automatically. The LU names created will be BRLTST04 through to BRLTST0B. These names must correspond to the Printer Names you specify for the TN3270E sessions in the Print Server.

You can now generate a configuration report from NW for SAA. To do this, simply mark the server icon in the left window and select `Generate Server Configuration Report` from the function menu.

The following table is a summary of a report generated by this command for the example above.

Profile Name	**NWSAA**
SNA Network ID:	**SEEDB**
Peripheral node control point name:	**CPNAME**
Block ID/PU ID:	**05D 66204**
Local/Partner SAP for ILUs:	**04**
Logical Adapter:	**E100B_1**
PU Profile:	**NWSAAPU**
Adapter Name	**E100B_1**
Adapter Type:	**LLC 802.2**
Terminate peer link if no active APPC sessions:	**No**
Logical adapter number:	**0**
Number of local service access points:	**2**
Enable adapter at startup:	**Yes**
PU Profile Name	**NWSAAPU**
Number of dependent LUs:	**8**
Starting dependent LU number:	**4**
Peripheral node control point name:	**NWSAAPU**
Node ID (block/PU ID):	**05D 66204**
Offline test mode:	**No**
Assign only LUs activated by the host:	**Yes**
Enable SDDLU Support:	**No**
Adapter Name:	**E100B_1**
Adapter Type:	**LLC 802.2**
Maximum Session Count:	**9**
VTAM Name Prefix:	**BRLTST**
Default LU Type:	**1**
Default Model Number:	**2**
Default LU Category:	**Public**
Maximum frame size to transmit inbound:	**0521**
Remote node address:	**020066800000**
Remote Service Access Point:	**04**
Local Service Access Point:	**04**
Enable PU profile at startup:	**Yes**

LU id	Category	VTAM LU Name	Type	Mod	Termination Method
0	Public		14	2	TSELF
4	Public	BRLTST04	1	2	TSELF
5	Public	BRLTST05	1	2	TSELF
6	Public	BRLTST06	1	2	TSELF
7	Public	BRLTST07	1	2	TSELF
8	Public	BRLTST08	1	2	TSELF
9	Public	BRLTST09	1	2	TSELF
10	Public	BRLTST0A	1	2	TSELF
11	Public	BRLTST0B	1	2	TSELF

PU Profile Names	NetWare SAA
Maximum connections per client	5
Use IP client name	No
TN3270 NetWare User ID	Admin
Client Response Timer	120
Printer End of Job Timer	9999

Summary of a report generated by Generate Server Configuration Report (bold text = not default).

Verifying the Communication:

Follow the steps below to test the communication by sending a print job to the Axis Network Print Server.

1. Make sure the printer is connected to the Axis Network Print Server and the corresponding LU in the host is activated.
2. Send a print job from the host.

The Axis Network Print Server is now ready for use. If needed, it can be further adapted to your system using the Web-based configuration pages or IBM Printer Emulation. Please refer to *Extended IBM Printer Emulation*, on page 183.

You can check the status of the TN3270E connection by printing a test page from the Print Server. This is done by pressing the test button once. Make sure the TN3270E status (St:) line for your server connection is defined as either:

- SSCP
- LU-1
- LU-3

For additional information about configuring other TN3270E servers, refer to the Technical Notes on www.axis.com

PPR/PPD Printing - IPDS data streams

Important:

> IPDS is only available for print server models with the IPDS option installed. Please refer to *"Protocols and Datastreams"* on page 10.

Before you Begin

In order to use the Axis Network Print Server to print IPDS data using TCP/IP as the transport protocol, the following software must be installed and configured on your MVS:

- PSF/MVS Version 2 release 2.0 with APAR OW15599.
- MVS Scheduler APAR OW12236 to support the two new `PRINTDEV` keywords: `IPADDR` and `PORTNO`.
- TCP/IP version 3 release 1, or higher

Configuration Procedures

The configuration procedures presented in this section are divided into seven separate steps:

1. Specifying the TCP/IP address space name
2. Defining the MVS control unit
3. Modifying the TCP/IP profile on your MVS system, if necessary
4. Configuring the Axis Network Print Server
5. Verifying the communication between the Axis Network Print Server and the IBM Mainframe
6. Defining the Axis Network Print Server as a writer-controlled printer to JES
7. Defining the printer to PSF with a `PRINTDEV` statement, including the IP address and port number.

Specifying the TCP/IP Address Space Name

To specify a TCP/IP address space name you should enter the following EXEC statement in the appropriate PSF writer procedure:

```
//STEP01 EXEC PGM=APSPPIEP,REGION=4096K,PARM=(,,,,tcpip_name)
```

where `tcpip_name` is the name of the TCP/IP address space. If this parameter is not coded, PSF uses the default name `TCPIP`. For a full description of the `PARM` parameter refer to *IBM's user documentation covering the print service facility.*

Defining the MVS Control Unit

If you have not already done so, you must define the communications control unit, e.g. the 3172 control unit or the 3745 control unit, to MVS. The tool to use is dependent on your MVS version:

- When using a version earlier than MVS 4.1.0, you should use an MVS Configuration Program (MVSCP).
- When using a version of MVS 4.1.0 or higher, you can use a HardWare Configuration Definition (HCD) or an MVSCP.

For more information about using these methods, please refer to one of the following publications:

- *MVS/ESA Planning: Dynamic I/O Configuration*
- *OS/390 HCD Planning*
- *HCD User's Guide*

Modifying the TCP/IP Profile

The TCP/IP profile contains system configuration statements used to initialize the TCP/IP address space. Among those statements, the following are subject to special considerations when you are printing from PSF on TCP/IP-attached printers:

- DATABUFFERPOOLSIZE
- SMALLDATABUFFERPOOLSIZE
- TINYDATABUFFERPOOLSIZE
- KEEPALIVEOPTIONS
- GATEWAY

Below is an excerpt from an example TCP/IP Profile (not a complete profile) . Examples of the statements above are printed in bold:

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

KEEPALIVEOPTIONS  INTERVAL   10 SENDGARBAGE   FALSE  ENDKEEPALIVEOPTIONS
GATEWAY
; * Network     First Hop   Linkname  Packet Size Subnet mask   Subnet value
    10          =          BCPLAN    2000        255.255.255.0 10.10.12.0
    DEFAULTNET 10.10.12.1 BPCLAN    2000        255.255.255.0 0
```

Note:

If you change any of the values in the TCP/IP profile, you must restart TCP/IP to activate the new settings.

The table below provides more information about the statements.

Statement	Explanation
DATABUFFERPOOLSIZE	Defines the number and size of the data buffers. It is recommended that you specify at least 160 data buffers and a buffer size of 32768 bytes
SMALLDATABUFFERPOOLSIZE	Defines the number of small data buffers. It is recommended that you specify at least 256 small data buffers
TINYDATABUFFERPOOLSIZE	Defines the number of tiny data buffers. It is recommended that you specify at least 256 tiny data buffers
KEEPALIVEOPTIONS	PSF relies on TCP to detect when a connection with a TCP/IP-attached printer or an Axis Network Print Server is no longer available. When no data has been exchanged between PSF and its connection partner, TCP sends keep-alive probes to the connection partner periodically. These periodic probes, called keep-alive transmissions, enable TCP to discover when a connection is no longer usable even if the connection partner is abruptly powered off or is no longer accessible through the network. The frequency of keep-alive transmissions is controlled by the INTERVAL parameter on the KEEPALIVEOPTIONS statement. The frequency applies to all TCP applications that direct TCP to send keep alive transmissions. The default frequency is after about two hours of inactivity. We recommend that you specify a shorter interval than the default, such as 10 minutes, for the interval between keep-alive transmissions. Also, if any target host on you network requires that the keep-alive packet contains data, specify SENDGARBAGE TRUE
GATEWAY	The Packet_size parameter of the GATEWAY statement defines the maximum transmission unit (MTU) for the MVS host. The MTU size must not exceed the maximum size that can be sent through the control unit; if it does, transmission problems will occur. The MTU size should be 2000 bytes and the MTU size for the MVS host should be the same as the MTU size for the printer. For values in the GATEWAY statement other than the packet size, specify the values that are correct for your installation.

For more information about the TCP/IP profile and the statements described in this section, please refer to:

- *IBM TCP/IP MVS Customization and Administration Guide*
- *IBM TCP/IP Performance and Tuning Guide*

Configuring the Axis Network Print Server

Follow the instructions below to configure your Axis Network Print Server using a standard Web browser:

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Note:

To protect the **Admin** pages and the **Configuration Wizard** from unauthorized use, enter a password (default Pass) in the **Root Password** field under **Admin** | **General Settings**.

Note for IPDS printing:

In the Configuration Wizard, you can choose between PCL or PostScript printing. Choose the printer language that corresponds to your printer.

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This will start the **Configuration Wizard** which is a step-by-step guide through the required IBM configuration settings.

Verifying the communication

You can verify the communication between the MVS system and the Axis Network Print Server by pinging the print server from the MVS system. A successful ping indicates that the MVS system can communicate with the Axis Network Print Server.

From an TSO session, enter the following command:

```
TSO PING <IP_address>
```

Note:

The IP address is the IP address of the Axis Network Print Server.

In JES2, enter the following command from the System Display and Search Facility (SDSF) menu 6:

```
ping <IP_address>
```

Note:

The IP address is the IP address of the Axis Network Print Server.

Here is an example of a successful ping:

```
EZA0458I Ping V3R1:  Pinging host 10.50.45.200
(Use ATTN to interrupt.)
EZA0463I PING: Ping #1 response took 0.055 seconds
Successes so far = 1
```

And here is an example of an unsuccessful ping:

```
EZA0458I Ping V3R1:  Pinging host 10.50.45.200
(Use ATTN to interrupt.)
EZA0464I PING: Ping #1 timed out
```

If the ping is not successful, make sure the Axis Network Print Server is configured according to the instructions in **Setting the IP Address,** on page 16 and in **Configuring the Axis Network Print Server,** on page 43. If these items are all in order, consult your TCP/IP network administrator.

JES definitions

When a TCP-attached printer is to be used with JES, it must be defined for deferred-printing mode. To use a PSF printer for deferred printing under JES, you must first code JES initialization statements to define FSSs and FSAs for PSF printers. For JES2, the FSS is defined by an FSS statement, and the FSA is defined by a PRTnnnn statement. For JES3, the FSS is

defined by an FSSDEF statement, and the FSA is defined by a DEVICE statement.

The maximum number of FSSs and FSAs that are supported are:

- FSSs = 2000
- FSAs per FSS = 64

The actual number of FSAs per FSS depends on several factors like:

- The virtual region size below the 16-megabyte line
- The number and the size of form definitions and page definitions
- The number of buffers specified (BUFNO) for channel-attached printers
- The block sizes of the font, page segment, overlay, form definition, and page definition libraries

JES2 Initialization

The example below shows a sample JES2 statements for a TCP/IP-attached Axis Network Print Server:

```
FSS (FSS1) PROC=SAMPPROC,HASPFSSM=HASPFSSM
PRT1       FSS=FSS1,MODE=FSS,PRMODE=(LINE,PAGE,),
           CLASS=C,UCS=0,SEP=NO,SEPDS=NO,CKPTPAGE=100
           START=YES,MARK=NO,TRKCELL=YES
```

Note:

This is only an example. For specific coding for JES parameters, refer to the JES publication for the level of JES you are using.

The following paragraphs describe the JES2 initialization statements shown above, which are typical of the JES2 statements used with PSF. For more detailed descriptions of all JES2 initialization statements, refer to the JES2 initialization and tuning publication for your operating system.

FSS Statement

The FSS initialization statement is optional but recommended. If it is omitted, JES2 generates a default FSS for that device. The FSS initialization statement defines an FSS to JES2. The FSS statement is associated with one or more PRTnnnn statements that define each printer FSA. For a description of all FSS parameters, refer to the JES2 initialization and tuning publication for your operating system. The FSS statement contains the following parameters for PSF:

FSS Statement	Explanation
FSS (fasname)	Specifies the unique 1- to 8-character name of a particular FSS. This name is referenced in the PRTnnnn statement for each printer FSA that is associated with this FSS. When you start the first printer that has an FSA definition for that FSS, an FSS address space is created for PSF. PSF manages this FSS and the printer FSA for the first printer. If you start a second printer with an FSA definition for the same FSS, PSF manages a separate FSA for the second printer in that FSS.
PROC	Specifies a procedure for starting the PSF FSS. The procedure, which must be defined before that FSS is started, is a member of either SYS1.PROCLIB or a library concatenated to SYS1.PROCLIB.
HASPFSSM	Specifies the 1- to 8-character name of the load module that is loaded into the PSF FSS address space. This load module contains the various FSI service routines that JES2 supplies. For PSF, specify the default value (HASPFSSM=HASPFSSM).

PRTnnnn Statement: A PRTnnnn statement, which is required to define each printer nnnn statement FSA, is associated with an FSS statement. Each printer FSA should have a unique PRTnnnn name that must match the label on the CNTL, ENDCNTL, and PRINTDEV statements for the PSF startup procedure specified in the PROC parameter.

Note:

The label on the PRINTDEV statement must be 8 characters or fewer. PSF accepts the PRTnnnn, PRINTnn, and PRINTERn formats. PRTnnnn is the recommended format.

The PRTnnnn parameters create JES2 default values that are used unless other values are specified in the application program JCL. The PRTnnnn statement contains the following parameters:

PRTnnnn Statement	Explanation
CKPTPAGE	Specifies the number of pages between data-set checkpoints. If checkpoint intervals are too frequent, printer performance is significantly reduced. If intervals are too infrequent, and a PSF error occurs, the job has to be reprocessed from the last checkpoint. In this case, printer performance is significantly reduced if PSF errors continue to occur. The recommended starting value is 100.
CLASS	Specifies the output classes processed by the printer. By defining print classes you can handle disabled mechanisms.
FSS	Specifies the FSS for this device and must match the FSA name specified in the corresponding FSS statement. This parameter is required.
MARK	Enables form markings to be placed on the job trailer pages. For the Axis Network Print Server you should set this parameter to NO. Note: This parameter is new in JES2 and replaces the MARK | NOMARK parameter.
MODE	Specifies that the printer is managed by an FSS. This parameter is required.

PRTnnnn Statement	Explanation
PRMODE	Specifies the data-set processing modes supported for the printer. It lists all the PRMODE values that the printer accepts. If the Axis Network Print Server is connected to a PostScript printer, the correct setting is PRMODE=(PAGE,LINE,).. This setting indicates that composed-page and line data sets can be printed.
SEP	Enables job-header and job-trailer separator pages to be produced. Note1: If the Distributed Print Function (DPF) of PSF/2 is installed, you may need to set this parameter to YES. Note2: This parameter is new in JES2 and replaces the SEP | NOSEP parameter.
SEPDS	Enables formatted data-set header separator pages to be produced. Note: This parameter is new in JES2 and replaces the SEPDS | NOSEPDS parameter.
START	Specifies the way that the printer is started. The parameter value NO specifies that the printer is to be started by an operator command. The parameter value YES specifies that the printer, if it is ready, is to start automatically when JES2 starts processing. Note: This parameter is new in JES2 and replaces the DRAIN | START parameter.
TRKCELL	Specifies whether track-cell despooling is to be used or not. It is recommended to set this parameter to YES.
UCS	Specifies a default font. If you want to select a font in the startup procedure instead of the JES2 default font, you should set this parameter to 0.

JES3 Initialization

Below is sample JES3 statements for an TCP/IP attached Axis Network Print Server. In the example the JNAME=PRT1 has been used.

```
FSSDEF,TYPE=WTR,FSSNAME=FSS3,PNAME=SAMPPRO3,SYSTEM=SYS1,TERM=NO
DEVICE,DTYPE=PRTAFP1,JNAME=PRT1,JUNIT=(,SYS1,,ON),FSSNAME=FSS3
MODE=FSS,PM=(LINE,PAGE,),CHARS=(YES,GT12),
CARRIAGE=(TES,A868),CKPNTPG=100,HEADER=YES,WC=(C)
```

Note:

This is only an example. For specific coding for JES parameters, refer to the JES publication for the level of JES you are using.

The following paragraphs describe the JES3 initialization statements shown above, which are typical of the JES3 statements used with PSF. For more detailed descriptions of all JES3 initialization statements, refer to the JES3 initialization and tuning publication for your operating system.

FSSDEF Statement: The FSSDEF initialization statement is optional but recommended. If it is omitted, JES3 generates a default FSS for the printer being invoked.

The FSSDEF statement can contain the following parameters:

FSSDEF Statement	Explanation
TYPE	Specifies that the FSS is an output writer for deferred printing. This parameter is required.
FSSNAME	Specifies the unique name of a particular FSS. This parameter is required.
PNAME	Specifies a procedure for starting a specific PSF FSS. The procedure, which must be defined before the FSS is started, is a member of the procedure library defined by the STCPROC parameter of the STANDARDS statement or of the IATPLBST procedure library. Different FSSDEF initialization statements can refer to the same startup procedure. The PNAME parameter specifies either a startup procedure supplied with PSF, or one of your organization's procedures.
SYSTEM	Specifies the JES3 processor on which the FSS is run. The name must match the NAME parameter in the MAINPROC statement for the processor.
TERM	Specifies the way that the FSS is terminated. The parameter value YES indicates that the FSS is terminated if the JES3 global address space is terminated by a *RETURN or *DUMP operator command.

DEVICE Statement: A DEVICE statement is required for each printer. The DEVICE parameters create JES3 default values that are used unless other values are specified in the JCL application program. The DEVICE statement can contain the following parameters:

Device Statement	Explanation
CARRIAGE	Specifies the JES default page definition. The value YES specifies that the page definition can be changed during startup procedures. The value NO specifies that the page definition cannot be changed during startup procedures. The value aaaa specifies that the un-prefixed name, 1 to 4 characters long, of the page definition is to be used as default. The name specified here, or the JES3 system default, is the PSF default page definition.
CHARS	Specifies a default JES3 font.
CKPNTPG	Specifies the number of pages between data-set checkpoints. If checkpoint intervals are too frequent, printer performance is significantly reduced. If intervals are too infrequent, and a PSF error occurs, the job has to be reprocessed from the last checkpoint. In this case, printer performance is significantly reduced if PSF errors continue to occur. The recommended starting value is 100.
DTYPE	Identifies the printer device type. For the Axis Network Print Server you should specify the parameter value PRTAFP1. This parameter is required.
FSSNAME	Specifies a unique FSS for this printer DEVICE statement. The value must match the value coded for the FSSNAME parameter in the corresponding FSSDEF statement.
HEADER	Specifies if job and data set header pages are printed. If DPF is installed, you may need to specify HEADER=YES.
JNAME	Specifies the name of the printer FSA. Each printer FSA should have a unique JNAME. This unique JNAME is 8 characters or fewer and must correspond to its label on the CNTL, ENDCNTL, and PRINTDEV statements for the PSF startup procedure specified in the PNAME parameter. This parameter is required.

Device Statement	Explanation
JUNIT	**Specifies:** **1. The device address (host-connected, channel-attached, non-SNA printers only). Do not specify a device address for the Axis Network Print Server when using TCP/IP attachment.** **2. The name of the processor to which the device is attached** **3. A destination class for messages about the device** **4 .Whether the device is initially online or offline** **This parameter is required.**
MODE	**Specifies that the printer is managed by an FSS. This parameter is required.**
PM	**Specifies which data-set processing mode is supported. For the Axis Network Print Server attached to Postscript printers, the correct setting is** `PRMODE=(LINE,PAGE,)`**, indicating that composed-page and line data sets can be printed.**
WC	**Specifies the print output class that the printer is to process. You may want to consider handling disabled mechanisms by defining print classes.**

Defining the printer to PSF

Each Axis Network Print Server must be defined to PSF with a PRINTDEV statement in the PSF startup procedure. The following keywords are required on the PRINTDEV statement:

- IPADDR='xxx.xxx.xxx.xxx'
- PORTNO='xxxx'

The IPADDR parameter specifies the IP address of the Axis Network Print Server in dotted-decimal notation.

Note:

Do not specify a host name in place of the dotted-decimal address.

The PORTNO keyword specifies the TCP/IP port to use for the print session. This port number must match the port number set up for the Axis Network Print Server in **Configuring the Axis Network Print Server,** on page 43.

Below is a sample procedure, `APSWPROT`, which you can modify to suit your installation. The `PRINTDEV` statement includes the required `IPADDR` and `PORTNO` keywords. In the `PRINTDEV` example below, the TCP/IP port number 5100 is used, but any port, larger that 1024, can be used as long as the same port is set up in the Axis Network Print Server.

The `APSWPROT` procedure contains JCL parameters to produce a startup procedure for either 240-pel and 300-pel printers, but the references to 300-pel resolution are commented out. To create separate startup procedures, make two copies of `APSWPROT`, and then follow the commented instructions in `APSWPROT`. Keep one unchanged copy as your startup procedure for a resolution of 120 or 240 pels. In the second copy, delete or comment out all references to 240-pel resolution, and make all references to 300-pel resolution active. This changed copy is your startup procedure for 300-pel resolution.

If you want to print both 240-pel and 300-pel AFP/IPDS jobs, create two

separate FSAs, one for jobs with resolution of 120 or 240, and one for jobs with resolution of 300 pels. The 240-pel resolution FSA uses 240-pel resources, and the 300-pel resolution FSA uses 300-pel resources. Both FSAs are defined to drive the same printer; however, only one FSA can be active at one time for a given printer. You should define separate classes or destinations for each FSA. Your installation must route the appropriate jobs to the appropriate class or destination. The two FSAs can be defined in the same or in separate startup procedures.

```
//APSWPROT PROC
//********************* THE PSF TCP/IP WRITER PROCEDURE **********************
//*
//*01* MODULE-NAME = APSWPROT
//* $MOD(APSWPROT) COMP(APS) PROD(PSF) : RELEASE 2.2.0
//*
//*01* DESCRIPTIVE-NAME = START PROCEDURE FOR PSF:
//*
//*                               TCP/IP ATTACHED DEVICES
//*
//*01* STATUS = VERSION 2, RELEASE 2, LEVEL 0
//*
//*01* FUNCTION = THIS PROCEDURE IS COPIED FROM THE
//*                DISTRIBUTION LIBRARY TO SYS1.PROCLIB.
//*                THIS COPY IS PERFORMED BY MACRO 'SGAPS5PR'.
//*
//*01* NOTES = THE FULL NAME OF THE DEFAULT PAGEDEF IS
//*                P1A06462.
//*             THE FULL NAME OF THE DEFAULT FORMDEF IS
//*                F1A10110.
//*             THE FULL NAMES OF THE DEFAULT FONTS ARE
//*                X0GF10, X0GS10, X0TU10, AND X0GU10
//*             THE FULL NAME OF THE SEPARATOR PAGE PAGEDEF IS
//*                P1V06483
//*             THE FULL NAME OF THE SEPARATOR PAGE FONT IS
//*                X0GT15
//*
```

Example continues

```
 CONT...

//* REQUIRED ACTIONS =
//*    RESOLUTION - THIS START PROCEDURE IS SET UP FOR DRIVING
//*      A TCP/IP DEVICE AT 240 PEL RESOLUTION. TO CHANGE IT
//*      TO DRIVE 300 PEL RESOLUTION TCP/IP ATTACHED DEVICES:
//*
//*      A) COMMENT OUT THE FIRST PRINTDEV STATEMENT AND UNCOMMENT
//*         THE SECOND PRINTDEV STATEMENT
//*
//*      B) THE FONT02 DATA SET MUST CONTAIN THE CONVERTED
//*         DEFAULT FONTS LISTED IN THE PRINTDEV.
//*         THE FONTS ARE CONVERTED USING THE FONT
//*         CONVERSION UTILITY APSRCF30. SEE THE PSF
//*         SYSTEM PROGRAMMING GUIDE.
//*
//*01* CHANGE-ACTIVITY :
//* $H1=LAPS0001, HAF1103, 080195 DKU1JAU : TCP/IP SUPPORT
//*
//**** END OF SPECIFICATIONS ***/
//STEP01   EXEC PGM=APSPPIEP,REGION=4096K
//JOBHDR OUTPUT PAGEDEF=V06483,     /* JOB SEPARATOR PAGEDEF          */
//       FORMDEF=A10110,CHARS=GT15  /* JOB SEPARATOR FORMDEF          */
//JOBTLR OUTPUT PAGEDEF=V06483,     /* JOB SEPARATOR PAGEDEF          */
//       FORMDEF=A10110,CHARS=GT15  /* JOB SEPARATOR FORMDEF          */
//DSHDR  OUTPUT PAGEDEF=V06483,     /* DS  SEPARATOR PAGEDEF          */
//       FORMDEF=A10110,CHARS=GT15  /* DS  SEPARATOR FORMDEF          */
//MSGDS  OUTPUT PAGEDEF=V06462,     /* MESSAGE DATASET PAGEDEF        */
//       FORMDEF=A10110             /* MESSAGE DATASET FORMDEF        */
//FONT01   DD   DSN=SYS1.FONTLIBB,  /* SYSTEM FONTS - 240 PEL         */
//         DISP=SHR
//FONT02   DD   DSN=SYS1.FONT300,   /* SYSTEM FONTS - 300 PEL         */
//         DISP=SHR
//PSEG01   DD   DSN=SYS1.PSEGLIB,   /* SYSTEM PAGE SEGMENTS           */
//         DISP=SHR
//OLAY01   DD   DSN=SYS1.OVERLIB,   /* SYSTEM MEDIUM OVERLAYS         */
//         DISP=SHR
//PDEF01   DD   DSN=SYS1.PDEFLIB,   /* SYSTEM PAGEDEFS                */
//         DISP=SHR
//FDEF01   DD   DSN=SYS1.FDEFLIB,   /* SYSTEM FORMDEFS                */
//         DISP=SHR
```

Example continues

```
 CONT...

 //* ************************************************************      */
 //*             PRINTDEV
 //* ************************************************************      */
 //PRT1      CNTL
 //PRT1      PRINTDEV FONTDD=*.FONT01, /* 240 PEL FONT LIBRARY DD      */
 //*                                  /* <-- SEE REQUIRED ACTIONS     */
 //*                                  /* ABOVE                        */
 //*PRT1      PRINTDEV FONRDD=*.FONT02, /* 300 PEL FONT LIBRARY DD     */
 //*                                   /* <-- SEE REQUIRED ACTIONS    */
 //*                                   /* ABOVE                       */
 //           OVLYDD=*.OLAY01,          /* OVERLAY LIBRARY DD          */
 //           PSEGDD=*.PSEG01,          /* SEGMENT LIBRARY DD          */
 //           PDEFDD=*.PDEF01,          /* PAGEDEF LIBRARY DD          */
 //           FDEFDD=*.FDEF01,          /* FORMDEF LIBRARY DD          */
 //           JOBHDR=*.JOBHDR,          /* JOB HEADER SEPARATOR        */
 //*                                   /* OUTPUT                      */
 //           JOBTRLR=*.JOBTLR,         /* JOB TRAILER SEPARATOR       */
 //*                                   /* OUTPUT                      */
 //           DSHDR=*.DSHDR,            /* DATA SET HEADER             */
 //*                                   /* SEPARATOR                   */
 //           MESSAGE=*.MSGDS,          /* MESSAGE DATA SET OUTPUT     */
 //           BUFNO=5,                  /* NUMBER OF WRITE DATA BUFFERS*/
 //           PAGEDEF=A06462,           /* DEVICE PAGEDEF DEFAULT      */
 //           FORMDEF=A10110,           /* DEVICE FORMDEF DEFAULT      */
 //           CHARS=(GF10,              /* DEVICE                      */
 //           GS10,TU10,GU10),          /* DEFAULT FONT SET            */
 //           PIMSG=YES,                /* ACCUMULATE DATA SET         */
 //*                                   /* MESSAGES                    */
 //           DATACK=BLOCK,             /* REPORT ALL DATA-CHECK       */
 //*                                   /* ERRORS                      */
 //           TRACE=NO,                 /* CREATE INTERNAL TRACE       */
 //           FAILURE=WCONNECT,         /* PSF ACTION ON PRINTER       */
 //*                                   /* FAILURE                     */
 //           TIMEOUT=REDRIVE,          /* PSF ACTION ON TIMEOUT       */
 //           MGMTMODE=IMMED,           /* PRINTER MANAGEMENT MODE     */
 //           DISCINTV=40,              /* DISCONNECT INTERVAL IN      */
 //*                                   /* SECONDS                     */
 //           IPADDR='xxx.xxx.xxx.xxx'  /* Axis Network Print Server IP
ADDRESS       */
 //           PORTNO='5100',            /* TCP/IP PORTO                */
 //PRT1       ENDCNTL
```

Although it is not recommended, it is possible to drive the printer with just one FSA, if one of the following conditions are met:

- All the resources in the resource libraries are resolution-independent, and all the jobs that use inline resources or user libraries contain resources that are resolution-independent.
- All jobs that request a resolution that is different from the resolution-dependent resources in the PSF system and security libraries contain the resources at the requested resolution, either as inline resources or in the user's library.

Even if a PSF user requests 120-pel resolution for an AFP print job being sent to the printer, PSF requires 240-pel resources from the library. Do not store 120-pel resources in the library.

Starting and Stopping the PSF/MVS Printer

When operating the Axis Network Print Server when emulating a TCP/IP attached IPDS printer, you should use JES operator commands, just as if the printer were channel-attached or SNA-attached.

Starting the Printer

To start a TCP/IP-attached printer, do the following:

1. Start TCP/IP.
2. Power on the printer(s).
3. Power on the Axis Network Print Server.
4. Start the printer FSA as indicated below.

Before starting a PSF FSS, you must have a cataloged startup procedure in SYS1.PROCLIB or any other system procedure library. This procedure specifies PSF initialization parameters and libraries that contain system and installation resources. The name of this procedure can be specified in the FSSDEF statement of the JES initialization deck. If the name is omitted, JES3 supplies a default name, that is chosen for the defined printer.

When you install PSF, you must create or update the required libraries referenced by the startup procedure, and you should consider any need to increase the region size, as specified in the EXEC statement, to accommodate resources and an increased number of printer FSAs. The startup procedure can also specify defaults that cannot be set with JES initialization statements for printer FSA definitions.

Stopping the Printer

You can stop a TCP/IP-attached printer in several ways but this is the recommended method:

Stop the PSF FSA for the printer by entering the following command from the MVS console.

JES2:

```
$Pprinter-name
```

JES3:

```
*VARY printer-name, OFF
*CANCEL printer-name
```

The variable `printer-name` specifies the name of the printer FSA as defined in **JES definitions,** on page 53.

You can now disconnect the Power Adapter from the Axis Network Print Server.

Section 6 Adding Printers in Windows

Having connected the Axis Network Print Server to your network, as described in *"Connect the Hardware"* on page 14, this section describes how to install the Axis Network Print Server in the Windows environment. Identify your Windows platform and follow the installing instructions from the list below.

Overview of Installation Methods

Refer to the table below to determine the most appropriate installation method according to your computer environment:

Windows Platform	Printing Protocol	Method	See...
Windows 2000, XP, Vista, Server 2003	TCP/IP (LPR)	AXIS AddPrinter Wizard	*"Adding Printers in Windows 2000 / XP / Vista / 2003 using AXIS AddPrinter Wizard"* on page 64
		Windows Add Printer Wizard	*"Adding Printers in Windows Vista using Windows Add Printer Wizard"* on page 66 *"Adding Printers in Windows 2000 / XP / 2003 using Windows Add Printer Wizard"* on page 69
		Microsoft LPR Monitor	*"Adding Printers in Windows Vista using the Microsoft LPR Monitor"* on page 75 *"Adding Printers in Windows 2000 / XP / 2003 using the Microsoft LPR Monitor"* on page 75
Windows 2000	NetBIOS/NetBEUI	AXIS Print Monitor software	*"Adding NetBIOS/NetBEUI Printers in Windows 2000 using AXIS Print Monitor"* on page 80
Windows NT	TCP/IP (LPR)	Windows Add Printer Wizard	*Adding Printers in Windows NT Using the Microsoft LPR Monitor*, on page 77
	NetBIOS/NetBEUI		*Adding Printers over NetBIOS/NetBEUI in Windows NT using AXIS Print Monitor*, on page 81
Windows 98, Me	TCP/IP (LPR)	AXIS Print Monitor software	*"Adding Printers in Windows 98 and Me over TCP/IP using AXIS Print Monitor"* on page 82
	NetBIOS/NetBEUI		*"Adding Printers in Windows 98 and Me over NetBIOS/NetBEUI using AXIS Print Monitor"* on page 83

If you intend to operate your Axis Network Print Server in a multi-protocol environment, you should also proceed to the other relevant sections in this manual.

Client/Server Network

For client/server printing, each computer sends print jobs through a network server computer.

The printer must first be installed on the server computer (from the Add Printer Wizard, AXIS Print Monitor) and then shared on the network, which makes it a network printer. It will then appear as a **Network Printer** (in Windows Add Printer Wizard and in AXIS Print Monitor) on

the client computers. Each client computer must install the appropriate printer drivers in order to print properly.

> For Windows 98 and Me, it is only necessary to install AXIS Print Monitor on a **server** for client/server printing.

Peer-to-Peer Network

In Peer-to-Peer networks, each computer prints directly to the network printer. The network printer appears as a **Local Printer** (in Windows Add Printer Wizard and in AXIS Print Monitor), and needs to be added to each client computer that wants to print. Each client computer must install the appropriate printer drivers in order to print properly.

> In Windows 98 and Me, AXIS Print Monitor must be installed on **all (printing) client computers** for Peer-to-Peer printing.

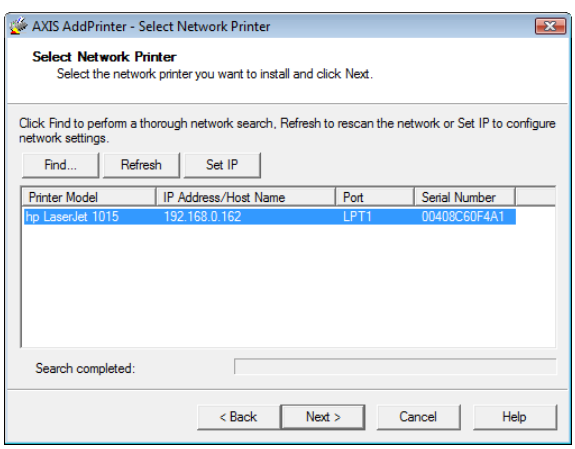
SNMP Device Index

When using the TCP/IP protocol (and if the printer driver permits), the print server can use **SNMP Status** to find out if the printer is ready to accept a new job. See *"SNMP Device Index"* on page 251.

Adding Printers in Windows 2000 / XP / Vista / 2003 using AXIS AddPrinter Wizard

AXIS AddPrinter is a Wizard that locates your network printers and helps you install them in your Windows environment. When you have completed the Wizard, the network printer is ready for use. To install a network printer you must be logged in as an Administrator or be a member of the Administrators' group.

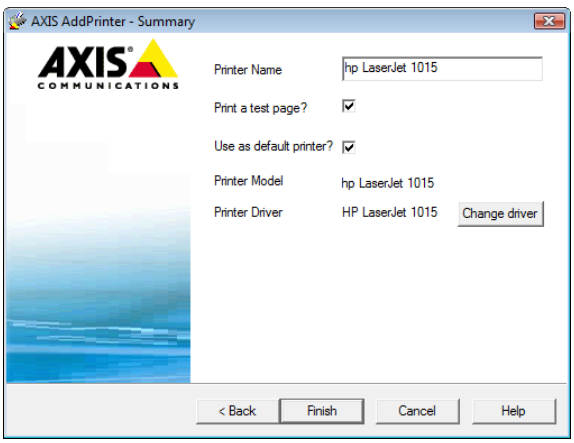
1. Install AXIS AddPrinter Wizard on all Windows 2000, XP, Vista and Windows Server 2003 workstations that will print via the print server.
2. Before you continue, ensure that the print server is properly connected to the printer, network and power.
3. Start AXIS AddPrinter. Click **Next**. The Wizard will perform an automatic search for all Axis network printers, which is indicated by the progress bar at the bottom of the screen.



4. Select a printer from the **Select Network Printer list** and click **Next**. If the printer does not appear, see *Easy Access to All Network Printers*, below.
5. The Wizard searches for a suitable printer driver.

   If a suitable driver is not found, you will be asked to select a driver, otherwise the Wizard suggests which Printer Model and Printer Driver to use.

   Click **Change driver** to select another driver, or click **Finish** to accept and install the suggested driver.



The installation is complete and you can start using the network printer.

Easy Access to All Network Printers

The Wizard's **Select Network Printer list** also provides quick and easy access to all connected and configured network printers.

Find...

If the print server is located outside your local subnet it will not appear in the list. This may be the case if your router blocks SLP traffic. Click **Find**. Enter the IP address or host name displayed on the print server's Test page and click **OK**. *Example: 192.168.3.191* or *AXIS181cf0*

Refresh

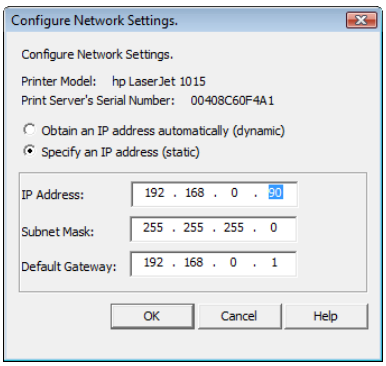
If the print server has just been switched on, the printer has not had time to report its presence. This process can take a few minutes. In this case, **Printer Model** is stated as **No printer connected**. Click **Refresh** to rescan your local network segment for available print servers and update the status. If you still do not see the expected values, click **Help** and select **Troubleshooting**.

Set IP

To set or change the IP address, select the print server and click **Set IP**. Decide whether you want to configure the IP settings manually or want the Wizard to suggest a static IP address.

Example: Select **Suggest...** and click **OK**. Confirm – or modify – the Wizard's suggested IP settings. Click OK.

Note: The **Suggest...** option is only available when the computer has one network card.

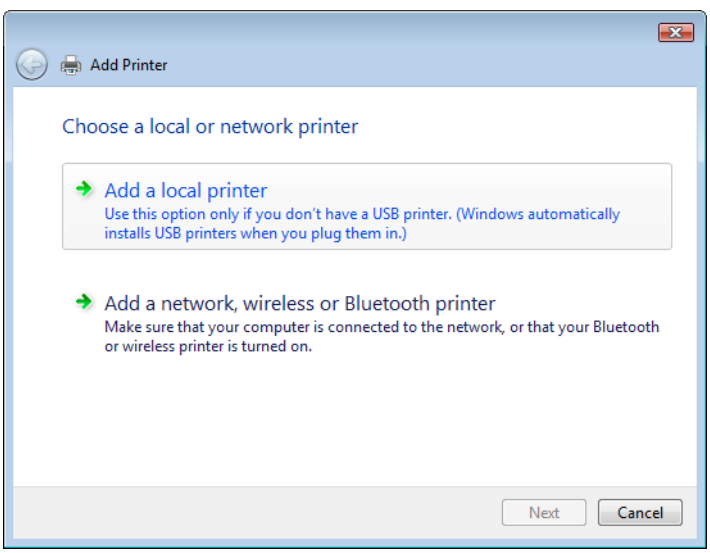


Go Straight to the Print Server's Web Interface

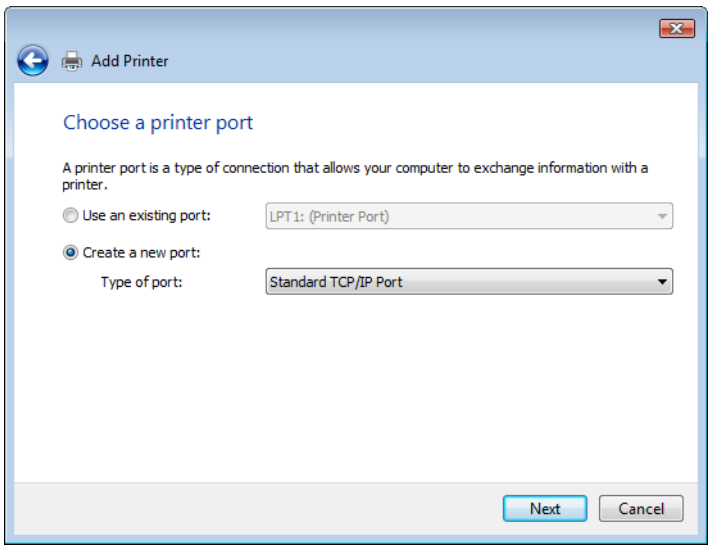
Right-click on a printer in the **Select Network Printer list** and select **Print server home page** to configure the print server from its embedded Web pages.

Adding Printers in Windows Vista using Windows Add Printer Wizard

1. Go to **Start** | **Control Panel** | **Hardware and Sound**.
2. Click **Add a printer** to start the Add Printer Wizard.
3. Click **Add a local printer**.



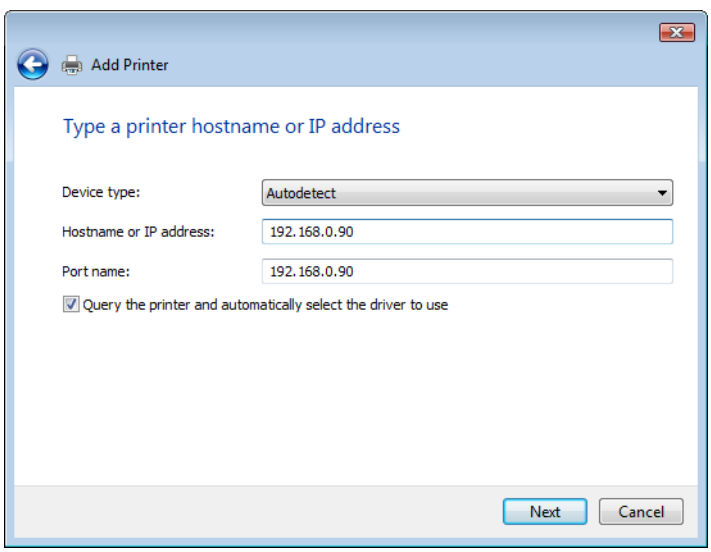
4. Click **Create a new port**. In the dropdown list, select **Standard TCP/IP Port**. Click **Next**.



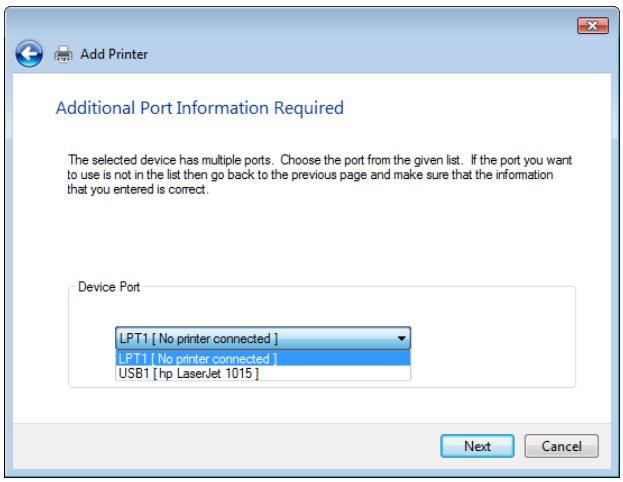
5. Enter the IP address (or host name) of the print server in the field **Hostname or IP Address.** *(Example: 192.168.0.90)*

   The **Port name** will be filled in automatically when you enter the IP address, optionally, add the port you want to use as a suffix. *(Example: 192.168.0.90_USB1)*

   Ensure that **Query the printer and automatically select the driver to use** is selected and click **Next**.

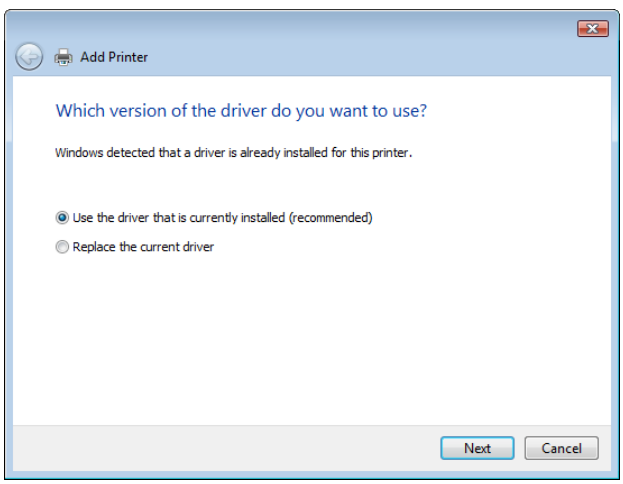


6. If you have a multiport print server you will be prompted for **Additional Port Information**. Select the port to which the printer is connected. *(Example: USB1)* Click **Next**.

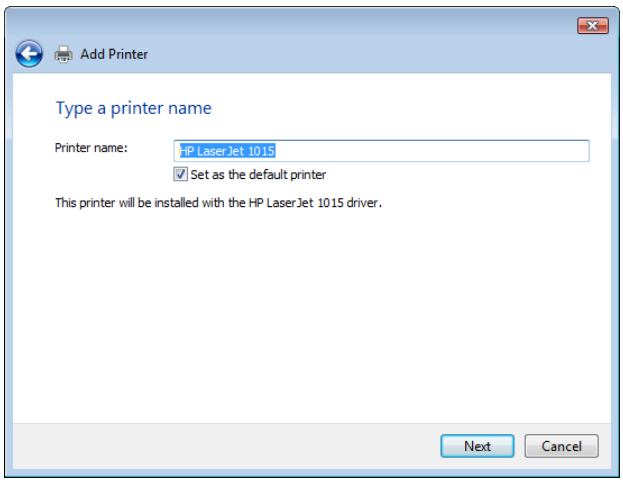


7. If you already have the printer's driver installed, you will be asked whether to keep it or to replace it. Select manufacturer and model of your printer. If you have the printer driver on an installation disk/CD, then click **Have Disk** and browse to the directory where you have the driver.

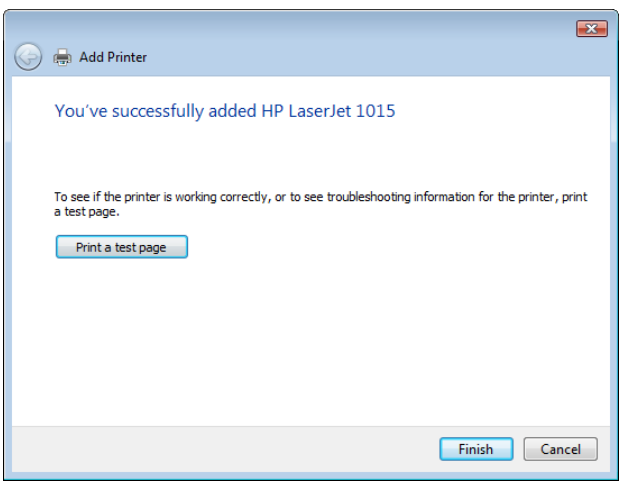
   Click **Next**.



8. Enter a **Printer name** and choose whether you want to make it your default printer. Click **Next**.



9. Click **Print a test page** to verify your installation. Click **Finish**.



You have now successfully completed the installation.

Adding Printers in Windows 2000 / XP / 2003 using Windows Add Printer Wizard

Follow the instructions below to use the standard Windows method for adding a network printer in Windows 2000, XP and Windows Server 2003 (Windows XP Professional is described in this example).

Windows XP:

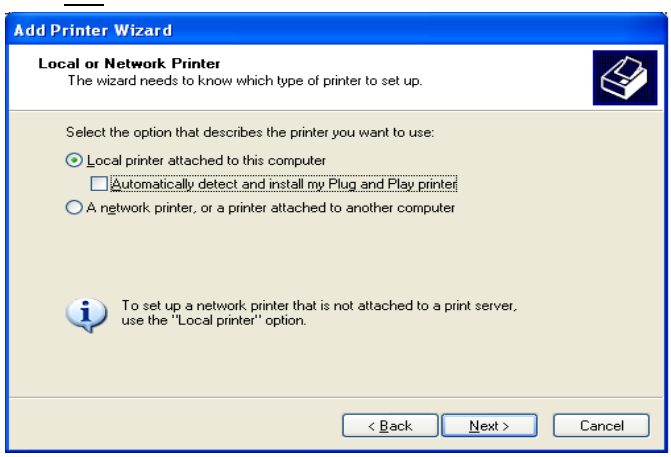
1. Go to **Start** | **Printers and Faxes** and click the **Add a Printer** icon to start the Add Printer Wizard. Click **Next.**

   (Windows XP Home Edition: Choose **Start** | **Control Panel** | **Printers and Faxes** | **Add a Printer** to start the Windows Add Printer Wizard)

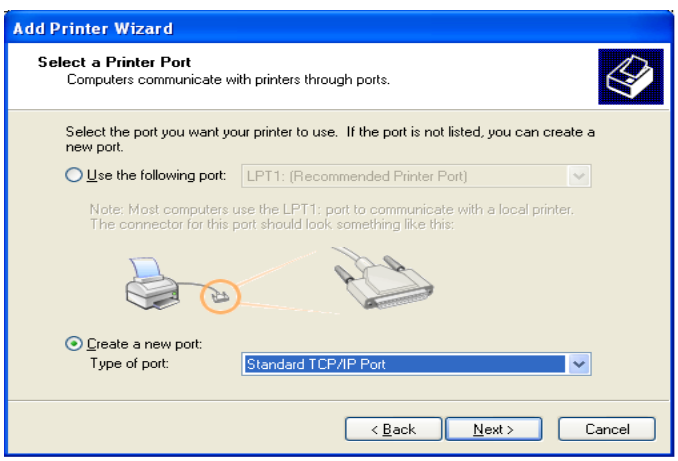
   Windows 2000:

1. Go to **Start** | **Settings** | **Printers** and click the **Add Printer** icon to start the Add Printer Wizard. Click **Next.**

2. In the Wizard, select **Local Printer attached to this computer.** Make sure the **Automatically detect and install my Plug and Play printer** check box is not checked. Click **Next.**



3. Click the **Create a new port** radio button and select **Standard TCP/IP Port** from the list. Click **Next** and the **Add Standard TCP/IP Printer Port Wizard** starts. Click **Next**.



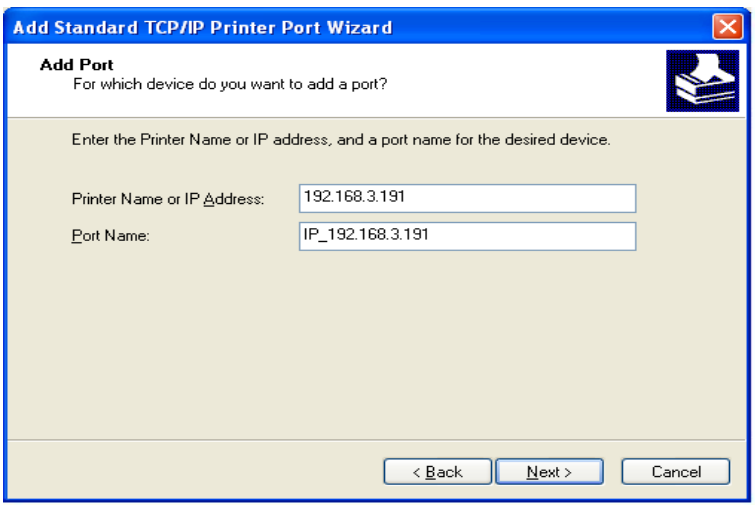
4. Enter the IP address of the print server (Example: 192.168.3.191) The **Port Name** field will be filled in automatically when you enter the IP address. Add the port you want to use as a suffix (optional).

AXIS 5570e

Physical Port	Add suffix	Entry example
USB port	Type **_USB1**	192.168.3.191_USB1
LPT1 (parallel port)	Type **_LPT1**	192.168.3.191_LPT1

If you have an old version of Windows, it will not detect the USB port. If so, type "_LPT2" instead of "_USB1" in the example above, e.g. *192.168.3.191_LPT2*.

For additional information, see *"*Tcpmon.ini*" on page 74.



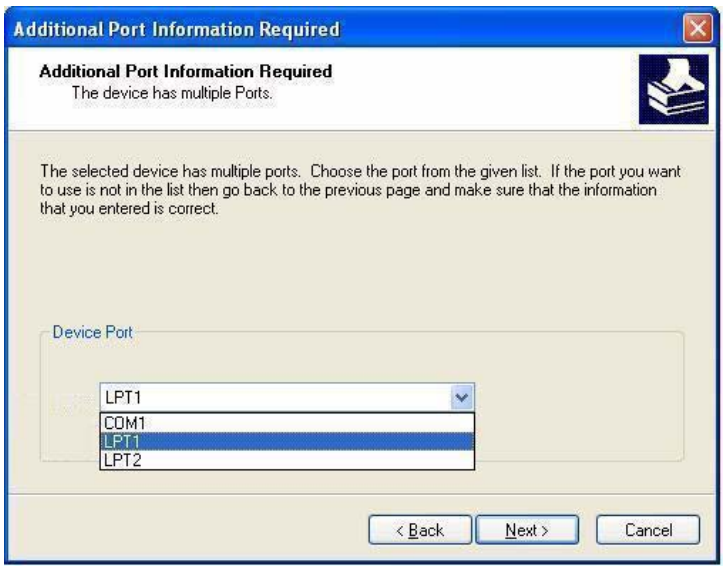
5. Click **Next**.
6. In the **Additional Port Information Required** window, enter the **Device Port** you want to use. You will see the available ports in a drop-down menu:

AXIS 5570e

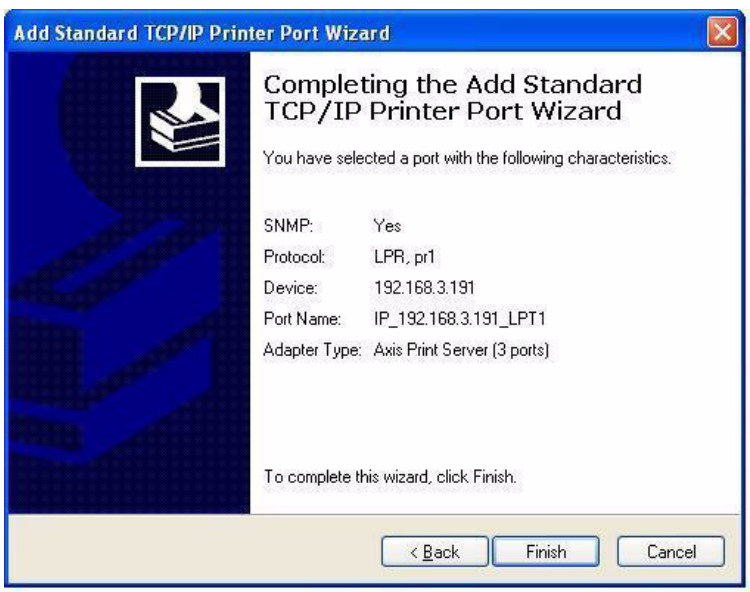
Physical Port	Add suffix	Entry example
USB port	Type **_USB1**	192.168.3.191_USB1
LPT1 (parallel port)	Type **_LPT1**	192.168.3.191_LPT1

If you have an old version of Windows, it will not detect the USB port. If so, type "_LPT2" instead of "_USB1" in the example above, e.g. *192.168.3.191_LPT2*.
For additional information, see *"*Tcpmon.ini*" on page 74.

7. Click **Next**.



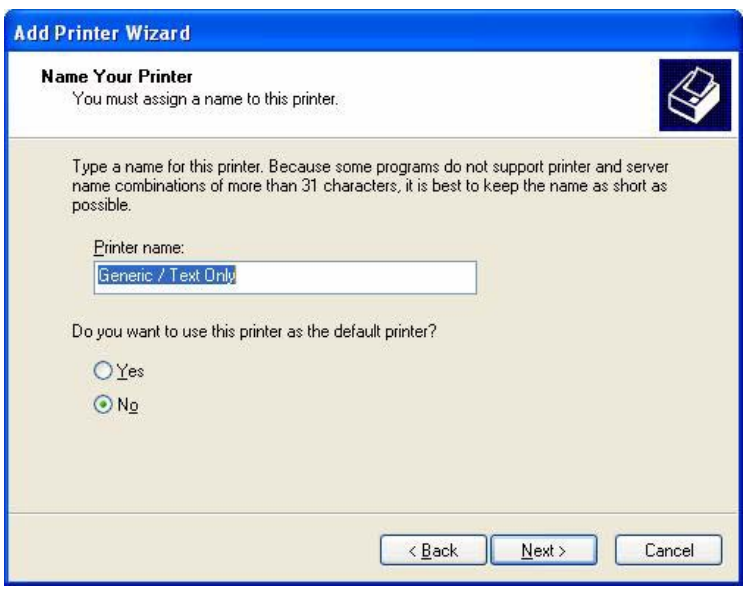
Click **Next** and **Finish**



8. Select **Manufacturer and Printer** from the driver list. Click **Next**.

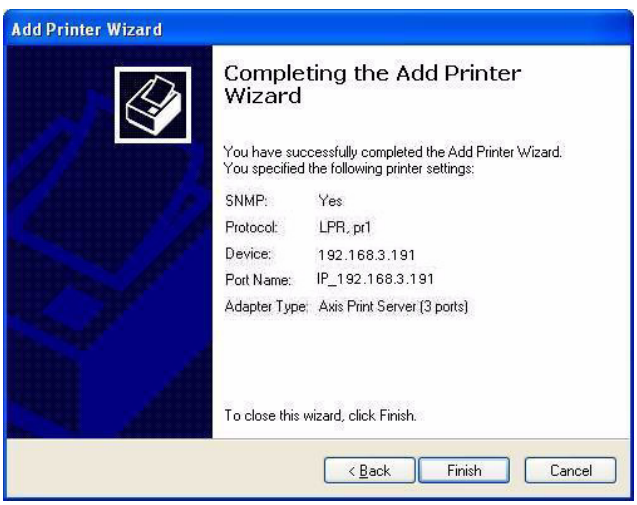
9. Choose whether you want to keep the existing driver or to replace it. If you already have the printer's driver installed, you will be asked whether to keep it or to replace it.

10. Click **Next**. Supply a name for the printer and choose whether you want to make it your default printer. Click **Next**.



11. Choose whether you want to share the printer with other network users, print a test page, etc. Select the appropriate radio button and click **Next** and **Finish**.

12. Print a test page to verify your installation.



You have now completed the installation.

*Tcpmon.ini

If you have an old version of Windows, the USB port will not be recognized.

For the USB port to appear as an option in the Windows Device Port list (see Step 5 above), you must install Axis tcpmon Upgrade Utility, a script that aids Windows in recognizing the USB port.

This script upgrades the tcpmon.ini file (in the system32 directory) by adding new Axis print server ports in the Windows Available Ports list. The old tcpmon.ini file will be saved as tcpmon.ini_bak in the same directory, no other information will be affected. You have to be logged in as an Administrator to use this program.

The program is available here: **ftp.axis.com/pub_soft/prt_srv/utility/tcpmon**

Adding Printers in Windows Vista using the Microsoft LPR Monitor

This section describes how to set up Windows Vista for LPR printing over the TCP/IP protocol, using the built-in Microsoft LPR Monitor i.e. **Print Services for UNIX**.

Basic Setup

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPR printing.

Prepare for LPR Printing

1. Go to **Start** | **Control Panel** | **Programs**.
2. Click **Turn Windows features on or off**.
3. Expand **Print Services**.
4. Ensure that **LPR Port Monitor** is checked.
5. Click **OK**.

Installing an LPR printer

1. Go to **Start** | **Control Panel** | **Hardware and Sound**.
2. Click **Add a printer** to start the Add Printer Wizard.
3. Click **Add a local printer**.
4. Click **Create a new port**.
5. In the dropdown list, select **LPR Port**. Click **Next**.
6. Enter the IP address (or host name) in the field **Name or address of server providing lpd** *(example: 192.168.0.90)* and enter the port you want to use in the field **Name of printer or print queue on that server** *(example: USB1)*.
7. Click **OK**.
8. End the Wizard in the usual manner: select Manufacturer and Printer (Next), keep/replace driver (Next), name the printer, make it default or not (Next) and finally decide whether you want to print a test page.

Adding Printers in Windows 2000 / XP / 2003 using the Microsoft LPR Monitor

This section describes how to set up a Windows 2000/XP/2003 server for LPR printing over the TCP/IP protocol, using the built-in Microsoft LPR Monitor i.e. **Print Services for UNIX**.

Note:

See *"Alternative Method for LPR Printing"* on page 77 for instructions on how to set up printing over LPR without installing Print Services for Unix**.**

Basic Setup

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPR printing.

Preparing for LPR Printing

Follow the following steps to prepare for LPR printing:

1. Open the **Control Panel**.
2. Click **Add/Remove Programs.**
3. Click **Add/Remove Windows Components.**
4. Check **Other Network File and Print Services** and click **Details**.
5. Check **Print Services for Unix** and click **OK**.
6. Click **Next** and **Finish**.
7. Close **Add/Remove Programs** and the **Control Panel**.

Installing an LPR printer

Follow the instructions below to use the standard Windows method for installing an LPR printer in Windows 2000/XP/2003:

Windows XP:

1. Go to **Start** | **Printers and Faxes** and click the **Add a Printer** icon to start the **Add Printer Wizard**. Click **Next**.

Windows 2000:

1. Go to **Start** | **Settings** | **Printers** and click the **Add Printer** icon to start the **Add Printer Wizard**. Click **Next**.
2. Select the appropriate radio button: **Local Printer**. Click **Next.**
3. Click the **Create a new port** radio button and select **LPR Port** from the list. Click **Next**.
4. Enter the name of the server (or its IP address) in the field **Name and address of server providing lpr** (Example: AXIS100086) and enter the port you want to use in the field **Name of printer or print queue on that server** (Example: LPT1). Click **OK**.

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	USB1	LPT1	–	–

End the Wizard in the usual manner: select Manufacturer and Printer, keep/replace driver, name the printer, make it default or not, share it or not and finally decide whether you want to print a test page.

Client/Server Printing

Select **Network printer** instead of **Local Printer** in Step 2 above if your print server has already been installed by the administrator on another computer. Follow the instructions in the **Add Printer Wizard** to complete the installation.

Important!

- Make sure that the **Automatically detect and install my Plug and Play printer** checkbox is not checked
- Press **F1** to access the Windows online help system if you need additional help when installing a printer/print server using this method.

Alternative Method for LPR Printing

If you wish to print over LPR but do not wish to install **Print Services for Unix** you can do this by changing the printing protocol after having installed the printer using the Standard TCP/IP method, see *"Adding Printers in Windows 2000 / XP / 2003 using Windows Add Printer Wizard"* on page 69 for instructions. LPR is chosen by default with this method.

Once the printer is installed, follow these instructions to change the printing protocol:

1. Go to **Start** | **Settings** | **Printers**.
2. Double-click the installed printer.
3. Select **Properties** from the **Printer** menu.
4. Click the **Ports** tab.
5. Click the **Configure Port** button.
6. Click the **LPR** radio button and enter the queue name (PR1, PR2...).
7. Click **OK** to finish.

Adding Printers in Windows NT Using the Microsoft LPR Monitor

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPR printing.

Preparing for LPR Printing

In the Control Panel, double-click the Network icon. Select the **Services** tab. If the **TCP/IP Printing** entry appears, then TCP/IP is already installed. Close the Network folder and go on to *Installing an LPR printer*, below.

First, prepare for LPR printing:

1. Open the **Control Panel** and double-click the **Network** icon.
2. Select **Protocols**.
3. Add **TCP\IP Protocol**.
4. Select **Services**.
5. Add **Microsoft TCP\IP Printing**.

Installing an LPR Printer

1. Go to **Start** | **Settings** | **Printers** | **Add Printer**. Select **My Computer** (for peer-to-peer printing) and click **Next**.
2. From the **Available Ports** list, choose the appropriate printer port, which will appear as the host name or IP address of the print server. Skip to step 7.
3. If the host name or IP address of the print server you wish to use does not appear in the list, click **Add Port**.
4. Choose **LPR Port** from **Available Printer Ports** and click **New Port**.

5. Type the print server's name or IP address in the field **Name or address of server providing lpd** (Example: 10.13.6.198). Then enter which port to use in the field **Name of printer or print queue on that server** according to the table below (Example: LPT1). Click **OK** and then **Close**.

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	USB1	LPT1	–	–

6. The added print server will now appear in the **Available Ports** list.
7. Click **Next**, choose an appropriate driver and finish the installation in the normal manner.

AXIS Print Monitor Software

AXIS Print Monitor is the recommended tool to use for network printing in Windows NT, 98 and Me environments. AXIS Print Monitor is available free of charge on www.axis.com

AXIS Print Monitor Overview

AXIS Print Monitor allows the print server to be connected in the same simple fashion as connecting a local printer. Once installed, it is automatically initialized upon system startup. AXIS Print Monitor has been developed for peer-to-peer printing, allowing your print jobs to be sent directly to the print server.

Printing Environments

AXIS Print Monitor supports printing over TCP/IP (LPR and Raw TCP) and NetBIOS/NetBEUI. To enable printing in these environments, please ensure that the desired printing protocols are running on your client.

Peer-to-Peer Printing

The AXIS Print Monitor needs to be installed on each workstation to perform peer-to-peer printing. Once installed, the AXIS Print Monitor allows you to access all network printers, just as if they were connected directly to your workstation.

Client/Server Printing

AXIS Print Monitor needs only to be installed on one server to perform client/server printing. The installed printers must be configured to be shared to allow clients to use them. Pop-up messages should not be enabled on the server as they will not be displayed on the client platforms.

Note:

AXIS Print Monitor can also be used for DOS printing. Please refer to the AXIS Print Monitor's Readme file for instructions. The Readme file is located in the same folder where AXIS Print Monitor is installed on your PC.

Adding Printers over TCP/IP in Windows NT using AXIS Print Monitor

1. Install AXIS Print Monitor on all workstations that will print via the print server. AXIS Print Monitor is available free of charge on www.axis.com
2. To start the Add Printer Wizard, select **Settings** | **Printers** from the **Start** menu and double-click the **Add Printer** icon.
3. The Wizard asks you to select **My Computer** or **Network printer server**. Select **My Computer**, click **Next**.
4. Click **Add Port...** In the Available Ports dialog, select **AXIS Port** and click **New Port...**
5. Select **LPR (TCP/IP)** as your choice of protocol and click **OK**.
6. Enter the IP address or the host name of your print server *(Example: enter an IP address: 192.168.3.191 or a host name: AXIS181636).*
7. In the **Logical Printer Name** field, enter the port you wish to use; **USB1**, **LPT1, LPT2** or **COM1**. Click **OK**, click **Close**.
8. Select Manufacturer, Printers, choose a printer name and if you want to use the printer as your default printer. Choose if you want to share the printer and print a test page. Click **Finish**.
9. You may now configure the port, as described below.

Configure the Port:

1. Select **Settings** | **Printers** from the **Start** menu and highlight the printer you wish to configure. Select **File** | **Properties** | **Ports** and click **Configure Port**.
2. Choose whether error condition pop-up messages are to be displayed by checking the box in the **Configure AXIS Ports** dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**.

> Even if the desired printer is available in the Manufacturers and Printers lists, you are advised to use the print driver provided with the printer. This assures you of the latest driver software.

Adding NetBIOS/NetBEUI Printers in Windows 2000 using AXIS Print Monitor

See to it that the NetBEUI protocol is installed on your client. Follow the procedure below to install Axis Printer Ports from a Windows 2000 workstation:

1. To start the Add Printer Wizard, select **Settings** | **Printers** from the **Start** menu and double-click the **Add Printer** icon. Start the installation by clicking **Next**.
2. The Wizard asks you to select **Local printer** or **Network printer**. Select **Local printer**. Click **Next**.
3. Click **Create a new port.** In the Available Ports dialog, select **AXIS Port** and click **Next.**
4. Select **NetBIOS/NetBEUI** as your choice of network protocol and click **OK**.
5. Select the AXIS Port you want to add from the list of available ports. The port appears as <name>.<port> (Example: AX100086.LP1). The <port> is taken from the table below. Click **OK**.

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	US1	LP1	–	–

6. Choose the appropriate printer driver for your printer. Click **Next** and proceed directly to step 9. It is only necessary to perform steps 7 - 8 if your printer does not appear in the list.

Note:

Even if the desired printer is available in the **Manufacturers** and **Printers** lists, you are advised to use the printer driver provided with the printer. This assures you of the latest driver software.

7. Click the **Have Disk...** button. Insert the printer driver diskette/CD that was provided with your printer, select the appropriate diskette/CD drive and click **OK**.
8. Select the printer driver you want to install and click **Next**.
9. Enter an appropriate name for your printer and click **Next**.
10. Choose whether you want to share the printer with other network users and click **Next**.
11. Choose whether you want to print a test page, click **Next** and then **Finish**.

Adding Printers over NetBIOS/NetBEUI in Windows NT using AXIS Print Monitor

See to it that the NetBEUI protocol is installed on your client. Follow the procedure below to install Axis Printer Ports from a Windows NT workstation:

1. Install AXIS Print Monitor on all workstations that will print via the print server.
2. To start the Add Printer Wizard, select **Settings** | **Printers** from the **Start** menu and double-click the **Add Printer** icon.
3. The Wizard asks you to select **My Computer** or **Network printer server**. Select **My Computer**. Click **Next**.
4. Click **Add Port...** In the Available Ports dialog, select **AXIS Port** and click **New Port...**
5. Select **NetBIOS/NetBEUI** as your choice of network protocol and click **OK**.
6. Select the AXIS Port you want to add from the list of available ports. The port appears as <name>.<port> (Example: AX100086.LP1). The <port> is taken from the table below. Click **OK**.

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	US1	LP1	–	–

7. Close the Printer Ports window.
8. Click the **Configure Port...** button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**. Continue the installation by clicking **Next**.
9. Choose the appropriate printer driver for your printer. Click **Next** and proceed directly to step 12. It is only necessary to perform steps 10-11 if your printer does not appear in the list.

Note:

Even if the desired printer is available in the **Manufacturers** and **Printers** lists, you are advised to use the printer driver provided with the printer. This assures you of the latest driver software.

10. Click the **Have Disk...** button. Insert the printer driver diskette/CD that was provided with your printer, select the appropriate diskette/CD drive and click **OK**.
11. Select the printer driver you want to install and click **Next**.
12. Enter an appropriate name for your printer and click **Next**.
13. Choose whether you want to share the printer with other network users and click **Next**.
14. Choose whether you want to print a test page and then click **Finish**.

Adding Printers in Windows 98 and Me over TCP/IP using AXIS Print Monitor

1. Install AXIS Print Monitor on all workstations that will print via the Axis print server.
2. Next, start the Windows Add Printer Wizard: select **Settings** | **Printers** from the **Start** menu and double-click the **Add Printer** icon.
3. After clicking **Next** in the first dialog, the Wizard asks you to select between **Local Printer** and **Network Printer**. You must select **Local Printer** as the print server emulates a local printer port. Click **Next**.
4. Choose the appropriate print driver for your printer. If the desired print driver already appears within the displayed **Manufacturers and printers** lists, highlight your selection, click **Next** and proceed directly to step 7. It is only necessary to perform steps 5- 6 if your printer does not feature in the model list.
5. Click the **Have Disk...** button. Insert the printer driver diskette/CD into the appropriate disk drive of your computer.
6. Select the type of printer you want to install from the diskette/CD and click **Next**. If you already have the printer's driver installed, you will be asked whether to keep it or to replace it.
7. Select the Printers@TCP/IP Port and click **Next**.
8. Enter an appropriate name for your printer and choose whether you want it to be the default printer. Click **Next**.
9. In the next window, do not order a Test Page to be written, just click **Finish**.
10. The printer you have defined will now be displayed in the Printers Folder. Right-click the printer object and select **Properties**.
11. Click the **Details** tab within the **Properties** page and then click **Add Port** to display the available monitors.
12. Click the radio button "other". Select **AXIS Port** and then click **OK**.
13. Select **LPR (TCP/IP)** as your choice of protocol and click **OK**.
14. Enter the IP address or the host name of your print server (Example IP address: 192.168.3.191 or host name: AXIS181636).
    In the **Logical Printer Name** field, enter the port you wish to use; **USB1**, **LPT1, LPT2** or **COM1**.
15. The TCP/IP port will then be added automatically to the list of available ports. Click **Apply** and **OK**.
16. You may now configure the port, as described below. The Axis Printer Port is now installed.

Configure the Port:

1. Select **Settings** | **Printers** from the **Start** menu and highlight the printer you wish to configure. Select **File** | **Properties** | **Details** and click **Port Settings**.
2. Choose whether error condition pop-up messages are to be displayed by checking the box in the **Configure AXIS Ports** dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**.

> Even if the desired printer is available in the Manufacturers and Printers lists, you are advised to use the print driver provided with the printer. This assures you of the latest driver software.

Adding Printers in Windows 98 and Me over NetBIOS/NetBEUI using AXIS Print Monitor

Follow the procedures below to install Axis NetBIOS/NetBEUI printer ports on a Windows 98 workstation, using AXIS Print Monitor:

1. To start the Add Printer Wizard, select **Settings** | **Printers** from the **Start** menu and double-click the **Add Printer** icon.
2. After clicking **Next** in the first dialog, the Wizard asks you to select Local printer or Network printer. Select **Local printer**. Click **Next**.
3. Choose the appropriate printer driver for your printer. If the desired printer driver appears in the displayed **Manufacturers** and **Printers** lists, highlight your selection, click **Next** and proceed directly to step 6. It is only necessary to perform steps 4 - 5 if your printer does not appear in the model list.

Note:

> Even if the desired printer is available in the **Manufacturers and Printers** lists, you are advised to use the printer driver provided with the printer. This assures you of the latest driver software.

4. Click the **Have Disk...** button. Insert the printer driver diskette/CD that was provided with your printer, select the appropriate diskette/CD drive and click **OK**.
5. Select the printer driver you want to install and click **Next**.
6. Select the AXIS Printer Port from the Available Ports list. The port names appears as <name>.<port>. Here, <name> is AX followed by the last six digits of the print server's serial number (e.g. AX100086) and <port> is taken from the table below. Click the Configure Port button.

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	US1	LP1	–	–

Example: AX100086.LP1

7. Choose whether error condition pop-up messages are to be displayed by checking the box in the **Configure AXIS Ports** dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK** and **Next**.
8. Enter an appropriate name for your printer and click **Next**.
9. Choose whether you wish to print a test page and click **Finish**.

Section 7 Adding Printers in Macintosh

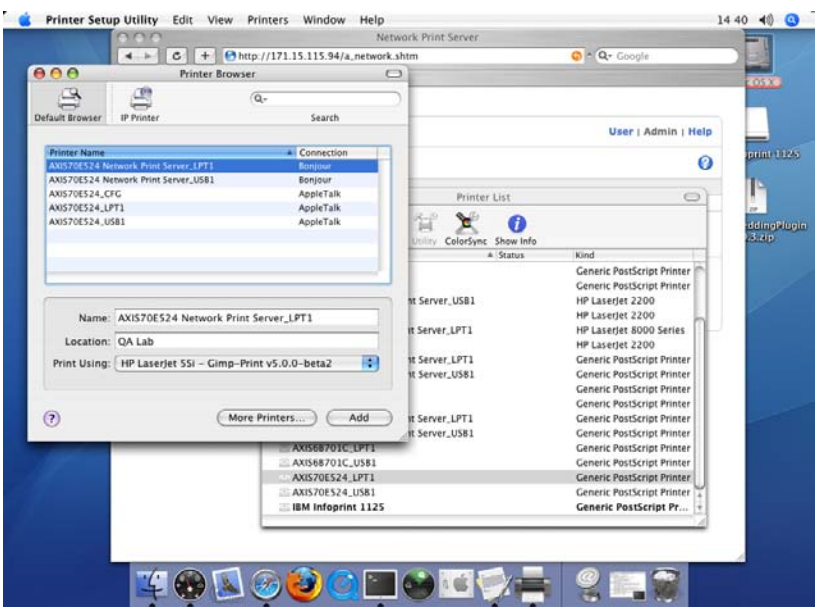
Having connected the AXIS 5570e to your network, this section now describes how to set up your print server for printing in Mac OS X and earlier Macintosh environments using AppleTalk.

If you intend to use the print server in a multi-protocol environment, refer to the chapters pertaining to the respective operating systems in this manual.

Bonjour Printing in Mac OS X

Bonjour is available from Mac OS X 10.2 and up. Bonjour is enabled by default in the print server. You can alter the Bonjour parameters from the print server's Web interface: select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network.**

1. From the Apple menu, select **Go** | **Applications** | **Utilities** and start the **Print Center** or the **Printer Setup Utility**.
2. Click **Add** in the Printer List.
3. From the drop-down list, select **Bonjour**.
4. High-light the printer you want to install. The print server's default name is **AXISxxxxxx Network Print Server** (where the xs represent the last six digits of the print server's serial number) followed by the ports available. *Example: AXIS610282 Network Print Server_USB1.*



5. Click **Add** to finish the installation. The print server has now been added to the Printer List.
6. If you wish to configure printer settings, click **Printers** | **Configure Printer**.

To Change the Bonjour Service Name

You can change the print server's Bonjour service name via the print server's Web interface: **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** => Bonjour Service Name.

If the print server using Bonjour is already installed and the print server name or service name is changed, the print server must be removed from the Printer List and then re-installed with the new Bonjour service name.

Installation in Mac OS X using AppleTalk

This section describes setting up your print server for printing in the Mac OS X.

1. Start **Print Center** (from **Go** | **Applications** | **Utilities** | **Print Center**)
2. Select **Printers** | **Add Printer...**
3. From the **Printer List** dialog, select **AppleTalk**.
4. Now, the ports of your print server will appear in the list of available printers. The port is shown as <host name>_<port>.
   Example: AXIS100086_LPT1.
5. Select the print server port you want to use.
6. Select an appropriate printer driver for your printer from the **Printer Model** drop-down list. If the printer is not available in the list, select **Generic**. (Note: **Generic** is only used for postscript printers.)

   You can also browse for a printer driver on your computer or network by selecting **Other...** from the list.
7. Click **Add** to complete the installation.

Installation of LPR printing in MAC OS X

If you want to print using LPR, select:

1. **Printers** | **Add Printer**...
2. From the **Printer List** dialog, select **LPR printers using IP.**
3. Enter the IP address or host name of the print server in the **LPR printer's Address** field. You must uncheck the **Use Default Queue on Server** check box and enter a Queue Name:

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	USB1	LPT1	–	–

Choose a printer driver from the Printer Model list and click Add to finish.

Installation on Mac OS 9.1 or older, using AppleTalk

Basic Configuration

On Mac OS 9.1 or older, basic configuration in AppleTalk is performed simply by opening the Chooser window and selecting a printer.

You can change the default name of your print server or any of default parameters by editing the print server's *config* file. To access the *config* file from a Macintosh, you can use:

- any Web browser with Javascript enabled
- FTP using MacTCP, Fetch or Anarchie

In order to use any of these methods, you must assign an IP address to the print server as described in *"Setting Parameters"* on page 90.

Choosing a Printer

Selecting a Printer

The method for choosing a printer varies depending on which version of LaserWriter printer driver you are using.

- The LaserWriter 7.0 driver assumes that you use a standard PostScript driver, and cannot take advantage of any printer specific features.
- The LaserWriter 8.0 driver uses PPD files that contain printer descriptions. This gives you full control over any features your printer might have.

Autodetect Printer Type

The print server can automatically detect the type of printer you are using if you enable **Autodetect Printer Type**. The print server can then recognize Epson and Hewlett Packard InkJet printers. Most Epson and Hewlett Packard InkJet printers that have Mac OS printer drivers for network printing are supported. Without the Autodetect Printer Type function, the AppleTalk printer type has to be specified manually in the print server. For Epson InkJets it would be "EPSONLQ2" and for HP InkJets it would be "DeskWriter". If the print server does not recognize the connected printer, the default setting "LaserWriter" will be used as printer type. "LaserWriter" is the recommended setting to be used with all PostScript printers.

To enable **Autodetect Printer Type**, log in to your print server's Web interface and select **Admin** | **Network Settings** | **Detailed View** | **Macintosh** | **Auto Detect Printer Type** | **Yes**.

See the **Help** pages in the print server's Web interface for details.

LaserWriter 7.0 Printer Driver

Follow the instructions below to choose a printer:

1. Select **Chooser** from the **Apple** menu.
2. Click the **LaserWriter** icon.
3. If your network has more than one zone, click on the zone you want. (If your network does not have any zones, this box will not appear.)

4. Click the name of the printer you want – the ports are shown as <host name>_<port>. **Example**: AXIS100086_USB1.
5. Click the **Close** box. This completes the configuration and closes the Chooser.

Repeat this procedure for each Macintosh computer on the network using the print server.

LaserWriter 8.0 Printer Driver

Follow the instructions below to choose a printer:

1. Select **Chooser** from the **Apple** menu.
2. Click the **LaserWriter 8.0** icon.
3. If your network has more than one zone click on the zone you want. (If your network does not have any zones, this box will not appear.)
4. Click the name of the printer you want – the ports are shown as <host name>_<port>. **Example**: AXIS100086_USB1.
5. Click **Setup...** and then **Auto Setup**. If the selected printer supports bi-directional printing and the appropriate PPD file is available, the installation is performed automatically and you can therefore proceed directly to step 7 (if this is not the case, the PPD file must be selected manually, as described in step 6).
6. Choose the PPD file matching your printer, and click **OK**.
   If your printer does not appear in the PPD file list, please contact your printer vendor. Use the Generic PPD if you do not need any printer specific features.
7. Click **OK**, and then click the **Close** box. This completes the configuration and closes the Chooser.

Repeat this procedure for each Macintosh computer on the network using the print server.

Bi-directional Support

The AXIS 5570e allow the printer driver to communicate directly with the printer and consequently facilitates complete functional control over print jobs, e.g. automatic downloading of fonts not resident in the printer.

This functionality has backward compatibility with older printers and Macintosh computers, which means that the AXIS 5570e can generate appropriate responses to Macintosh printer queries when the connected printer does not support bi-directional communication.

Verifying the Setup

You simply need to print a document from the Macintosh computer to verify communication to the chosen printer. The basic installation can be considered complete if the print test is satisfactory. The AXIS 5570e is now ready for use.

BCP and TBCP

You should specify if you want to enable or disable binary transfer of print data in the print server's Web interface (**Admin** | **Network Settings** | **Detailed View** | **Macintosh** | **Binary Protocol for Printer** *n*. By enabling

binary transfer you reduce printing time, provided that the print job is sent as binary data to the print server. This is particular true when you are printing large bitmaps.

- **TBCP** enables the print server to use the TBCP (Tagged Binary Communication Protocol) to transfer print data to the printer. Select this alternative when using Postscript printers.
- **BCP** enables the print server to use the BCP (Binary Communications Protocol) to transfer print data to the printer. Select this alternative when using Postscript printers.
- **None** disables all binary transfers, select this alternative for all non-PostScript printers and for ASCII PostScript printing.

Notes:

- If you have have set the Autodetect Printer Type parameter to YES, the text output format will be chosen automatically (Admin | Network Settings | Detailed View | Macintosh | Auto Detect Printer *n* Type | Yes).
- Some printers, e.g. Epson InkJet printers, can not be used when TBCP is enabled.

Setting Parameters

In AppleTalk, you can change a limited number of the parameters of the AXIS 5570e. You can:

- enable and disable binary data transfers for your printing
- select the type of binary transfer protocol to use
- specify the AppleTalk printer type
- set the IP address

However, by assigning an IP address to your print server, you have access to all of the print server parameters via any standard Web browser or via FTP. Refer to *"Management and Configuration"* on page 131 for more information.

Example: The following example describes how you set the print server parameters in AppleTalk.

Important:

DO NOT use the parameter values from this example when configuring your print server. You should select values that are appropriate for your printers and network settings.

Follow the instructions below:

1. Open the **Chooser** from the Apple menu.
2. Select a network printer driver – any LaserWriter will do.
3. Select the printer port ending with **_CFG**.
4. Close the Chooser.
5. Open a text editor, e.g. SimpleText.

6. Write a text file containing the parameters you want to set:

BINARY_TYPE_1.	:BCP
INT_ADDR.	:192.168.3.191
ATYPE_1.	:EPSONLQ2

Note:

Parameters that you do not want to set should be excluded from the text file. Refer to the Parameter list in this manual for information about which values that are valid for each parameter.

7. Print the text file. The settings will be stored in the print server.
8. Open the Chooser and select the printer port you wish to use for printing documents.
9. Close the Chooser.

Note:

The _CFG port disappears 60 minutes after the AXIS 5570e has been powered on. If you want it to reappear, you must restart your print server.

Section 8 Adding Printers in NetWare

This section describes how to continue the installation of the AXIS 5570e in the NetWare environment. Identify which transport protocol you are running on your network and which installation method you should use. Continue the installation by selecting the appropriate installing instructions from the table below:

Installation method	Transport protocol	Action
NDPS	TCP/IP IPX/SPX	See *"Setup using NDPS"* on page 92 and *"Public Access Printers"* on page 93 *"Controlled Access Printers"* on page 97
iPrint	iPrint over LPR	See *"Setup using iPrint"* on page 106 and *"Install a printer using AXIS LPR Gateway Configuration Snap-in"* on page 109
	iPrint over IPP	See *"Setup using iPrint"* on page 106 and *"Install a printer with AXIS IPP Gateway Configuration Snap-in"* on page 108
Queue-based printing	IPX/SPX Basic Configuration	To install using the AXIS NetPilot Installation Wizard, see *"Basic Setup with AXIS NetPilot"* on page 111
	IPX/SPX Advanced configuration	If you need a more advanced installation that is not covered by the AXIS NetPilot Installation Wizard, see *"Advanced Installation using AXIS NetPilot"* on page 113

See "NetWare Administration" on page 117. for information on Novell's administration tools.

If you intend to operate your AXIS 5570e in a multi-protocol, mixed environment, you should also proceed to the other relevant sections in this manual.

Setup using NDPS

The AXIS 5570e supports Novell Distributed Print Services (NDPS). You can run NDPS over Pure IP (TCP/IP) or IPX/SPX.

Before the AXIS 5570e can be installed, make sure that NDPS is installed and a Broker is loaded on your NetWare file server.

Axis Network Print Server uses the AXIS NDPS Gateway for printing in networks using either IP or IPX as transport protocols. The printer gateways are included with the NDPS software (from version 5.1 and up) and are automatically installed together with NDPS.

Installing the Axis Network Print Server in the NDPS environments

Having assigned an IP address to the AXIS 5570e as described in *Setting the IP Address*, on page 16, you are now ready to install the Axis Network Print Server for NDPS printing. You can select to install the connected printers as public or controlled access printers. Follow the instructions below to install the Axis Network Print Server using NDPS:

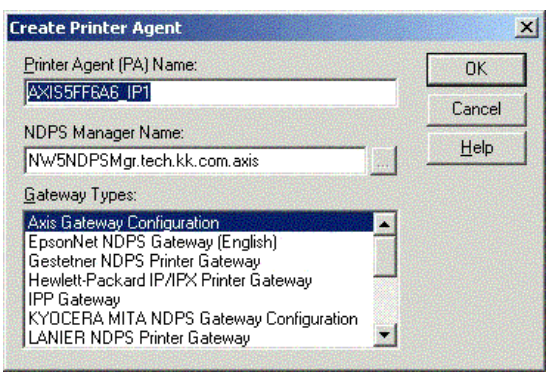
Important:

- The NDPS Enabled parameter of the Axis Network Print Server is by default enabled. It must be set to Yes in order for the communication between the print server and the NDPS gateway to be enabled. To change this parameter, log in to the print server's Web pages and choose: Admin | Network Settings | Detailed View | NetWare=> NDPS Enabled => Yes.
- If you do not have an NDPS Manager object available, start out with creating one in the NetWare Administrator.

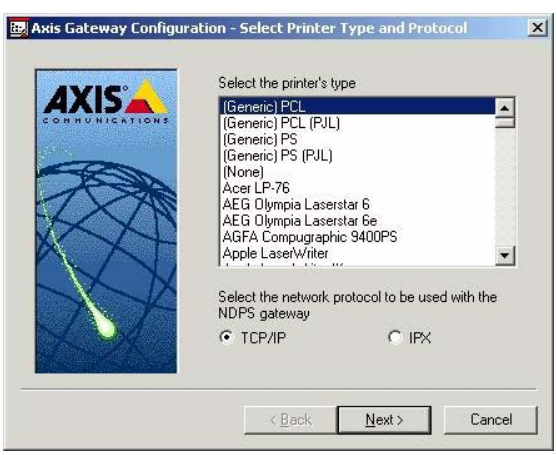
Public Access Printers

Follow these instructions to create a public access printer using the NDPS Manager object in your NetWare administrator utility:

1. Double-click on the NDPS Manager object you will be using to control the Printer Agents.
2. On the **Identification** page for the NDPS Manager, click the printer **Agent List** button. The **Printer Agent List** dialog will appear.
3. Click **New**. The **Create Printer Agent** dialog will appear.
4. Type a name of your choice in the **NDPS Printer Agent** field:



5. Select the **Axis Gateway configuration** in the **Gateway Type** window.
6. Click **OK**
7. In the **Select the printer's type** window, choose your printer. If you cannot find the printer, select an appropriate Generic one (PCL, PS, etc)

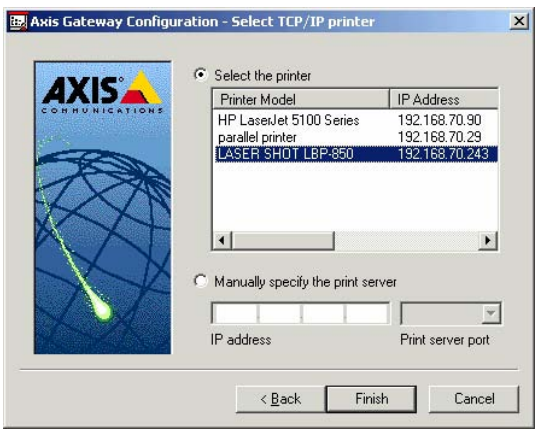


8. Select TCP/IP (**default**) or IPX as network protocol. Click **Next.**

9. You will find the print server in the next window with the printer attached on the connected port. Depending on the transport protocol you used when you start the installation, the print server should appear as following:

- TCP/IP Network protocol:

  IP Address and Port, e.g: *192.168.70.243* and *LPT1*



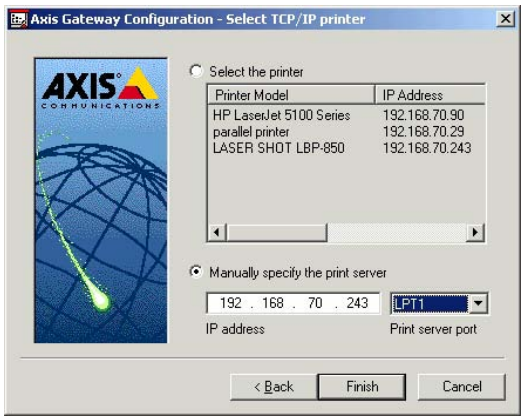
1. Only the ports with a connected printer show up in this window. If the printer is not in the displayed print list, click **Manually specify the print server** and do the following:
   Enter the print server's IP address in the **IP Address** Field
2. Choose a port in the **Print Server Port** field

   e.g., **192.168.70.243** and **LPT1**

   The available ports are :

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	other/unknown	LPT1	–	–

Note: “other/unknown”, stands for the USB1 port.



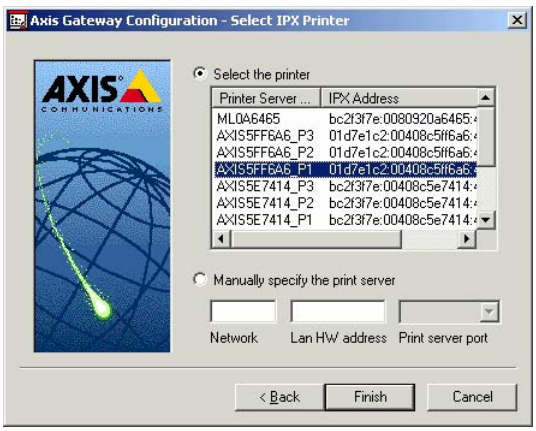
IPX Network protocol:
All the available ports will be presented, regardless if the printers are or not connected to those ports, e.g.

LPT1	AXIS5FF66A_P1
LPT2	AXIS5FF66A_P2
USB1	AXIS5FF66A_P2
COM1	AXIS5FF66A_P3

The IPX Addresses for the above printers will appear as:
<IPX External Network Number>:<Print server's HW address>:<Socket Number>

i.e.: **01d7e1c2:00408c5ff6a6:400c**
where 400c, 401c, and 402c are the socket numbers corresponding to the LPT1, LPT2, USB1 and COM1 physical ports:

LPT1	400c
LPT2	401c
USB1	401c
COM1	402c

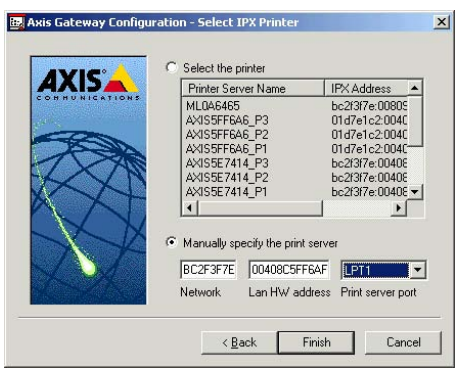


If the printer is not in the displayed print list, click **Manually specify the print server** and do the following:

1. Enter the <IPX External Network Number> in the **Network** field.
2. Enter the <Print server's HW address> in the **LAN HW address** field.
3. Choose a port in the **Print Server Port** field, e.g. **01d7e1c2:00408c5ff6a6** and **LPT1**

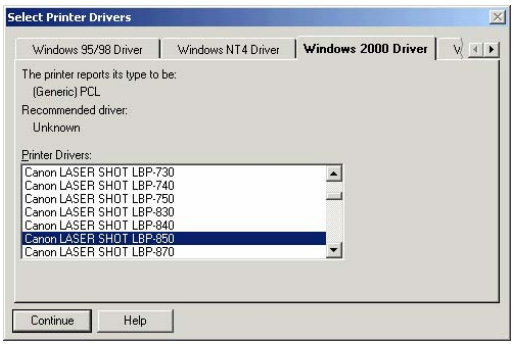
Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	other/unknown	LPT1	–	–

Note: other/unknown, stands for the USB1 port.

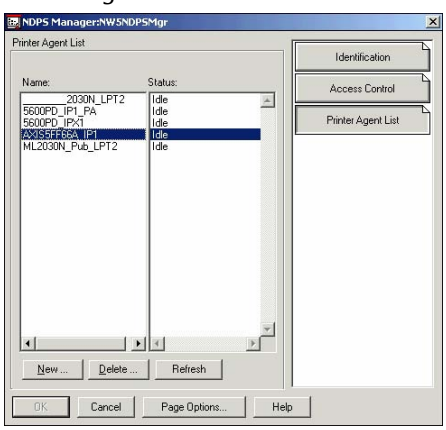


4. When done, select your printer and click **Finish**.

5. Next, select the printer drivers for each client operating system. (Windows 2000, NT and 95/98). These drivers will be automatically downloaded to users' workstations when they install this printer in the future.



6. Click **Continue** and **OK** in the next NDPS window. The new Printer Agent appears in the Printer Agent List window.



   Check the Status: it should be **Idle**.

7. Press **Cancel** to close the NDPS Manager

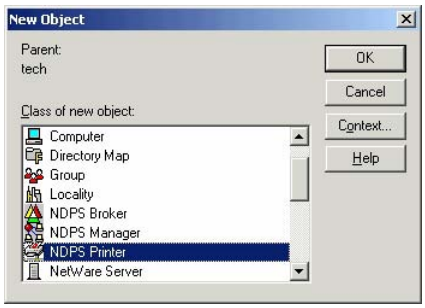
To install the printer on the workstation, See "Installing an NDPS Printer on the Workstation" on page 103.

Controlled Access Printers

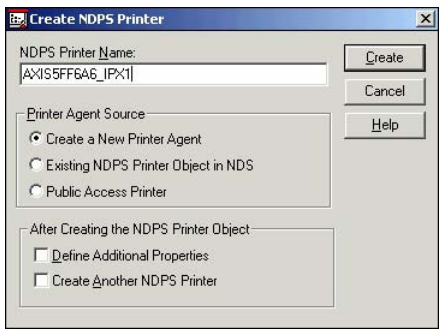
Follow these steps to create a controlled access printer as an object in the Directory Tree, using the NetWare administrator utility:

1. Log in as Admin.
2. Start the NW Admin utility on any Workstation (SYS:PUBLIC\WIN32\nwadmin32.exe).
3. Browse the context your NDPS Manager resides in.

4. From the **Object** menu, select **Create**. The New Object dialog appears.



5. Select NDPS Printer. The Create NDPS Printer dialog appears.



6. Type a name of your choice in the NDPS Printer Name field, e.g. **AXIS5FF66A_IPX1**
   In the Printer Agent Source field, select the source of the Printer Agent. The following options are available:

   - Create a New Printer Agent. If you select this option, you are asked to select either the Novell Gateway or a third party Gateway.

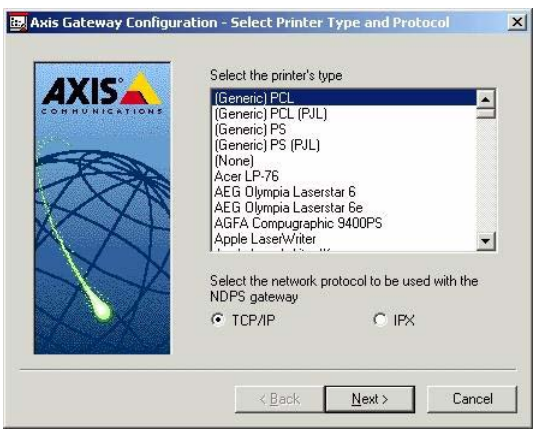
   - Printer Agent on Existing NDS Object. Use a Printer already configured as a controlled access printer (NDPS Printer Object).
   If you select this option, a list of current NDPS Printer Objects in this container will be displayed from which you can select the one you want to use.

   - Public Access Printer Agent. Use an existing Printer Agent representing a Public Access Printer.

7. Select **Create a New Printer Agent** and click **Create** to display the Create Printer Agent dialog.

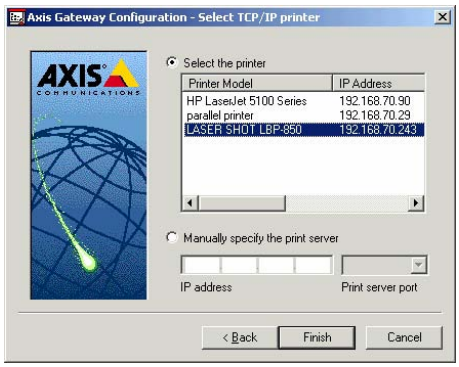
8. Confirm the Printer Agent name (default is the name of the new printer you are creating) and browse to select the NDPS Manager to which you want to assign it

9. Select AXIS Gateway Configuration in the Gateway Type field.
10. Click **OK**.
11. In the **Select the printer's type** window choose your printer. If you cannot find the printer, select an appropriate Generic one (PCL, PS, etc)



12. Select TCP/IP (**default**) or IPX as network protocol.
13. Click **Next.**
14. You will find the print server in the next window with the printer attached on the connected port.
    Depending on the transport protocol you used when you start the installation, the print server will appear as:

- **TCP/IP Network protocol:**
  IP Address and Port, e.g.
  192.168.70.243 and *LPT1*



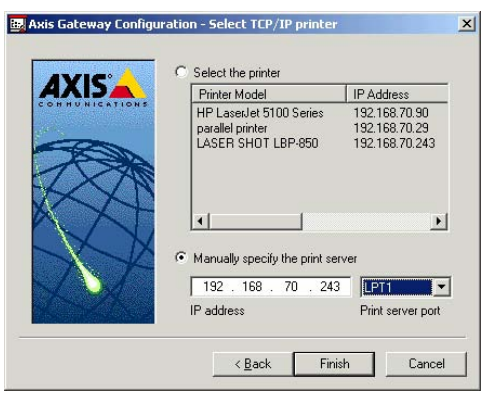
Only the ports with a connected printer will show up in this window.

If the printer is not in the displayed print list:

1. Click **Manually specify the print server** enter the print server's IP address in the **IP Address** Field.
2. Choose a port in the **Print Server Port** field e.g., **192.168.70.243** and **LPT1:**

Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	other/unknown	LPT1	–	–

Note: other/unknown stands for the USB1 port.



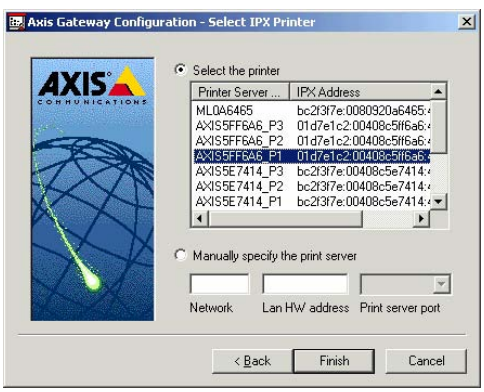
IPX Network protocol:
All the available ports will be presented, regardless if the printers are or not connected to those ports,.

LPT1	AXIS5FF66A_P1
LPT2	AXIS5FF66A_P2
USB1	AXIS5FF66A_P2
COM1	AXIS5FF66A_P3

The IPX Addresses for the above printers will appear as:
<IPX External Network Number>:<Print server's HW address>:<Socket Number>

i.e.: **01d7e1c2:00408c5ff6a6:400c**
where 400c, 401c, and 402c are the socket numbers corresponding to the LPT1, LPT2, USB1 and COM1 physical ports:

LPT1	400c
LPT2	401c
USB1	401c
COM1	402c



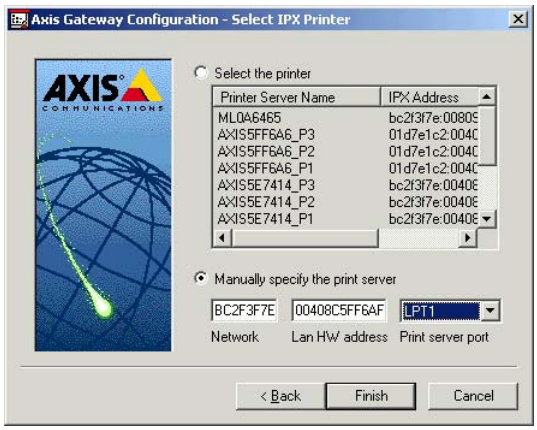
If the printer is not in the displayed print list:

1. Click **Manually specify the print server** and enter the <IPX External Network Number> in the **Network** field.
2. Enter the <Print server's HW address> in the **LAN HW address** field.

3. Choose a port in the **Print Server Port** field:
e.g.: **01d7e1c2:00408c5ff6a6** and **LPT1.**

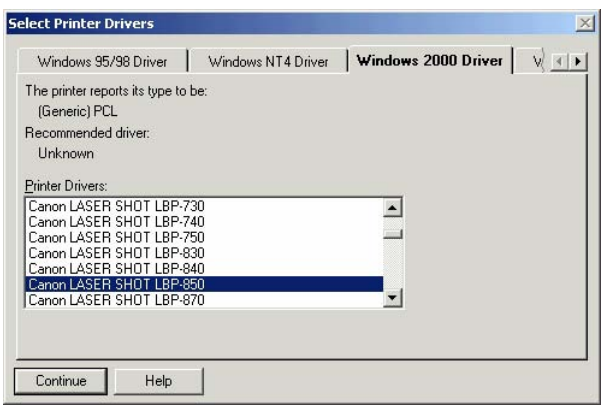
Ports available	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	other/unknown	LPT1	–	–

Note: other/unknown stands for the USB1 port.

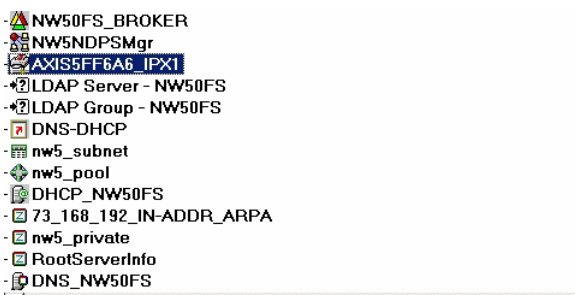


4. When done, select your printer and click **Finish**.

5. Next, select the printer drivers for each client operating system. (Windows 2000, NT and 95/98). These drivers will be automatically downloaded to users' workstations when they install this printer in the future.



6. Click **Continue** and **OK** in the next NDPS window. Your printer will appear as an NDS object in the Directory Tree and will offer a full range of network security options.



To install the printer on the workstation, See "Installing an NDPS Printer

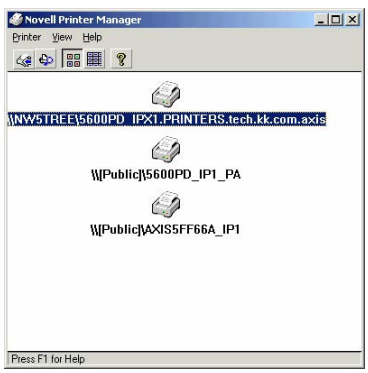
on the Workstation" on page 103.

Installing an NDPS Printer on the Workstation

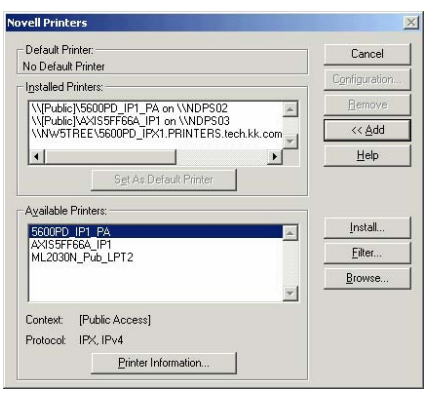
To install the printer on a workstation, use either Novell Printer Manager (NetWare 5.1 only) or the Add Printer Wizard on the local workstation.

Using Novell Printer Manager

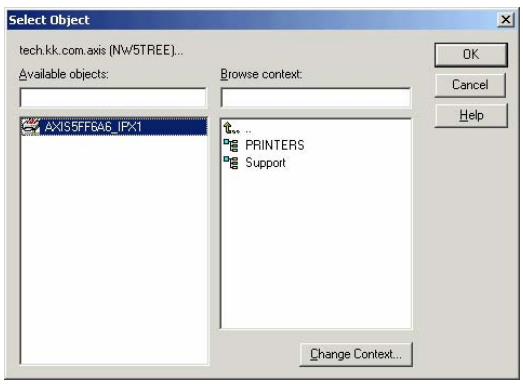
1. Log in as Admin.
2. On the any workstation, browse to
   <NW 5.1 File Server>\SYS:PUBLIC\Win32
   and start Nwpmw32.exe (Novell Printer Manager).
   The Novell Printers dialog appears, displaying a list of installed Public or Controlled printers (if any printers have previously been installed on the workstation).



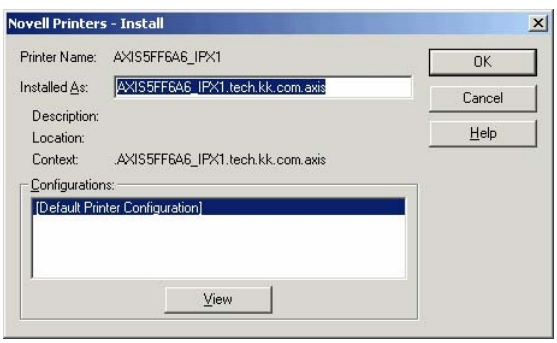
3. From the Printer Manager's Printer pull down menu, select **New**.
4. Click **Add**. A list of available printers appears.



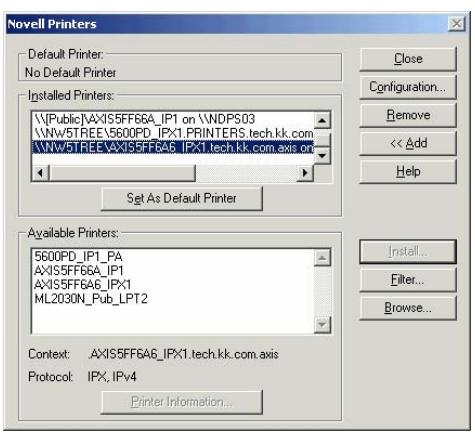
5. The list of available printers shows the NDPS Public Access Printers on the network and the NDPS Controlled Access Printers in you current NDS context. To see the Controlled Access Printers in other context that you have rights to, click the **Browse** button and select your choice. Click **OK.**



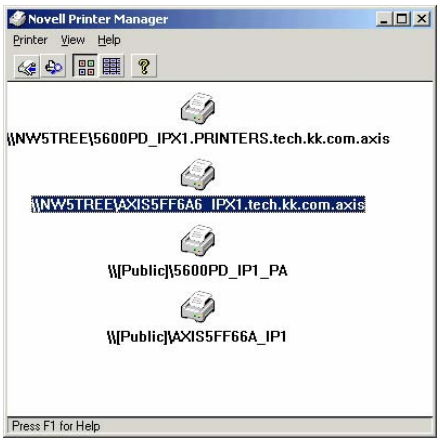
6. Once selected, click **Install**. The Novell Printers – Install dialog appears.



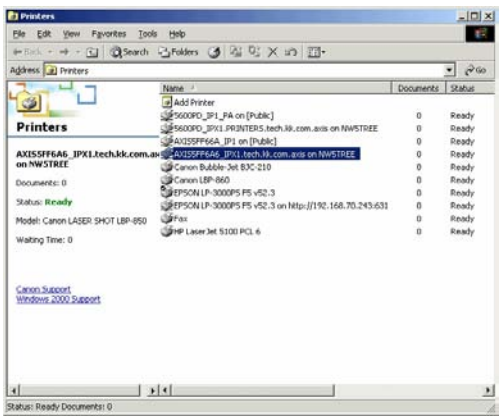
7. Click **OK**. The default driver for that printer is then automatically downloaded.
   If the printer object does not have a printer driver associated with it, or a driver was not found, you will be prompted to either to choose from a list of printer drivers provided by NDPS or to provide a disk with the appropriate driver.
   The Novell Printers dialog appears with the new printer, e.g. **AXIS5FF6A6_IPX1** in the installed list.



8. Click **Close**.
   In the Novell Printer Manager window the new installed NDPS printer appears with the name e.g. **AXIS5FF6A6_IPX1** and is available for print jobs.

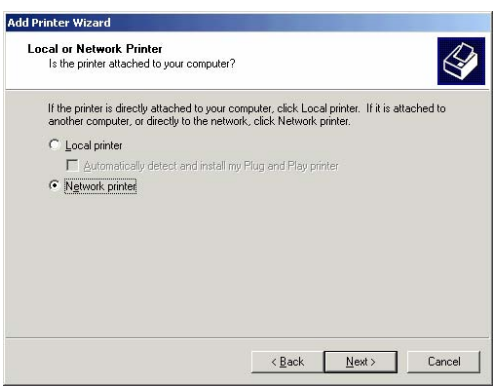


9. Verify by clicking **Start - Settings - Printers** on the workstation.



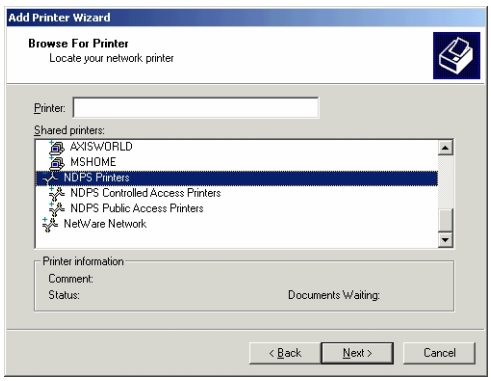
Using the Add Printer Wizard

1. Click **Start** on your workstation, select **Settings** =>**Printers**. There might be some differences regarding this menu depending of MS Operating System you are running.
2. Start the Add Printer Wizard on the workstation. The Add Printer Wizard dialog will appear. Click **Next**.
3. Select **Network printer** and click **Next**.



4. Click **Next** again in the **Locate Your Printer** dialog (Win2000/XP) or press the **Browse** button (Win9X)

5. Browse to the **NDPS Printers**. Expand either the **NDPS Controlled Access Printers** or the **NDPS Public Access Printers** folder, select your newly installed NDPS printer and follow the instructions.



When you have completed these steps, you are ready to start printing.

Notes:

- The Public Access print servers are immediately available for everyone on the network
- The Axis Gateway Configuration Utility is an installation and configuration tool for NDPS printers in the NetWare environment.
  The Axis Gateway will appear in NetWare 5.1 and later releases. You can download the Axis Gateway Configuration Utility for use with earlier versions of NetWare from www.axis.com.
- To print using TCP/IP, Axis print server firmware 6.1 or later is required. In order to print using IPX/SPX, Axis print server firmware 5.51 or later is needed.

Setup using iPrint

iPrint is Novell's next generation of printing software that lets users print to and from all destinations.

A standard Web page displays available printers to the user.
By clicking a printer, the iPrint client is installed (if not installed previously), the printer's driver is downloaded, and a printer is created in the user's Printer folder, enabling the user to send documents to the printer from any application on the desktop.

Before setting up iPrint printers, make sure that you meet all the iPrint Setup requirements. See the Novell iPrint Administration Guide for instructions on installing, configuring, and customizing iPrint.

AXIS Print servers can be installed as iPrint printers, either by using the Novell LPR gateway (LPR on IP) or the AXIS Gateway Configuration Snap-in for iPrint.

Axis provides two Snap-ins for iPrint:

- AXIS LPR Gateway Configuration
- AXIS IPP Gateway Configuration

When you install Service Pack 6 (16 April 2003) for NetWare 5.1 or later and Service Pack 3 (16 April 2003) for NetWare 6.0 or later, the AXIS LPR Gateway Configuration will automatically be installed and configured on the NetWare Servers and ready for use.

The AXIS IPP Gateway Configuration Snap-in for NetWare 6.0 can be downloaded for free from www.axis.com. Follow the instructions below to install the AXIS IPP Gateway Configuration Snap-in for NetWare 6.0, if you want to add it in your iPrint environment.

Installing AXIS IPP Gateway Configuration Snap-in for NetWare 6.0

1. Download the free **axisIPP-snap-in.zip** file from www.axis.com and unzip it in a temporary directory.
2. Make sure the the NetWare Enterprise Web Server was previously installed on the server. Otherwise, install it.
3. Novell iPrint uses the NDPS infrastructure, so make sure that all the NDPS requirements have been met:
   - Make sure that the BROKER.NLM is loaded. If it is not, type LOAD BROKER in the server console prompt and select the name of the Broker.
   - Make sure that the NDPS Manager object is created in the Novell Directory Services (NDS) tree. Refer to your Novell documentation for creating this object.
   - Make sure that the NDPSM.NLM is loaded. If it is not, type LOAD NDPSM in the server console prompt and select the appropriate NDPS Manager.
4. Shutdown Tomcat and the NetWare Enterprise Web Server on the NetWare file server by executing the following commands:

   Type "NSWEBDN" <Enter>
   Type "TOMCAT33 -STOP" <Enter>
   Type "NVXADMDN" <Enter>

5. Map the next available drive (e.g. G:) to the root of volume SYS on your NetWare server.
   From the temporary directory where **axisIPP-snap-in.zip** has been unzipped, run the batch file **AxisIPP.bat** (default G:).
   If the drive G: is not available, you have to edit the batch file and change the drive to next available one.
   Check that each line in the batch file is executed without failure.
6. Restart Tomcat and the NetWare Enterprise Web Server on the file server by executing the following commands:
   Type "TOMCAT33" <Enter>
   Type "NVXADMUP" <Enter>
   Type "NSWEB" <Enter.

7. Access the iManager Web page on the NetWare server by opening the following URL:
   https://<IP address of NW server>:2200/eMFrame/iManager.html
   You have to authenticate.
8. Click on **iPrint Managemen**t on the left pane and select **Create Printer.**
9. On the right pane, verify that the newly installed **AXIS IPP Gateway Configuration** is under the **Gateway type** drop-down menu.
   If not, it may be necessary to restart the NetWare server.

   Now you are ready to use the AXIS IPP Gateway Configuration for installing iPrint printers. You have to have **Administrator rights** to install the printers through iPrint.

Install a printer with AXIS IPP Gateway Configuration Snap-in

1. Use an AXIS 5570e and connect a printer to whatever port you want.
2. Connect the print server to the network.
3. Connect the Power Adapter.
4. Start the printer and the print server.
5. Log in as Admin.
6. Use a Web browser and the local host URL to login into iManager on your NetWare server.
7. Open your browser to the following URL:
   https://<IP address of NW server>:2200/eMFrame/iManager.html
   You have to authenticate.
8. Click on **iPrint Management** on the left pane.
9. Click on **Create Printer.**
10. Choose a name of your choice for the printer
11. Choose the context where the printer will be installed.
12. Browse for the NDPS Manager and select it.
13. In the **Gateway Type** drop-down list, choose the **Axis IPP Gateway Configuration**. Press **Next**.
14. In the Printer URL, you may choose either the IPP version 1.0 format:
    http://<IP address of your print server>:631/lptx

    or the IPP version 1.1:

    ipp://<IP address of your print server>/lptx

    where x is the port number. Click **Next.**
15. Select default drivers for your printer. Click **Next** and **OK**.

Install a printer using AXIS LPR Gateway Configuration Snap-in

1. Use an AXIS 5570e and connect a printer to whatever port you want.
2. Connect the print server to the network.
3. Connect the Power Adapter.
4. Start both the printers and the print server.
5. Log in as Admin.
6. Use a Web browser and the local host URL to login into iManager on your NetWare server.
7. Open your browser to the following URL: https://<IP address of NW server>:2200/eMFrame/iManager.html You have to authenticate.
8. Click on **iPrint Management** on the left pane.
9. Click on **Create Printer.**
10. Choose a name for the printer.
11. Choose the context where the printer will be installed.
12. Browse for the NDPS Manager and select it.
13. In the **Gateway Type** drop-down list, choose the **Axis LPR Gateway Configuration**. Click **Next**.
14. Choose either the IP address or the DNS Name for your print server.
15. Under **Printer name**, select the physical printer port, e.g. LPT1, or logical printer port pr1-pr8 using the drop-down list. Click **Next**.
16. Select default drivers for your printer. Click **Next** and **OK**.

Installing the iPrint Printer on the Workstation

An iPrint printer can by locally installed on the workstation in two ways:

- Using the iPrint Client
- Using the MS Add Printer Wizard at the workstation.
  See “Using the Add Printer Wizard” on page 105.)

Installing the iPrint Printer using the iPrint Client.

In order for users to use iPrint, they need to install the Novell® iPrint Client software and a printer. When a user selects a printer to be installed by iPrint, iPrint checks to see if the Novell iPrint Client software is installed and then installs it if necessary. Then the printer driver is downloaded and the printer is installed in the user’s Printer folder.

In order for iPrint to work properly, the workstation should have the following:

- Windows 95/98/Me or Windows NT*/2000/XP
- Web browser with JavaScript enabled:
  - Microsoft Internet Explorer 5.0 or later
  - Netscape 4.76 (iPrint is not supported on Netscape 6)

The user should use the following iPrint url:

http://<IP address of your NW server>:631/IPP

1. From a Netscape or Internet Explorer browser, enter the provided URL. A Web page displays a listing of available printers to install and a link to install the client software.
2. Select **Install iPrint client software** to locally install the iPrint printers. If you try to install a printer before installing the iPrint client software, you will be prompted to install the client software first.
   If you associate a printer driver with a printer being installed, the driver is automatically installed on the user's workstation. If the driver already exists, that driver is overwritten even if it is a newer driver.
3. After installing a printer, it is added to the user's **Printer folder**. Users can print to the printer by selecting it from any application.

Basic Setup with AXIS NetPilot

Install the AXIS NetPilot software on your computer. AXIS NetPilot runs on Windows 98 and Windows NT.

Starting the Installation

Follow the instructions below to install the AXIS 5570e with AXIS NetPilot:

1. Start AXIS NetPilot by double-clicking the NetPilot icon, which is located in the folder where you installed AXIS NetPilot.
2. Locate the Axis Network Print Server in the 'New Axis Units' folder. Select it and click the **Install** button on the AXIS NetPilot toolbar. If your network is large, it could take a few seconds before the print server appears in the folder.
3. Choose the **with Installation Wizard** option.

The AXIS NetPilot Installation Wizard guides you through the installation process. The following options are available:

Note:

The number of options varies according to the number of environments you enable.

Print Server Name — The default print server name consists of the characters 'AXIS' followed by the last six digits of the serial number. If you want to change the print server name, just type the new name in the available text field.

Environments — Choose which networking environments you want to configure the Axis Network Print Server for, e.g. NetWare, TCP/IP, Windows & OS/2 or Macintosh. If your network comprises various different platforms, you can enable any combination of environments.

NetWare NDS — Place NetWare Print Queues on a specific bindery server, or alternatively into an NDS Tree.

The IP Address — Choose the method the Axis Network Print Server should employ for obtaining an IP address. DHCP, arp, RARP, BOOTP and Auto-IP are supported. You can also select to set the IP address manually. Refer to *"Setting the IP Address"* on page 16 for further information about setting the IP address.

Print Queues — The Axis Network Print Server uses the print server name followed by the printer port as the default Print Queue names and print server port names. If you want to change the default printer queue names, just type the new names in the available text fields.

AXIS 5570e

Environment	Default Names
NetWare	AXIS1A0003_USB1_Q
	AXIS1A0003_LPT1_Q
Windows & OS/2	AX1A0003.US1
	AX1A0003.LP1
AppleTalk	AXIS1A0003_USB1
	AXIS1A0003_LPT1

Default Print Queue Names and Print Server Port Names for each of the operating environments.

Test Page

The final user prompt in the Installation Wizard allows you to print a test page through NetWare. The test page displays the name of all the NetWare servers the Axis Network Print Server is connected to and shows the status of each connection.

Unless you want to connect or create additional printing queues, the installation for the NetWare environment is now completed.

Notes:

- The parameters entered during installation are not permanent; they can be altered at any time according to your network printing requirements.
- No serious or permanent damage will be caused if you make a mistake during installation. If you find, at any time, that printing is not satisfactory, the parameters can easily be changed to tune the system to your requirements.
- For information on advanced functions, please refer to the AXIS Network Print Server Technical Reference. You can download this or other technical information over the Internet by accessing **www.axis.com**

Advanced Installation using AXIS NetPilot

Having installed your Axis Network Print Server print server in accordance with the basic installation procedures described in *Basic Setup with AXIS NetPilot*, on page 111, your Axis Network Print Server print server should now feature in the 'Network Print Servers' folder located in the AXIS NetPilot main window.

NetWare Network Environment Window

The NetWare Network Environment window allows you to connect additional print queues to your Axis Network Print Server as well as create new ones.

Follow the steps below to gain access to the NetWare Network Environment window:

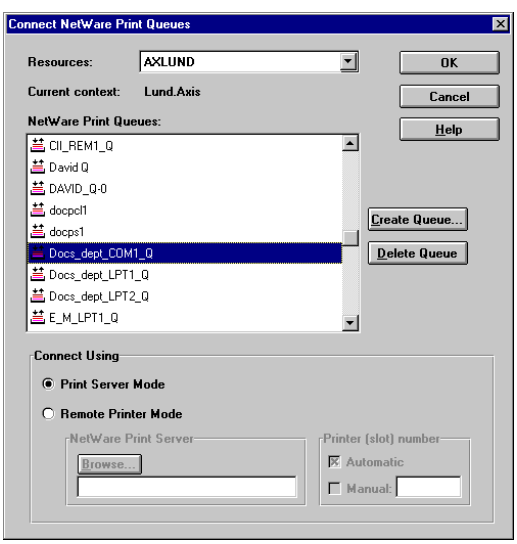
1. Select the required Network print server from the 'Network Print Server' folder.
2. Choose **Network** from the Setup menu or click on the **Network** icon on the AXIS NetPilot's toolbar.
3. If you are not logged on to your NetWare file server, a dialog box will ask you to log on.

The Axis Network Print Server periodically updates the configuration by scanning the NDS tree or, in the case of NetWare versions 3.x, the designated file servers.

Connecting Print Queues

Follow the steps below to connect a print queue to the print server port:

1. Open the NetWare 'Network Environments' window.
2. Select the print server port you want to connect.
3. Click the **Connect...** button.
   The **Connect NetWare Print Queues** window appears.



4. Select the tree or server location of the print queue from the **Resources** box.
5. Select an existing print queue to connect to the server port, or create a new print queue by clicking on **Create Queue...** If you have selected an existing queue, advance to step 8. Continue with step 6 only if you want to create a new queue.
6. Type the queue name in the **Create Queue** dialog window. If you want to create a queue in the NDS tree you must also enter the name of the volume where the queue will be located. Click **OK**.
7. Select the newly created queue from the queue list.
8. Select **Print Server Mode** or **Remote Printer Mode**. If you selected **Print Server Mode**, advance directly to step 11, otherwise continue with step 9.
9. Select an appropriate NetWare Print Server name, that will be associated with the Axis Network Print Server, by using the **Browse...** button.

Notes:

- You cannot type or edit the name manually.
- Make sure that you have PSERVER.NLM running if you selected Remote Printer Mode in step 8.

10. If you want to define a remote printer number slot manually, check the **Manual** box and type the desired number in the box.
11. Click the **OK** button to return to the Network Environments window.

Basic Queue-based printing over IP

Axis print servers with software version 6.0 or later allow users to print in a Pure IP environment using traditional queue-based printing (which usually uses the IPX transport protocol). Note that only NDS queue-based printing is supported.

In the NetWare Pure IP environment, you must use the NetWare Administrator to create the printer, print server and queue objects.

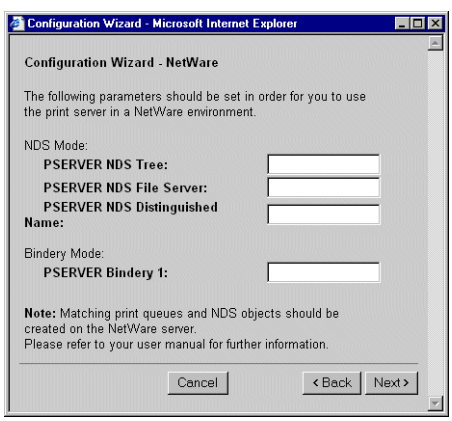
Installing the Axis Network Print Server

Follow the instructions below to install the Axis Network Print Server in the NetWare Pure IP environment:

1. Start the Configuration Wizard from the **User mode** in the Axis Network Print Server Web interface.
2. Click **your way through the Wizard until reaching the NetWare page.**
3. **Set the parameters on the NetWare page:**
   - PSERVER NDS Tree (example: NW5TREE)

     or

     PSERVER NDS File Server: (example: FILESERVERNAME)
   - PSERVER NDS Distinguished Name:
     (example: AXISXXXXXX.<context>, where <context> is the container where you want to create your print server)



Setting the PSERVER parameters in the Axis Network Print Server Web interface.

4. Use the NetWare Administrator to create the printer, print server and queue objects in the NDS tree and then link them together. The **Print Services Quick Setup** (Non-NDPS) utility can be used for this. Go to **Tools** in the **NetWare Administrator**.

5. Use the Add Printer Wizard on your work station to install the printer on your client. Note that only NDS queue based PSERVER printing is supported. When installing, choose **Network Printer** and browse to the queue you have just created. Alternatively, choose **Local Printer** and select the queue you have just captured.

Any configuration and management of the Axis Network Print Server can be performed from any standard Web browser. Please refer to *"Using a Web Browser for Print Server Management"* on page 131.

If both the IPX and IP protocols are enabled in your network and the print server uses DUAL_STACK (enabled by default) as its network transport protocol, then IPX will be chosen. To force the print server to use the IP transport protocol, go to your print server's Web interface and choose **Admin** | **Detailed View** | **NetWare** and change the NetWare Transport Protocol from DUAL_STACK to IP_ONLY. Save and exit when finished.

Note:

Pure IP requires that you run NetWare 5 or higher.

Queue-based Printing Methods

The following overview explains the advantages and limitations of the two supported queue-based printing methods.

Print Server Mode

The Axis Network Print Server logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the Axis Network Print Server emulates a NetWare print server, which is a workstation running PSERVER. It provides high printing speed with low network load and is the recommended mode for medium to large sized networks. Each print server in PSERVER mode takes one NetWare user license.

Advantages

- High performance: up to 1 Mbyte/s

Limitations

- In bindery mode, this printing method requires a NetWare user licence for each Axis Network Print Server to file server link.

Remote Printer Mode

The Axis Network Print Server acts as Remote Printer for PSERVER.NLM running on the NetWare file server, or to a dedicated workstation running PSERVER.EXE. In this fashion, the Axis Network Print Server emulates a workstation running the NetWare remote printer software RPRINTER, or NPRINTER. This mode is only recommended for small networks where the number of NetWare user licences is a major issue.

Advantages

- NetWare user licences are not required.

Limitations

- Lower performance, typically 20 - 70 kbytes/s for NLM.
- Higher network load.

Using Novell Utilities

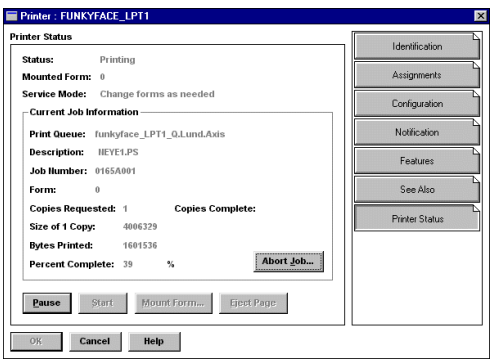
After installing the Axis Network Print Server into the NetWare environment, you can manage your Axis Network Print Server, using either Novell's NetWare Administrator, or PCONSOLE.

NetWare Administration

Some useful features provided by the NetWare Administrator are described in more detail below:

Printer Status

The Printer Status menu, detailed below, shows the status of an active print job serviced by an Axis Network Print Server. It displays detailed information concerning the active job including, Print Queue, print job description, size of print file, percentage of job completed, etc. You can also abort or pause the print job from this menu.



Notification

You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the AXIS 5570e, e.g. Busy, Off-line, Out of paper, Paper jam, etc. You can also add or remove print job owners and administrators from the list of persons to be notified.

Print Layout

You can view installed AXIS 5570e and their relative print queues for any NetWare Organizational Unit. You can also display summary information by right-clicking on the printer object you want to examine.

Section 9 Adding Printers in UNIX/Linux

Print Tools

For printer configuration, *printtool* and *printconfig* are the most common. How they are invoked depends on which distribution and window manager you use.

AIX *SMIT* is the recommended printing tool. It contains an integrated printer driver list, but does not have printer detection functionality.

Instructions:

Type the command `smit` in a Terminal window, then click **Print Spooling**.

Debian *printtool* is the recommended printing tool. The program contains an integrated printer driver list, but does not have printer detection functionality.

Instructions:

Type the command `printtool` in a Terminal window to start the graphical version.

HP UX *Sam* is the recommended printing tool. It doesn't provide an integrated printer driver list, nor printer detection functionality.

Instructions:

Type the command `sam` in a Terminal window, click **Printers and Plotters** and then click **Actions** and **Add_Remote Printer/Plotter.**

Mandrake *printerdrake* is the recommended printing tool. It contains an integrated printer driver list, but does not have printer detection ability.

Red Hat *printconf* is the recommended printing tool. The program contains an integrated printer driver list, but does not have printer detection functionality.

Instructions:

Type the command `printconf-gui` in a Terminal window to start the graphical version.

You can also run printconf as a text-based application if you do not have the X Window System installed, or if you prefer the text-based interface. Log in as **root** (or use the command `su` to temporarily change to the root user), and type the command `/usr/sbin/printconf-tui` from a shell prompt.

Solaris 9 The printing tool is called *Printer Administrator*. This operating environment has an integrated printer driver list, but does not have printer detection functionality.

Instructions:

Type the command `/usr/sadm/admin/bin/printmgr` in a Terminal window.

SuSE *YaST2* is the recommended printing tool. It contains a printer driver list as well as printer detection capability.

Instructions:

To start the Printer Configuration tool, select this from the Desktop:

YaST2 menu button (on the panel) | **In Yast Control Center** | **Hardware** | Edit Printers

Notes:

- A versatile IPP client for UNIX/Linux is CUPS. It can be downloaded from the Common Unix Printing System's Web site at www.cups.org
- If you don't find your specific printer in your distribution, have a look at http://www.linuxprinting.org/database.html

Typical Invocation via a Windows Manager

Using the Mandrake 8.2 distribution (with CUPS installed) and the KDE windows manger as an example, a typical set-up begins with starting Mandrake Control Center.

1. Click **Hardware** | **Printer** and the *Printerdrake* application will be invoked.
2. Click **Expert Mode** to be able to add a network printer.
3. Click the **Add a new printer** button.

Print Queues Five types of print queues can be configured in the Mandrake distribution:

- Local Printer
- Printer on remote lpd server
- Network printer (TCP/Socket)
- Printer on SMB/Windows 95/98/NT server
- A printer device URl

1. Select the **Network printer** radio button and click **Next**.
2. Enter the IP address or host name of the print server as well as the port you want to use. Port numbers available for TCP/IP are:

Ports numbers	USB port	Parallel port 1	Parallel port 2	Serial port
AXIS 5570e	9902	9900	–	–

   Also see *"TCP Ports Opened for Raw Printing"* on page 251.
3. Click **Next**. Fill in data to help users identify the printer, i.e. name, description and location. Click **Next**.
4. Select printer model and click **Next**.
5. Configure the printer and click **Next**.
6. The printer is set up. Click **Finish** and the printer is accessible.

Typical Invocation from a Terminal Window

Still using Mandrake as an example, open a Terminal Window and type the command `printtool`. If you are in a terminal window, the graphic version will start (as described above). If you do not have the X Window System installed, the command will start a text based version. The same information as was described above will be needed.

Note: In Mandrake, even if you type `printtool` at a shell prompt, `printerdrake` will automatically start.

Debian 3.0

Debian offers a choice between plain LPD, LPRng and CUPS. There are several printer configuration tools in this distribution, e.g. the *apsfilter* (version 5 or later), which adds support for LPRng and Ghostscript's uniprint driver scheme. Red Hat's printtool is also supported, for those who prefer GUI administration tools.

For LPRng, LPD and CUPS use the **Printtool.**

Invocation

1. From the Gnome desktop, select Main Menu (on the panel) => Debian menus => Apps => System => Printtool.
2. On the KDE desktop, select the Main Menu (on the Panel) => System => Debian => Printtool.
3. Open a terminal window and type the command `printtool` (in XTERM or Gnome).

Print Queues

Five types of print queues can be configured with *printconf* in the Debian distribution:

- Local Printer
- Unix Printer (lpd Spool
- Windows Printer (SMB)
- Novell Printer (NCP Queue)
- JetDirect Printer

Adding a Remote Unix Printer

1. Start *printtool* and click **Add**.
2. Select **Remote Unix (lpd) Queue** from the **Printer Type** menu, and click **OK**.
3. Text fields for the following options appears:
   - **Printer name** — Enter a unique name for the printer. (The name cannot contain spaces and must begin with a letter. Valid characters are a - z, A - Z, 0 - 9, -, and _.
   - **Remote Host** — The hostname or IP address of the remote machine to which the printer is attached.
   - **Remote Queue and input filter** — The remote printer queue and input filter.
4. Click **Next** to continue.
5. Click **Select** to choose a printer driver and to set it up. Click **OK**. Finally, click **Test** and print a test page.

Red Hat 7.3

Printtool has been replaced by **Printconf**. The utility maintains the /etc/printcap configuration file, print spool directories, and print filters.

Note: If you type `printtool` at a shell prompt, `printconf` will automatically start.

Invocation

1. On the Gnome desktop, select the Main Menu button (on the Panel) => Programs => System => Printer Configuration to start the graphical version.
2. On the KDE desktop, select the Main Menu button (on the Panel) => Red Hat => System => Printer Configuration to start the graphical version.
3. Type the command `printconf -gui` at a shell prompt (for example, in an XTerm or a Gnome terminal) to start the graphical version.
4. You can also run `printconf` as a text based application if you do not have the X Window System installed, or you just prefer the text based interface. To run it, log in as root (or use the command `su` to temporarily change to the root user), and type the command `/usr/sbin/printconf -tui` from a shell prompt.

Print Queues

Five types of print queues can be configured with `printconf` in the Red Hat distribution:

- Local Printer
- Unix Printer (lpd Spool)
- Windows Printer (SMB)
- Novell Printer (NCP Queue)
- JetDirect Printer

Important!

- Do not edit the /etc/printcap file. Each time the printer deamon (lpd) is started /restarted, a new /etc/printcap file is dynamically created.
- If you want to add a printer without using printconf, edit the /etc/printcap.local file. The entries in /etc/printcap.local are not displayed in printconf but are read by the printer daemon.
- If you upgrade your system from a previous version of Red Hat Linux, your existing configuration file is converted to the new format used by printconf. Each time a new configuration file is generated by printconf, the old file is saved as /etc/printcap.old.
- If you add a new print queue or modify an existing one, you need to restart the printer daemon (lpd) for the changes to take effect.
- Clicking the Apply button saves any changes that you have made and restarts the printer daemon. The changes are not written to the /etc/printcap configuration file until the printer daemon (lpd) is restarted. Alternatively, you can choose File => Save Changes and then choose File => Restart lpd to save your changes and then restart the printer daemon.
- If a printer appears in the main printer list with the Queue Type set to INVALID, the printer configuration is missing options that are required for the printer to function properly. To remove this printer from the list, select it from the list and click the Delete button.

Adding a Remote Unix Printer

To add a remote UNIX printer, such as one attached to a different UNIX/Linux system on the same network, click the **New button** in the main `printconf` window.

Select **Unix Printer** from the **Queue Type menu**, and click **Next**.

Enter a unique name for the printer in the **Queue Name** text field. The printer name cannot contain spaces and must begin with a letter a through z or A through Z. The valid characters are a through z, A through Z, 0 through 9, -, and _. Click **Next**.

Text fields for the following options appear:

- Server — The hostname or IP address of the remote machine to which the printer is attached.
- Queue — The remote printer queue. The default printer queue is usually lp.

By default, the Strict RFC1179 Compliance option is not chosen. If you are having problems printing to a non-Linux lpd queue, choose this option to disable enhanced LPRng printing features.

Click **Next** to continue

The next step is to select the type of printer that is connected to the remote system.

Important!

> The remote machine must be configured to allow the local machine to print on the desired queue. As root, create the file `/etc/hosts.lpd` on the remote machine to which the printer is attached. On separate lines in the file, add the IP address or hostname of each machine which should have printing privileges.

Selecting the Print Driver

If you are configuring a local printer, select the print driver from the list. The printers are divided by manufacturers. Click the arrow beside the manufacturer for your printer. Find your printer from the expanded list, and click the arrow beside the printer name. A list of drivers for your printer will appear. Select one. Then finish the Wizard in the usual manner.

SuSE 8.0

The printing system on SuSE Linux is based on an apsfilter, with some enhancements; SuSE's apsfilter will recognize all common file formats (including HTML, if html2ps is installed).

There are two ways to setup printers on SuSE systems:

- YaST2 will let you configure "PostScript", "DeskJet" and "Other printers", supported by Ghostscript drivers; it's also possible to setup HP's GDI printers (DeskJet 710/720, 820, 1000, via the "ppa" package). YaST2 will provide /etc/printcap entries for every printer ("raw", "ascii", "auto" and "color", if the printer to configure is a color printer). YaST2 will create spool directories and it will arrange apsfilterrc files, where you're able to fine tune some settings (Ghostscript preloads, paper size, paper orientation, resolution, printer escape sequences, etc.). With YaST2 it's also possible to setup network printers (TCP/IP, Samba, or Novell NetWare Printer).
- SuSE includes the regular SETUP program from the original apsfilter package (with some enhancements); run `lprsetup` to invoke this configuration script. Once you get accustomed to its GUI, you'll be able to configure local and network printers.

Invocation of YaST2

On the Gnome desktop select YaST2 Menu Button (on the panel) => Yast Control Center => Hardware => Edit Printers to start the Printer Configuration tool.
On the KDE desktop select YaST Menu Button (on the panel) => Yast2 modules => Hardware => Edit printers to start the graphic version.

Print Queues

SuSE and YaST2 differ between these printer connections:

- Local printers (Parallel, USB, Serial and Disk File)
- LPD protocol network printing (Forward queue to a remote LPD and Prefiltered queue for an LPD forwarding queue)
- Other network printing (Samba/Windows, Novell)

The SuSE installation manual explains the setup procedures in detail.

AXIS axinstall Script

Having performed the basic TCP/IP setup procedures as defined earlier in this manual, you are now able to print in interactive mode using PROS, LPR, FTP or Reverse Telnet protocols. However, if you want to integrate the AXIS 5570e with your host spooler, you can use the Axis automatic installation script *axinstall*. The *axinstall* script is available from ftp://ftp.axis.com/pub_soft/prt_srv/utility/axinstall/latest/

After executing this script, the printer connected to the print server will appear as though it is directly connected to the host printer spooler.

If you intend to use the print server in a multi-protocol environment, refer to the chapters pertaining to the respective operating systems in this manual.

When the *axinstall* script has been downloaded to your host, execute the script with this command:
`sh axinstall` or `sh ./axinstall` (depending on your system).

You will be guided through the installation by a step-by-step procedure. During the installation you will be asked to select a print method; we suggest you choose LPD or, for more functionality, use the PROS filter or named pipe methods. Please refer to the following pages if you need guidance on the choice of print methods.

> Note: NLPRng is not supported by axinstall.

The *axinstall* script will suggest one of the systems listed below when started. If you do not find the suggestion appropriate, then manually select any of the systems listed.

```
1....SunOS 4 (SUN BSD, Solaris 1.x)
2....SunOS 5 (SUN SYS V, Solaris 2.x)
3....AIX (IBM RS/6000, BULL DPX 20)
4....HP-UX (HP 9000)
5....BOS (BULL DPX 2)
6....DEC OSF/1 (Digital Equipment, Alpha)
7....ULTRIX (Digital Equipment, DEC)
8....IRIX (Silicon Graphics, SGI)
9....SCO UNIX (Santa Cruz Operation)
10...SCO UnixWare 2.x
11...SCO UnixWare 7
12...SCO OpenServer
13...FreeBSD (Berkeley UNIX)
14...Linux

15...Generic BSD (Berkeley UNIX)
16...Generic SYS V R3 (UNIX System V Release 3)
17...Generic SYS V R4 (UNIX System V Release 4)
```

Systems supported by axinstall

Print Methods on TCP/IP Networks

The AXIS 5570e supports several different print methods in the TCP/IP environment. *axinstall* will suggest a print method suitable for your particular UNIX/Linux system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc).

The diagram below shows the alternative data paths taken by some of the UNIX/Linux print methods. This illustrates some of the advantages and limitations of the different methods. Use the following information to determine which method to adopt.

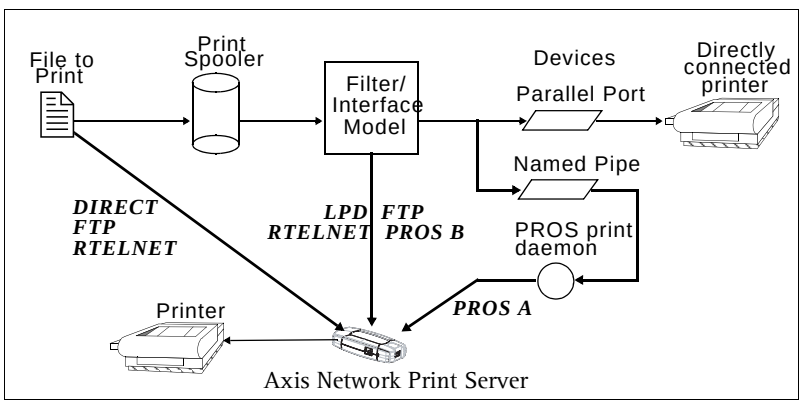


Illustration of different UNIX/Linux print methods

LPD The Line Printer Daemon is a protocol for transferring print jobs between hosts. This is the recommended method for UNIX/Linux systems, but some System V versions do not support LPD.

Advantages:
Easy to set up — install the AXIS 5570e as a remote queue in System V, or add a remote printer to `/etc/printcap` using the `rm` and `rp` fields (BSD).

Limitations:
Spooler features, and `printcap` or `lpr` options (BSD) such as multiple copies, are not available.

FTP The File Transfer Protocol is used for transferring files between hosts.

Advantages:
Uses industry standard network software on the host.

Limitations:
No printer status logging. In the case of BSD it may conflict with other input or output filters and does not allow both input and output filters. In System V no filters or interface programs can be used.

PROS A protocol developed at Axis. Comes in two versions;

named pipe (PROS A) and *filter* (PROS B).

PROS A Advantages
The AXIS 5570e appears as a device to the system. This makes all filter and model options available. It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

PROS A Limitations
A 'C' compiler is required to build the PROS A drivers.

Note:

You can download a 'C' compiler from **http://www.gnu.org/**.

PROS B Advantages
It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

PROS B Limitations
A 'C' compiler is required to build the PROS B drivers and in the case of BSD, it may conflict with other input or output filters. It does not allow both input and output filters. Interface programs can not be used in System V.

Reverse Telnet
Often used for printing via a terminal server printer port. Only recommended if you already have a Reverse Telnet driver installed.

Advantages:
Easy to set up with previously installed Reverse Telnet drivers.

Limitations:
No status logging. Drivers are not supplied with the print server. Existing drivers may be slow.

Other UNIX/Linux Systems
Most UNIX/Linux systems resemble either BSD or System V and so with some ingenuity, a solution can also be devised for other variants.

If the system has BSD socket type networking support, then `prosbsd` (in the `bsd` directory of the AXIS 5570e) can be used as a starting point. It receives print data from `stdin`, and writes a log file to `stderr`. Nothing is written to `stdout`.

Alternatively, FTP may be used. It is a good idea to use `bsd/ftp_bsd` or `sysv/ftp_sysv` as a starting point.

IBM MVS Systems
A sample JCL script, `jclex`, is available in the `mvs` directory of the print server. It gives an example of how to print a file from an MVS mainframe to an AXIS 5570e using FTP.

Section 10 Adding Printers in OS/2

Having connected the Axis Network Print Server to your network, as described in *"Connect the Hardware"* on page 14, this section now describes how to set up your Axis Network Print Server for printing in the OS/2 environment.

Continue with the instructions presented in the table below:

Printing protocol	See ...
TCP/IP	*"TCP/IP Printing"* on page 128
NetBIOS/NetBEUI	*"NetBIOS/NetBEUI Printing in OS/2"* on page 129

If you intend to operate your AXIS 5570e in a multi-protocol, mixed environment, you should also proceed to the other relevant sections in this manual.

TCP/IP Printing

Having assigned an IP address to the Axis Network Print Server, as described in *"Setting the IP Address"* on page 16, you are now ready to install it for TCP/IP printing in the OS/2 environment. The Axis Network Print Server supports LPR Printing using the lprportd service method.

Installing the Axis Network Print Server

Follow the instructions below to install the print server using the lprportd service method:

1. Open the **OS/2 System** window, select **TCP/IP** and **TCP/IP Configuration**.
2. Select **Printing**, type a number, e.g. 3, in the **Maximum number of LPD ports** field. The Remote print server and Remote print server's printer fields should remain empty.
3. Select **Autostart**, select **lprportd**, click the **Autostart** check box and select **Detached**.
4. Exit and Save.
5. Restart your OS/2 client.

Creating a Print Queue

Continue with the instructions below to create a print queue:

1. Open the **Template** group. Create an new printer from Templates by dragging the **Printer** icon to the desktop with the right mouse button.
2. Select a printer driver and double-click a free **Output port, for instance** \PIPE\LPD0.
3. Enter the host name or the IP address of the Axis Network Print Server in the **LPD server** field.
4. Enter one of the Axis Network Print Server logical printer names, for example pr1, in the **LPD printer** field.

NetBIOS/NetBEUI Printing in OS/2

AXIS Print Utility for OS/2 is the tool to use for NetBIOS/NetBEUI printing in OS/2 environments. This tool can be fetched from www.axis.com => Software => Discontinued products. Install this utility if you have not already done so.

If you want to change the default name or any of the Axis Network Print Server default parameters, you can do so using any standard Web browser.

Refer to *Section 11 Management and Configuration*, on page 131, for more information.

The AXIS Print Utility for OS/2 is not needed on the client platforms when using a client-server configuration.

About AXIS Print Utility for OS/2

AXIS Print Utility for OS/2 is an application for NetBIOS/NetBEUI printing in the OS/2 environment. Its allows you to:

- Install and maintain the Axis Network Print Server printer ports as OS/2 printer ports.
- Capture and monitor print jobs directed to the Axis Network Print Server ports.

Print jobs are directed through a spool directory located on your local hard disk (peer-to-peer mode), or on the file server (client-server mode). The printer port status of your Axis Network Print Server can be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problem condition.

Notes:

- The NetBEUI protocol must be active. If not, use MPTS/LAPS (LAN Server) or SETUP (LAN Manager) to activate it.
- If you are using OS/2 version 2.x and wish to print through TCP/IP, we recommend that you use the IBM TCP/IP for OS/2 product. It supports the LPD and interactive FTP print methods.

Installing the Axis Network Print Server

1. When AXIS Print Utility for OS/2 is running, click **Install** to install your Axis Network Print Server. The ports appears in the list as <name>.LP1, <name>.LP2 and <name>.CM1, where <name> is AX followed by the last six digits of your print server serial number. e.g. AX100086.LP1.
2. Select the port that you want to install, then click **Install**.

Repeat this procedure for each server using the Axis Network Print Server.

The AXIS Print Utility for OS/2 must be running in order to print through your Axis Network Print Server. It is strongly recommended that you modify the startup.cmd file, enabling AXIS Print Utility for OS/2 to automatically start when your client is re-booted. Instructions are available in the AXIS Print Utility for OS/2 Readme file.

Creating a Print Queue (OS/2 version 2.x and OS/2 Warp)

1. Double-click the **Templates** folder, then drag the **Printer** icon out to the Workplace Shell (or into a folder) while holding the right mouse button down.
2. Type a name of your choice in the Name field.
3. Select \PIPE\<name>.LP1, \PIPE\<name>.LP2 or \PIPE\<name>.CM1 from the Port list, and select a printer driver suitable for your printer from the Standard Printer list.
4. Click **OK** to confirm the printer definition.

Sharing the Print Queue

A print queue must be made a shared resource before it can be accessed from other clients or servers. The following three examples show how you can share your printer resources:

Open an OS/2 window and issue the following command:

NET SHARE <queue_name> /PRINT

Where <queue_name> is the name of the queue created on the previous side.

To share a printer resource when using OS/2 Warp with IBM Peer service, follow the steps below:

1. Click the right mouse button on the printer object.
2. Select **Share** and then **Start sharing**. In the dialog box, enter a Description.
3. Select the check-box **Start sharing at LAN workstation start-up**.
4. Click **OK**.

To share a printer resource when using LAN server 4.0, follow the steps below:

1. Open **LAN Server Administration**.
2. Open your domain and then **Resource Definition**.
3. Drag and drop a printer from the template.
4. Enter the Alias name, select a Server name and the previously created Spooler Queue Name.
5. Click **OK**.

The setup is completed and you can now print through your Axis Network Print Server.

Section 11 Management and Configuration

The management and configuration tools that are supported by the Axis Network Print Server allow you to:

- Change the print server parameters, i.e. editing the *config* file
- Receive extended information about the print jobs
- Receive printer port status
- Monitor your printers
- Reset the Axis Network Print Server

Configuration Overview

The method you should use to manage and configure your Axis Network Print Server depends on the operating system protocols of your network. The table below displays which method to use for each supported environment.

Environments	Configuration/Management methods
IBM Host (AS/400, IBM Mainframe)	From an IBM Host - See page 145
TCP/IP (AS/400, IBM Mainframe, UNIX, Windows, Mac OS	Web Browser - See page 131 AXIS ThinWizard - See page 136 FTP - See page 138 Telnet - See page 140 SNMP - See page 143
IPX/SPX (NetWare)	Novell Utilities - See page 144
Windows	Web Browser - See page 131
AppleTalk	Web Browser - See page 131 AppleTalk _cfg method - See page 88 Mac-FTP - See page 138

Using a Web Browser for Print Server Management

Once you have established the Axis Network Print Server in the TCP/IP environment, as described in *"Setting the IP Address"* on page 16, you are free to access the Axis Network Print Server Web pages from any standard Web browser.

The Web interface of the Axis Network Print Server is divided into two modes of operation, User mode and Admin mode.

User In User mode you can change language, but you have no rights to change any other parameters. However, if you have access rights to the Admin mode, you can change some of the basic parameters from User mode via the Configuration Wizard. This mode is intended for regular users who are only interested in using the print server's interface for checking print jobs or viewing printer properties. If you want to change any other of the print server's settings, you must enter the Admin mode.

Admin When in Admin mode, you have access to all the print server's parameters

and you can change them to your liking. This mode is intended for network administrators and can be password protected to prevent unauthorized changing of the print server parameters.

Note:

To protect the Admin pages from unauthorized use, it is highly recommended that you change the default password.

This is done from the **Admin** | **General Settings** | **General tab**. Enter the password in the **Root Password** field.

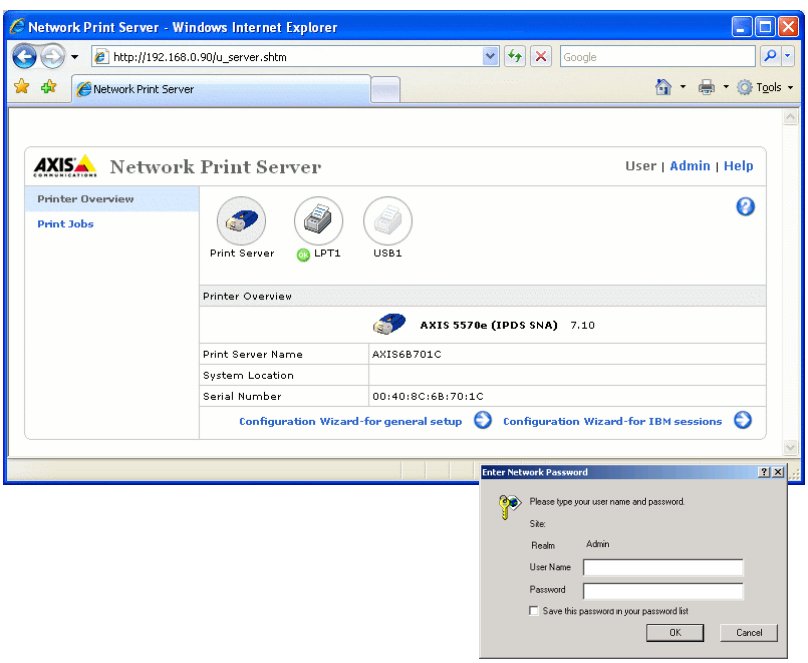
Accessing the Web Pages

Follow the steps below to access the internal Web pages of the Axis Network Print Server:

1. Enter the print server's IP address (or host name) in the **Location/Address** field of your Web browser. Press **Enter**
2. The **Printer Overview** page will appear. Click **Admin** to access the Administration Web pages.
3. If you have changed the User/Password combination, you will be promted for them. Click **OK**.

Note:

- You can address the print server's Web interface via **https://** To do this you must enable the SSL/TLS protocols in the Web interface: **Admin** | **Network Settings** | **Detailed View**| **TCP/IP Network** and set the **HTTPS Enabled** parameter to **Yes** (you must have a valid certificate loaded).If you do not have a valid certificate loaded, select **Admin** | **Security Settings** and click **Create.**



Available Services from the User Mode

The following services are available from the User mode. A link to the Axis home page is available from this mode.

Printer Overview

The Printer Overview page contains a section that allows you to view the general parameter setting of the Axis Network Print Server, including the print server name and the location of the print server in your organization, if defined.

If you have admin access rights you can use the **Configuration Wizard for general settings** to perform basic configuration of the Axis Network Print Server and the **Configuration Wizard for IBM sessions** to add an IBM session.

By clicking the printer icon a printer page opens, allowing you to view the status and the supported capabilities of the connected printer. The extent of this information depends on the printer model. From the printer page, you can also print a test page to the printer.

Print Jobs

From the Print Jobs page you can view the status of the current print jobs, including the number of printed bytes and the origin of the print job. You can also view a log of the 20 latest print jobs that includes the user, the printing protocol and the file size. A log that displays the accumulated usage of the connected printers allows you to control the usage of the connected printers.

Help

The Help page presents you with basic information about the Axis Network Print Server and the Web user interface. A short description of the Axis installation tools you should use when installing a printer on your PC is also included.

Available Services from the Admin Mode

The following services are available from the Admin mode. An additional link to www.axis.com is available from this mode.

This Print Server

The **This Print Server** page contains a section that allows you to view and modify the general parameter setting of the Axis Network Print Server, including the print server name, the node address, the password and the base URL. You can also configure any of the eight logical printers of the Axis Network Print Server. Management operations, like restarting the Axis Network Print Server and resetting its parameters to the factory default settings, are also available.

Caution!

Any network configuration should involve the Network Administrator.

By clicking on the printer icon, a printer page opens, allowing you to view the status and the supported capabilities of connected printer. The extent of this information is depending on the printer model. From the printer page, you can also print a test page to the printer.

Print Jobs

From the **Print Jobs** page you can view the status of the current print jobs, including the number of printed bytes and the origin of the print

job. You can also view a log of the 20 latest print jobs that includes the user, the printing protocol and the file size. A log that displays the accumulated usage of the connected printers allows you to control the usage of the connected printers. To delete an ongoing print job, use the delete button next to the job.

IBM Sessions From the **IBM sessions** page you can view the list of configured IBM sessions. You can choose to edit or delete a session from the list or add a new session from the **Add Session** button.

IBM Emulators The **IBM Emulators** page contains three **Detailed View** buttons.

- SCS/IPDS emulator configurations. Select the IBM printer that is to be emulated from the drop-down list.
- SCS/3270DS emulator configurations
  Common emulator settings: page format, CPI mapping, job control, 3270 options, extended emulation, user driver.
- IPDS emulator configurations
  IPDS Emulator Settings: IPDS configuration, IPDS PostScript Driver settings, IPDS PCL Driver settings

Network Settings From the **Network Settings** page you can set all parameters that control the network traffic to and from the Axis Network Print Server. You can enable or disable any of the supported network protocols and fine-tune the parameter settings. For additional information, see the Online Help pages.

Support From the **Support** page you can receive help to resolve any installation or print problems that might occur. If your problems persist, the Support page allows you to produce a Server Report. The Server Report includes the settings of the Axis Network Print Server, information about your connected printers as well as the current network settings. The Server Report is of great value for support assistance, so please mail, email or fax it to your support channel together with a detailed problem description.

Statistics The **Statistics** page displays information about the network traffic to and from the Axis Network Print Server as well as information about servers and services that are connected or associated with the Axis Network Print Server.

Help The **Help** page displays a comprehensive description of the configuration and management activities that can be performed from the internal Web pages of the Axis Network Print Server. Theses activities include instructions on how to install the Axis Network Print Server in various environments and how to upgrade it with new firmware. A detailed index is also available.

Security Settings On the **Security Settings** page you can enable or disable *SSL* (Secure

Socket Layer - a protocol designed to provide secure communications on the Internet.) and *TLS* (Transport Layer Security, a protocol that guarantees privacy and data integrity between applications communicating over the Internet) You can also create secure certificates and disable/enable insecure protocols.

Whenever SSL/TLS is enabled, you have to address the print server's Web interface in the secure way, i.e. via **https://**

See *Enabling Secure Web Services – SSL/TLS*, on page 167 for a detailed description.

Parameter List — Shows all print server parameters and their current settings.

Restart — Restarts the print server.

Software Default — A Software Default will reset all print server parameters and settings to their default values **except:**

- Node address (NODE_ADDR.)
- IP Address (INT_ADDR.)
- DHCP enabled (DHCP_ENB)
- Installed certificate
- Private key

See *The Test Button*, on page 212 for instructions on performing a Factory Default.

Firmware Upgrade — Upgrades the print server's internal software.

Using AXIS ThinWizard for Print Server Management

AXIS ThinWizard software allows you to manage and upgrade **multiple** Axis products. Using a standard Web browser, you can find, install, monitor, configure and upgrade your Axis print servers remotely in any TCP/IP network. AXIS Thin Wizard is Windows 2000, Windows XP and Windows Vista compatible.

Installing AXIS ThinWizard

AXIS ThinWizard software is available on www.axis.com
You should only install AXIS ThinWizard on a designated computer on your network.

To install, follow the instructions given by the Installation Wizard. During the installation, you will be asked to enter a user id and a password – these will be used when logging in to AXIS ThinWizard, so please take a note of them.

Important:

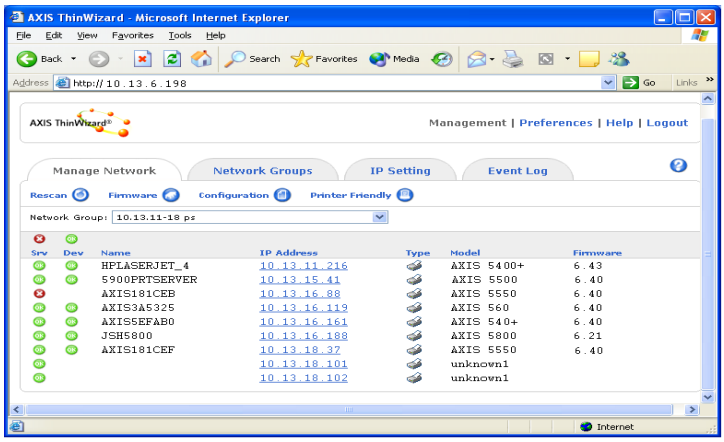
- To use all AXIS ThinWizard features, the print server must have the **FTP_ENB**. parameter set to **"Yes".** This is done in the print server's Web interface: **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** => FTP Enabled => Yes.
- If you disable SNMP in the print server's Web interface, you will disable AXIS ThinWizard's ability to determine print server status! Enabling/Disabling SNMP is done from **Admin** | **Network Settings** | **Detailed View** | **SNMP**

Starting AXIS ThinWizard

If AXIS ThinWizard is installed on the workstation you can access its Web interface via **Start** | **All Programs** (using Windows XP or **Start** | **Programs** using Windows 2000). If it is installed on another computer, follow the instructions below:

1. Make sure that the computer where you installed the AXIS ThinWizard is up and running on your network.
2. Start a Web browser on a client in your network.
3. Enter the IP address or the host name of the computer where you installed AXIS ThinWizard. (If the server is installed on another port than 80, you must enter the port name after the host name or the IP address).
4. The AXIS ThinWizard start page now appears in the Web browser. Enter the user id and password you specified during installation and click **Log in**.

5. The AXIS ThinWizard interface appears:



The first time you use AXIS ThinWizard, set the **Preferences** to reflect your network environment:

Select a network group from the list on the **Manage Network** page. If the list is empty, you must first create a group. Click the **Network Groups** tab and follow the instructions.

Creating a Network Group in AXIS ThinWizard

The network group concept is the corner stone of AXIS ThinWizard. By dividing your network into network groups, you can monitor your print servers more efficiently. The scope of each network group is determined by the Axis server types and IP address ranges that are included. You can create as many network groups as you want.

Follow the instructions below to create a network group:

1. Click **Network Groups** in the AXIS ThinWizard main menu.
2. Click **Create**.
3. The Create Network Group page opens. Type the name of the network group, enter the IP address ranges and Axis server types that should be included. If you are only interested in managing print servers, deselect all options but the **print server** option.
4. Click **OK** to create the network group.

You can edit the properties of each network group from the Network Groups page. Simply select the network group from the list and use one of the **Edit**, **Copy** or **Remove** commands.

Managing Print Servers

Follow the instructions below to access the AXIS 5570e using AXIS ThinWizard:

1. Click **Manage Network** in the main menu.
2. Select the network group, including the, from the drop-down list. All AXIS servers included in the network group appear in the window.
3. Click the link of the AXIS 5570e to access its internal Web page.
4. The 'Srv' and 'Dev' columns show the status of your print servers and printers.

Changing the IP Settings

Using AXIS ThinWizard you can also set or change each print server's IP parameters.

1. Click **IP Settings** in the main menu.
2. Select print server in the list.
3. Enter your data: IP address, Subnet mask, Default gateway and the print server's password (default password is **pass**).
4. Click **Set** to save your settings.
5. Click **Rescan** to update AXIS ThinWizard and see the changes.

If Your Print Server is not Shown in the List

If your print server is not shown in the list, click "**Click here...**". By entering the serial number of the print server (found on the underside label) you will be able to set the print server's IP parameters.
Example: *00408c181cf0*

Upgrading Axis Servers

Refer to *"Using AXIS ThinWizard for Print Server Management"* on page 136 for more information about upgrading Axis servers.

Multiple Configuration and Installation

Using AXIS ThinWizard it possible to change the settings of several Axis servers simultaneously. It is also possible to copy the configuration from one server to another. This is a convenient way to install a new server, based on the settings of an already existing server.

For additional information, please refer to the AXIS ThinWizard online help.

Using FTP for Print Server Management

Having assigned an IP address to your Axis Network Print Server, as described in *"Setting the IP Address"* on page 16, you can change the Axis Network Print Server parameter settings using the File Transport Protocol (FTP).

Ensure that **FTP Enabled** is set to *yes*. To check this parameter, browse to the print server and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network**.

Editing the *config* file

Follow the instructions below to edit the *config* file using FTP:

1. Log in to the Axis Network Print Server by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *config* file to your host by typing:
   `get config`
4. Edit the file using your preferred text editor.

5. Save the *config* file to the Axis Network Print Server by typing:
   `put config CONFIG`

Notes:

- It is important that the destination file is specified in capital letters. Otherwise the edits are temporary and will be lost once the Axis Network Print Server has been powered off.
- To edit the *config* file from a Macintosh you will need FTP support such as MacTCP, Fetch or Anarchie. The procedure for editing the file is the same as described above.

The example on the next page describes how to upload and download the *config* file using FTP from a DOS window.

Example:

```
> ftp npserver
connected to npserver.
220 AXIS 5570e FTP Network Print Server V7.10 Oct 04 2006
ready.
Name (npserver:root): root
331 User name ok, need password
Password: pass        (not visible)
230 User logged in
ftp> get config
200 PORT command successful.
150 Opening data connection for CONFIG (192,168,0,10,4,5),
(mode ascii).
226 Transfer complete.
65066 bytes received in 0.52 seconds (1.2e+02 Kbytes/s)
ftp> put config CONFIG
200 PORT command successful.
150 Opening data connection for CONFIG (192,168,0,10,4,5),
(mode ascii).
226 Transfer complete.
65066 bytes sent in 0.86 seconds (74 Kbytes/s)
ftp> bye
221 Goodbye.
>
```

Viewing the *Account* File

The *account* file contains data concerning the ten last print jobs. It specifies an internal job number, the user that initiated the job, the protocol and logical printer that was used, current status (Completed, Off-line, or Printing), number of bytes printed, elapsed time and off- line time.

Follow the instructions below to view the *account* file using FTP:

1. Log in to the Axis Network Print Server by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)

3. Download the *account* file to your host by typing:
   `get account`
4. View the *account* file using your preferred text editor.

Viewing the *Status* File

The status command shows which printer port the logical printers are assigned to, and their current status.

Follow the instructions below to view the *status* file using FTP:

1. Log in to the Axis Network Print Server by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *status* file to your host by typing:
   `get status`
4. View the status file using your preferred text editor.

FTP Help

By typing `help` in step 3 in the FTP instruction sets above, a list of all available files and commands will be displayed.

Using Telnet

Having assigned an IP address to your Axis Network Print Server, as described in *"Setting the IP Address"* on page 16, you can manage your Axis Network Print Server using the Telnet protocol.

Viewing the *Account* File

The *account* file contains data concerning the last ten print jobs. It specifies an internal job number, the user that initiated the job, the protocol and logical printer that was used, current status (Completed, Off-line, or Printing), number of bytes printed, elapsed time and off-line time.

Follow the instructions below to view the *account* file using telnet:

1. Log in to the Axis Network Print Server by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. View the *account* file by typing:
   `account`

The example below shows how to view the *account* file using Telnet from a UNIX shell.

Example:

```
> telnet npserver
Trying 192.36.253.96...
Connected to npserver.
Escape character is '^]'.

AXIS 5570e TELNET Network Print Server V7.10 Oct 04 2006

AXIS 5570e network login: root
Password: pass                (not visible)

AXIS 5570e TELNET Network Print Server V7.10 Oct 04 2006

Root> account
Current account file:
JOB   USER          PROT             PORT   S   BYTES    ETIME

2     LSLM_user     LAN Server/Man.  PR1    C   188313   1
1     Administrator LPD              pr1    C   244513   1
Root>
```

Typical Telnet session to view the *Account* File

Viewing the *Status* file

The status command shows which printer port the logical printers are assigned to, and their current status.

Follow the instructions below to view the *status* file using telnet:

1. Log in to the Axis Network Print Server by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. View the *status* file by typing: `status`

Performing Resets

Three types of reset commands allow you to perform soft resets, to perform hard resets, and to reset the print server's parameters to its default settings.

Follow the instructions below to perform a soft reset using telnet:

1. Log in to the Axis Network Print Server by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Restart the print server's protocols by typing:
   `softreset`

Replace the command in step 3 above with `hardreset` or `default` to perform the other two reset operations.

Printing Hexdumps

The Axis Network Print Server allows you to record a trace of the communication between the Axis Network Print Server and the host.

The Axis Network Print Server supports hexdump printing for the SNA, TN3270E, TN5250E, LPR/LPD and Raw TCP/IP printing protocols. Please refer to *"Protocols and Datastreams"* on page 10 for details on the supported protocols.

Follow the instructions below to perform a hexdump printout for the SNA printing protocol:

1. Log in to the Axis Network Print Server by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Enable the Axis Network Print Server to hexdump mode by typing:
   `snahexdump`
4. Select **Start Logging** from the **Terminal** menu in the Telnet window. Specify a file name and select the folder where you want to save the file.
5. Start the print job.
6. When the print job is finished, select **Stop Logging** from the **Terminal** menu.
7. Enter the quit command

Replace the command in step 3 above with `tnehexdump` for the TN3270E and TN5250E protocols, `lpdhexdump` for the LPR/LPD protocol, or `rtnhexdump` for the reverse Telnet protocol.

Telnet Help

By typing `help` in step 3 in any of the Telnet instruction sets above, a list of all available commands will be displayed.

Using SNMP

You can use SNMP (Simple Network Management Protocol) for remotely monitoring and configuring of the Axis Network Print Server. All major functions for print servers are supported.

General Information

SNMP refers to a set of standards for network management, including a protocol, a database structure specification, and a set of data objects. The Axis Network Print Server SNMP implementation runs in the TCP/IP environment.

The management is handled by NMS (Network Management System) software running on a host on your network. The NMS software communicates with network devices by the means of messages, which are references to one or more objects.

A message can be a question or an instruction to a device, or an alarm triggered by a specific event in a device. Objects are contained in data bases called MIBs (Management Information Base), where MIB-II is a standard database.

The Axis Network Print Server supports all relevant parts of MIB-II and also includes a private enterprise MIB. Refer to *The AXIS MIB,* on page 143.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the Axis Network Print Server SNMP support:

- NMS software that allows you to install private enterprise MIBs
- A host, supporting FTP, on which to run the NMS software

Follow these steps to add the AXIS MIB to your NMS software:

1. Log in to the Axis Network Print Server using FTP.
2. Download the MIB file */snmp/axis.mib* to the NMS host.
3. Install the AXIS MIB according to instructions in your NMS software documentation.

The AXIS MIB

The AXIS MIB contains a large number of objects which may be categorized as follows:

- Menu objects - used for viewing and changing the Axis Network Print Server configuration from the NMS program. Refer to *The Parameter List*, on page 220.
- Printer status and unit administration objects - used for monitoring Axis Network Print Server print jobs and storing parameter changes permanently.
- Trap objects - used for alarms at various error conditions.

For technical details, you can view the MIB file (*axis.mib*) with any text editor.

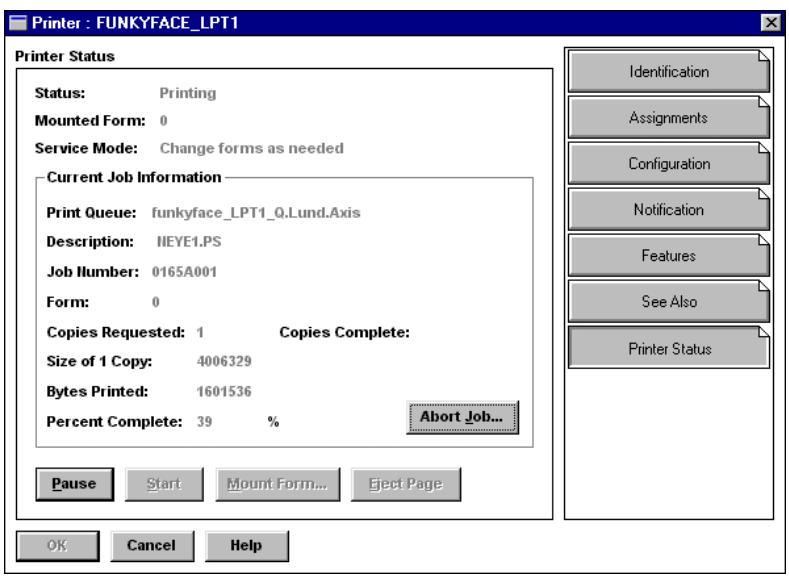
SNMP Device Index When using the TCP/IP protocol (and if the printer driver permits), the print server can use **SNMP Status** to find out if the printer is ready to accept a new job. See *"SNMP Device Index"* on page 251.

Using Novell Utilities

After installing the Axis Network Print Server into the NetWare environment, you can manage your Axis Network Print Server, using either PCONSOLE, Novell's NetWare Administrator, or iPrint.

NetWare Administration Some useful features provided by the NetWare Administrator are described in more detail below:

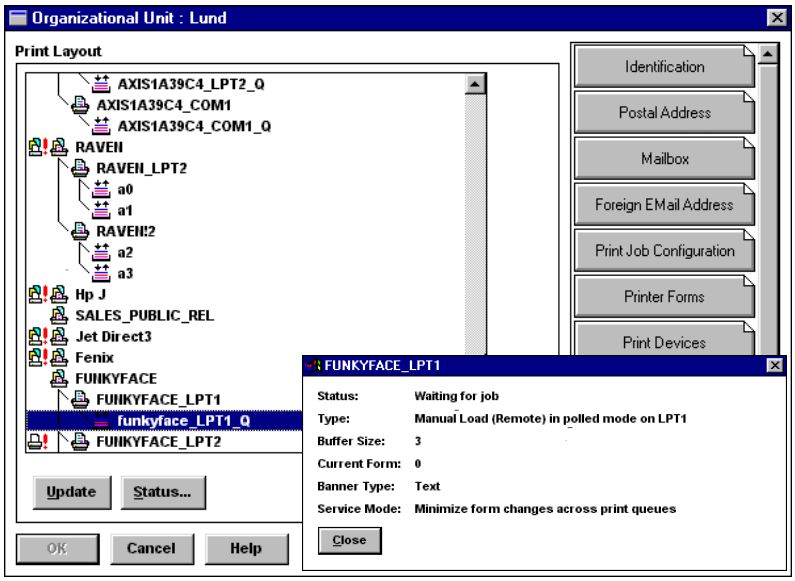
Printer Status The Printer Status menu, detailed below, shows the status of an active print job serviced by an Axis Network Print Server network print server. It displays detailed information concerning the active job including, Print Queue, print job description, size of print file, percentage of job completed, etc. You can also abort or pause the print job from this menu.



NetWare Administrator Printer Status Menu

Notification You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the Axis Network Print Server, e.g. Busy, Off-line, Out of paper, Paper jam, etc. You can also add or remove print job owners and administrators from the list of persons to be notified.

Print Layout You can view installed Axis Network Print Server Network Print Servers and their relative print queues for any NetWare Organizational Unit. You can also display summary information by right-clicking on the printer object you want to examine.



NetWare Print Layout with corresponding information summary

Configuring the Print Server from an IBM Host

Once communication with an IBM host has been established, all the Axis Network Print Server parameters can be edited by printing a file containing special configuration commands. To start the configuration, the command `%CONFIG+` is entered in the file. To protect your settings, a password must be provided. By default, the password is pass. When all parameters are set, the command `SAVE` is used to store the parameters permanently. The command `%CONFIG-` leaves the configuration mode and resumes normal printing. The syntax for the file to print is:

```
%CONFIG+ <password;>
IBM_PRINTING_PARAMETER_NAME = VALUE;
SAVE;
%CONFIG-
```

In order to maintain backward compatibility and increase security, many parameters that are not related to the IBM printing operation have to be preceded by the `%CONFIG++` command. When all parameters are set, enter `%CONFIG--`. The parameters requiring `%CONFIG++` are clearly marked in the parameter listing on the following pages.

```
%CONFIG+ <password;>
IBM_PRINTING_PARAMETER_NAME = VALUE;
%CONFIG++
PARAMETER_NAME = VALUE;
%CONFIG--
SAVE;
%CONFIG-
```

Select the PCL5 printer driver and disable the NetWare protocol:

```
%CONFIG+ password;      (If you have not changed the default
PRDRIVER = PCL5;        password (pass), the password is optional)
%CONFIG++
NETW_ENB = NO;
%CONFIG--
SAVE;
%CONFIG-
```

For parameters requiring more than one value, the values should be separated using a comma.

Section 12 Configuration Possibilities

This section describes some special features offered by the AXIS 5570e:

Autodetect Printer Type

The print server can automatically detect the type of printer you are using if you enable **Autodetect Printer Type**. The print server can then recognize Epson and Hewlett Packard InkJet printers. Most Epson and Hewlett Packard InkJet printers that have Mac OS printer drivers for network printing are supported. If **Autodetect Printer Type** is disabled, the AppleTalk printer type has to be specified manually in the print server. For Epson InkJets it would be "EPSONLQ2" and for HP InkJets it would be "DeskWriter". If the print server does not recognize the connected printer the default setting, "LaserWriter" will be used as printer type. "LaserWriter" is the recommended setting to be used with all PostScript printers.

To enable **Autodetect Printer Type**, log in to your print server's Web interface and select **Admin** | **Network Settings** | **Detailed View** | **Macintosh** | **Auto Detect Printer Type** | **Yes**.

See the **Help** pages in the print server's Web interface for details.

Auto-IP

In the absence of an IP address management mechanism such as DHCP, the print server will receive a temporary IP address automatically over

Auto-IP, a method which enables the host to automatically take a linklocal IPv4 address. Auto-IP is supported by Windows 98, Me, 2000, XP, Vista and Mac OS version 8.5 or higher.

See *"Dynamic IP Address Assignment"* on page 16.

Changing Language in the Print Server's Web Interface

English, French, German, Italian, Japanese and Spanish is supported in the print server's Web interface, with English as the default language. You can change the language used for the print server's Web interface from the User mode:

1. Click the Change button next to Language.

2. Choose your preferred language and character set from the drop-down lists, click OK and then press F5 to refresh the view.

You can change the Character Set by clicking the Change button. The default Character Set is ISO-8859-1, which can be applied in most cases. Japanese requires SHIFT_JIS.

E-mail Notification

Whenever an event that needs human intervention occurs in a network printer, the concerned person can be notified by e-mail. This 'trouble-report' contains a short and concise description of the event. Five events are covered: **Paper Jam, Out of Paper, Toner Low, No Toner, Printer Off-line.**

In order to determine who the e-mail recipients will be of these different trouble-reports, follow these instructions:

1. From your print server's internal Web page, go to: **Admin** | **Network Settings** | **Detailed View** | **e-mail Notification.** The following options will appear:

Options	E-mail recipient
Administrator e-mail Address	This address will be used as "Reply to"-address in the e-mails
PAPER JAM	The person responsible for handling paper jams in the printer
OUT OF PAPER	The person responsible for filling the printer with paper
TONER LOW	The person responsible for filling up the toner in the printer
NO TONER	The person responsible for changing the toner in the printer
PRINTER OFFLINE	The person responsible for the overall maintenance of printer

2. Enter the respective e-mail addresses of the trouble-report recipients in the blank fields as follows:
name@company.com

3. Click **OK** and exit when done.

Important:

Check that the **SMTP Server** and **Domain Name** parameters in the print server's internal Web pages are correct. This is done in: **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network**

IPP (Internet Printing Protocol)

The Axis Network Print Server enables printing over the Internet with IPP (Internet Printing Protocol), an industry standard that allows users to print to remote printers across the Internet.

With IPP, a user with an Internet connection can send a document to any printer which is connected to the Internet. IPP is platform independent and can be used to print over any LAN or WAN that supports TCP/IP.

In practical terms, this means that you can send documents to a remote printer as an addition to or replacement of fax and e-mail, with the same quality and color options of traditional network printing.

IPP clients

An *IPP client* needs to be installed on your computer together with an appropriate printer driver for proper IPP functionality. The IPP client is a tool that adds destination printers to your printer list.

The Axis Network Print Server with integrated IPP is compatible with any 1.0 and 1.1 compliant IPP client.

The Axis Network Print Server presents IPP printer objects to the client, one for each printer port. Some of the most common IPP client printing methods are described below. Please refer to your IPP client documentation for more specific information.

Currently Available IPP Clients on the Market:

- **For Windows 2000/XP/2003**: the Microsoft IPP Client (automatically installed with the Operating System).
- **For Windows 98, NT**: IPP clients can be downloaded from the Microsoft Web site.
- **For UNIX/Linux**: CUPS (can be downloaded from the Common Unix Printing System Web site at www.cups.org).
- If you wish to print using iPrint over IPP, use AXIS IPP Gateway Configuration Snap-in for iPrint in NetWare 5.x. It is available on www.axis.com (Support | Select Software). See its read-me file for installation instructions.
- **For Windows NT/2000**: the Internet Printer Connection software from Hewlett Packard (can be downloaded from the Hewlett Packard Web site).

IPP Printing Requirements

Before you print to an IPP printer you need to know:

- **the address** of the print server.
- **the brand and model of the printer** in order to install the appropriate printer driver.

Address Schemes for IPP Printers

When using IPP printing, you need to know the IP address or host name of your Axis print server. IPP is a client/server type protocol which comprises two industry standards:

- the 1.0 standard, which uses an http:// address scheme
- the 1.1 standard, which uses an ipp:// address scheme

Example using a Host Name in the 1.0 Standard:

If "axisps" is the host name of the print server, "631" is the port number and "LPT1" is the local printer port name, then the syntax of the address scheme will be **http://axisps:631/LPT1** in the 1.0 standard.

Example using an IP Address in the 1.1 Standard:

If "171.16.5.218" is the IP address of the print server and "LPT1" is the local printer port name, then the syntax of the address scheme will be **ipp://171.16.5.218/LPT1** in the 1.1 standard.

IPP User Requirements

The IPP protocol does not require any special configuration of the AXIS 5570e, the IPP function is automatically activated when you install your print server.

IPP is platform independent and functional in Windows (NT, 98, Me and 2000/XP/2003), Macintosh, NetWare and UNIX/Linux.

Firewall Considerations with IPP

If there are one or more firewalls between the IPP client and the server, you may have to make some changes to the firewall configuration. IPP uses TCP Port 631 for printing, so any firewalls between client and server must be configured to allow bi-directional traffic on that port. Please consult your network administrator if you think any configuration changes are necessary.

How to Print from Windows 98

Before you print to an IPP printer you will need to know:

- **the address of the print server.** The address contains the **IP address** or **host name** of the print server and the **printer port name**.
- **the brand and type of the printer** in order to install the appropriate printer driver.

If your destination printer does not exist in your **Printer name** list, you need to add it. Adding an IPP printer to your printer list is described below.

1. Select the IPP printer to which you want to send your document. Choose the destination printer from the **Printer name** field (in **File** | **Print**).
2. When you press **Print**, the print job is sent over the Internet to the AXIS 5570e, which then forwards the print job to the destination printer.

3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows 98

1. Install the IPP client for Windows 98 on your computer. This IPP client can be downloaded from the Microsoft Web site.
2. Open **Start** | **Settings** | **Printers.**
3. Choose **Add Printer**, then **Network Printer**.
4. In the **Printer** field in the **Connect to Printers** window, write the address of the destination printer.
(Example: http://171.16.5.218:631/USB1**)**
5. Select the appropriate printer driver corresponding to the destination printer.
6. Specify a name for the printer you wish to add to your printer list. Click **Finish.** The destination printer will be added to your printer list and you are ready to print using IPP.

How to Print from Windows NT:

Before you print to an IPP printer you will need to know:

- **the address of the print server.** The address contains the **IP address** or **host name** of the print server and the **printer port name.**
- **the brand and type of the printer** in order to install the appropriate printer driver.

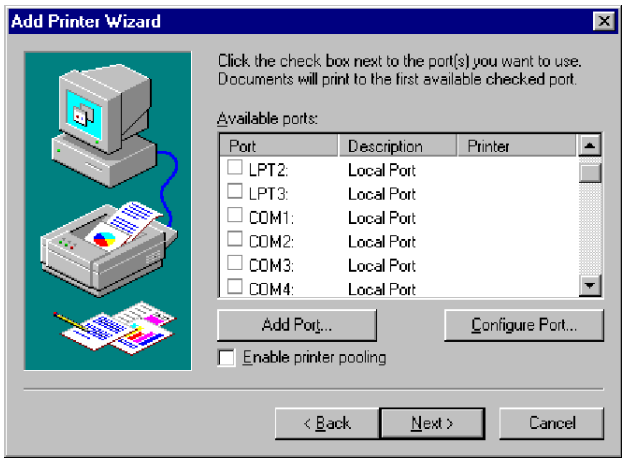
1. First you need to select the IPP printer to which you want to send your document. Select the destination printer from your **Printer Name** list (in **File** | **Print** | **Printer Setup**).

   The printer name will begin with a URL: **http://...**

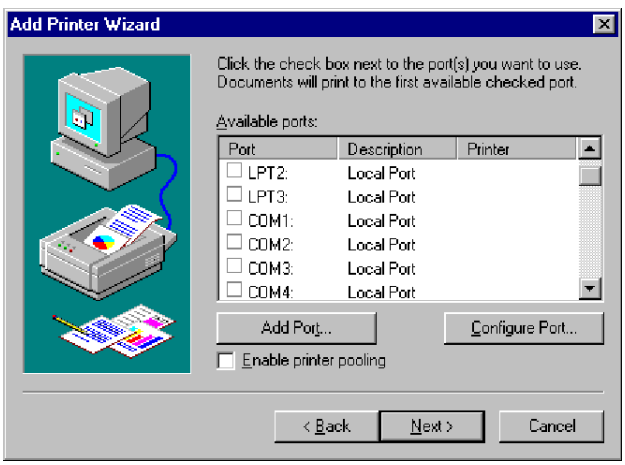
   If your destination printer does not exist in your **Printer Name** list, you need to add it. Adding an IPP printer to your printer list is described below.
2. When you press **Print**, the print job is sent over the Internet/WAN to the AXIS 5570e, which then forwards the print job to the destination printer.
3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows NT

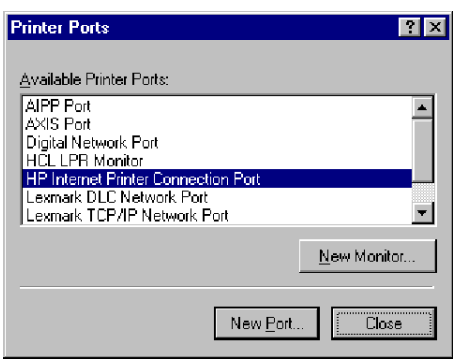
1. Install the Internet Printer Connection software from Hewlett Packard (can be downloaded from the Hewlett Packard Web site) on your computer.
2. Open **Start** | **Settings** | **Printers.**
3. Choose **Add Printer.** The Add Printer Wizard will start.
4. Next, the Wizard will ask you if you want to install on **My Computer** or on a **Network print server**. Choose **My Computer** and click **Next.**



5. In the **Available Ports** window, click **Add Port**:

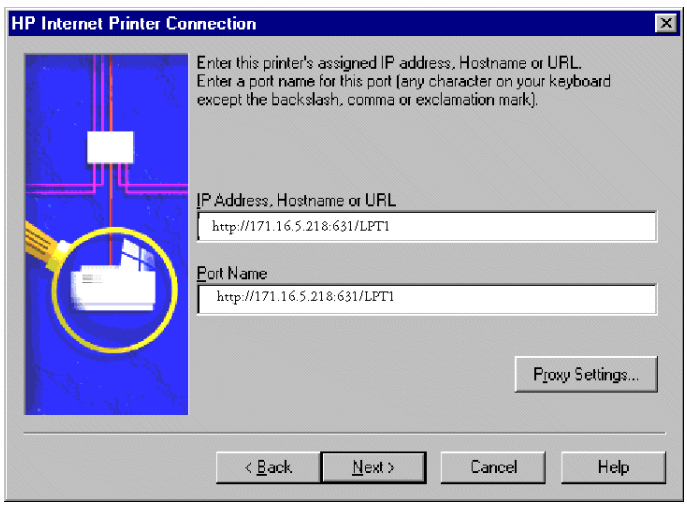


6. The **Printer Ports** dialog will appear, showing a list of **Available Printer Ports**.



7. Choose **The HP Internet Printer Connection Port** and click **New Port.**
8. The HP Internet Printer Connection will start. Click **Next**.

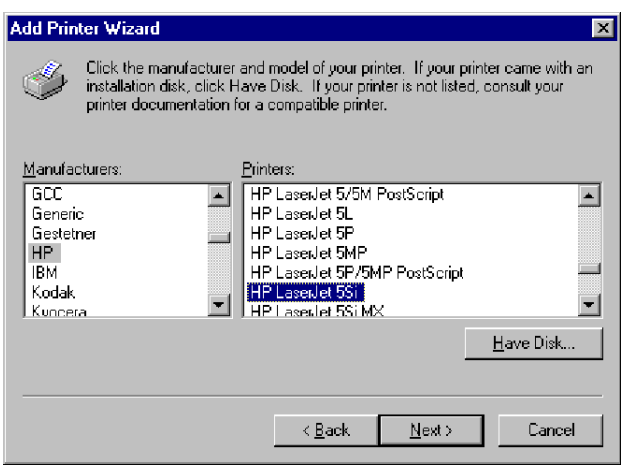
9. In the **IP Address, Host Name or URL** field, type the address of the AXIS 5570e to which the destination printer is connected. The URL will automatically appear in the **Port Name** field as well:



Example:
http://171.16.5.218:631/LPT1 if you want to address the parallel port or http://171.16.5.218:631/USB1 to address the USB port.

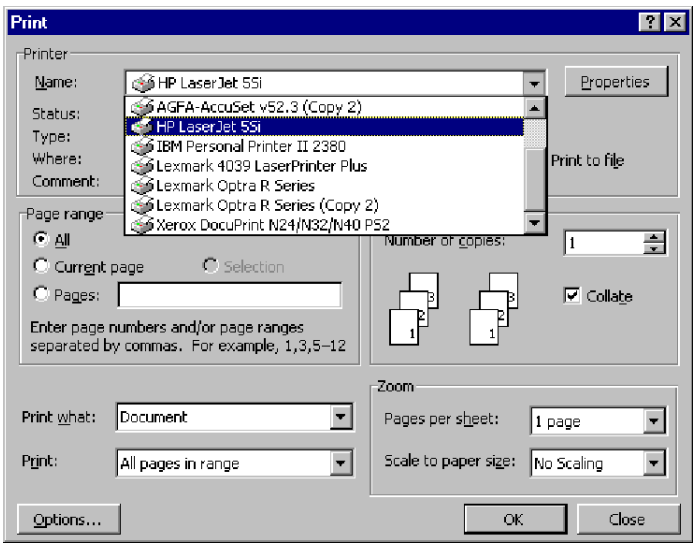
Click **Next**.

10. The Wizard will confirm the information you have entered. Click **Finish** to complete the installation and go back to the **Available Ports** list.
11. The IPP printer port list is now available in the **Available Ports** list. Click **Next.**
12. Next, choose a suitable driver for the destination printer and install it. Click **Next**
.



13. You will be asked if you want the newly added printer to be your default printer and if you want to share the printer on your network with other users. Choose the alternatives that suit your printing needs and click **Finish** to complete the installation.

14. The new printer will appear in your **Printer** window. You are now ready to start printing using IPP.



How to Print from Windows 2000/XP

Before you print to an IPP printer you will need to know:

- **the address of the print server.** The address contains the **IP address** or **host name** of the print server and the **printer port name.**
- **the brand and type of the printer** in order to install the appropriate printer driver.

1. Select the IPP printer to which you want to send your document. Choose the destination printer from the **Select Printer** field (in **File** | **Print**).

   If your destination printer does not exist in your **Select Printer** list, you need to add it. Adding an IPP printer to your printer list is described below.

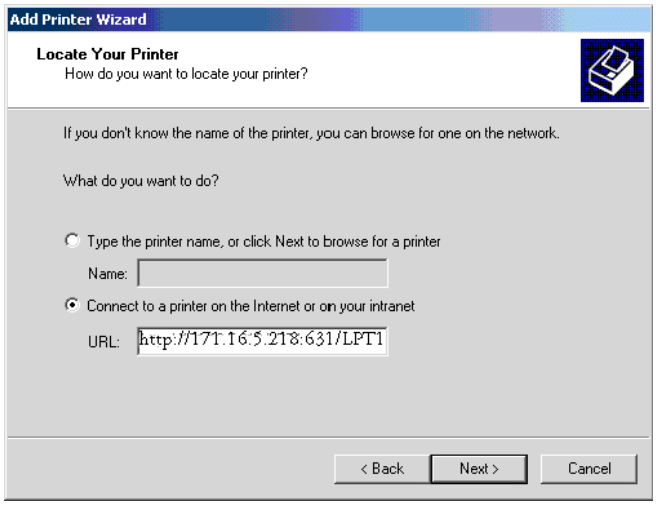
2. When you press **Print**, the print job is sent over the Internet to the AXIS 5570e, which then forwards the print job to the destination printer.

3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows 2000/XP

1. Choose **File** | **Print** from the document you wish to print.
2. In the **Select Printer** field, click the **Add Printer** icon. The **Add Printer Wizard** will start. Click **Next**.
3. The Wizard will ask you if you want to install a local printer or a network printer. Choose **Network Printer** and click **Next**.

4. Enter the printer address in the **URL** field.

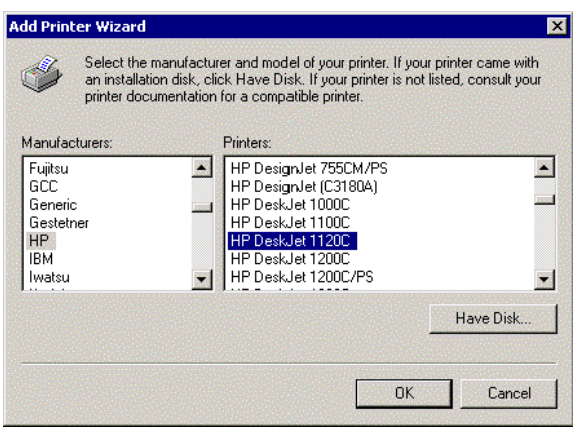


Example:
http://171.16.5.218:631/LPT1 if you want to address the parallel port or http://171.16.5.218:631/USB1 to address the USB port.

Click **Next**.

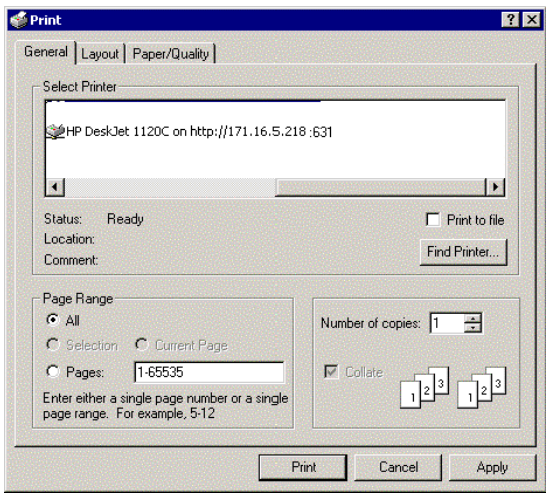
5. If you do not have a driver corresponding to the destination printer installed on your computer, the Wizard will prompt you to install one. Click **OK**.

6. The Installation Wizard will ask you to select a printer driver corresponding to the destination printer. Select the printer driver from the list and click **OK**.



7. The Wizard will ask you if you want the printer to be your default destination printer. Make your choice and click **Next** to complete the Add Printer Wizard installation.

8. The new printer is added to your **Select Printer** window:



9. You are now ready to print using IPP: specify your new destination printer from the printer list and click **Print**.

Logical Printers for Customized Printing

The AXIS 5570e has a powerful facility for altering the print data. This means that your desired print format can be realized on any type of printer. The following actions can be invoked from the print server:

- The character set can be changed to suit the printer
- Strings can be added before and after the print data
- Strings within the print data can be substituted
- ASCII to PostScript conversion
- Redirection of print data to another printer if the printer is busy
- Hex Dump mode to assist with printing problems
- See *Digital Copier Support*, on page 206.

If any of these actions are required, a Logical Printer is used to change the print data before being sent to the printer port. There are eight logical printers (PR1-PR8) that can be set up to filter the print data.

Each logical printer can be set via the print server's internal Web pages: Open a Web browser, enter the IP address of the print server in the Location/Address field and select **Admin | Logical Printers.**

The logical printers can also be set up by editing the *config* file. See *"Editing the config file"* on page 138.

Notes:

- The examples in this section describe how you can configure the available logical printers using a standard Web browser. If you want to set them directly by editing the *config* file, just enter the values for the corresponding parameters.
- The examples should only be viewed as suggestions how to configure the logical printers. You should, of course, configure them according to the needs of your network.
- In the Parameter List chapter of this manual, you can find a complete list of the AXIS 5570e parameters.

Character Set Conversion

A common problem in a multiple host environment is that different hosts use different ASCII character sets. As a result of this, language specific characters (such as å ü ô ñ) are sometimes printed incorrectly.

The AXIS 5570e solution to this problem is to assign a character set conversion filter to a logical printer, and then link that logical printer to the host causing the problem.

You select your desired conversion filter by setting the **Character Set Conversion** (PRx_CSET.) parameter. The output from the conversion filter is always IBM PC Set 2 (Code Page 437), and this is the character set the printer must be set up for.

Example:

Your network contains a host using the character set ISO 8859-2 and a host using the character set DEC.

In order to direct print jobs to the printer connected to the AXIS 5570e, you should assign the host to a separate logical printer, and install a character set conversion filter.

Follow the instructions below to change the conversion filter (USB1 is used as an examlpe here):

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** tab.
3. Set the parameter **Physical Port** to **USB1**.
4. Set the parameter **Character Set Conversion** to **ISO>IBM**.
5. Click the **OK** button.
6. Select the **PR2** tab.
7. Set the parameter **Physical Port** to **USB1**.
8. Set the parameter **Character Set Conversion** to **DEC>IBM**.
9. Click the **OK** button.

The ISO 8859-2 printer data that is sent to logical printer PR1 converts to IBM PC Set 2 and is printed on USB1. Similarly, the DEC printer data that is sent to logical printer PR2 converts to IBM PC Set 2 and is printed on USB1.

Adding Strings Before and After Print Jobs

These string functions provide a way to send printer control commands before and after each print job. They may be specified individually for each logical printer.

All strings are entered as hexadecimal byte values.

Example:

Assume that the logical printer PR5 is configured as a PostScript printer and that you want to append the PostScript End of File character (hex 04) after each print job.

Follow the instructions below to add a string after the print job:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR5** tab.
3. Enter the string **04** in the **String After Print Job** text field.
4. Click the **OK** button.

Example:

You have an HP LaserJet printer with dual trays, and want to print on pre-printed forms when using the logical printer PR4. The standard forms are taken from the lower tray, and the pre-printed forms are taken from the upper tray. The string before print job should contain the command to select the upper tray: $^{E}_{C}$&l1H (hex 1B 26 6C 31 48). The string after print job should contain the command to select the lower tray: $^{E}_{C}$&l4H (hex 1B 26 6C 34 48).

Follow the instructions below to add strings before and after the print job:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR4** tab.
3. Enter the string **1B 26 6C 31 48** in the **String Before Print Job** text field.
4. Enter the string **1B 26 6C 34 48** in the **String After Print Job** text field.
5. Click the **OK** button.

String Substitutions

The string substitution function performs search and replace operations on the print data. The primary application is to replace printer control commands. Up to twenty string substitutions may be specified individually for each logical printer.

All strings must be entered as hexadecimal byte values, and each match and substitute string must be preceded by a count byte.

You substitute command strings by editing the String Substitutions (PRx_STR.) parameter.

Example:

Assume that you want to replace the UNIX/Linux New Line (hex 0A) with an Carriage Return/Line Feed (hex 0D 0A) for logical printer PR1.

Follow the instructions below to substitute command strings:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** Web page.
3. Enter the string **01 0A 02 0D 0A** in the **String Substitutions** text field.

Hex Code	Explanation
01	length of the string you want to replace
0A	the string you want to replace
02	length of the substitute string
0D 0A	the substitute string

4. Click the **OK** button.

This conversion is the default setting for logical printers PR5 through PR8.

Example:

Assume that you want to replace the UNIX/Linux New Line (hex 0A) with an Carriage Return/Line Feed (hex 0D 0A), and the printer command $^{E}_{C}$G1 (hex 1B 47 31) with $^{E}_{C}$Y (hex 1B 59) for logical printer PR2.

Follow the instructions below to substitute command strings:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Enter the string **01 0A 02 0D 0A 03 1B 47 31 02 1B 59** in the **String Substitutions** text field.

Hex code	Explanation
01	length of the UNIX/Linux New Line command
0A	the UNIX/Linux New Line command
02	length of the Carriage Return/Line Feed command
0D 0A	the Carriage Return/Line Feed command
03	length of the printer command to replace
1B 47 31	the printer command to replace
02	length of the new printer command
1B 59	the new printer command

Click the **OK** button.

Note:

Extensive use of string substitutions will naturally decrease the throughput rate of the AXIS 5570e.

ASCII to Postscript Conversion

The AXIS 5570e logical printers can translate ASCII print data into PostScript format. This makes it possible to print on a PostScript printer from a host that does not support PostScript. The conversion is selected by activating a filter that converts ASCII data into Postscript. This filter can be activated individually for each logical printer.

Activate your desired filter by setting the Printer Language Translation (PRx_FILT.) parameter.

Example: Follow the instructions below to convert ASCII print data to PostScript for logical printer PR2:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.
4. Click the **OK** button.

If you select the parameter value **AUTO_PS**, the print data for every print

job is searched and if any ASCII data is found, it is translated into PostScript. This setting is recommended if you are not sure if the print data is ASCII or PostScript.

PostScript Settings

When a logical printer is set for PostScript conversion, you must specify the following:

- page size
- page orientation
- page format
- which font to use

The default page size is A4 and the default page orientation is Portrait, while the page format parameters are as follows:

Page Format Parameter	Default Value	Comment
Lines per page (MPL)	66	
Characters per line (MPP)	0	0 = disable line wrap
Characters per inch (CPI)	100	100 = 10 char per inch
Lines per inch (LPI)	60	60 = 6 lines per inch
Left margin (LM)	30	30 = 3.0 mm
Top margin (TM)	50	50 = 5.0 mm

The PostScript font can be any font that is installed in the printer. If no font is specified, Courier will be used.

Example: Follow the instructions below to set the PostScript parameters for logical printer PR2:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.
4. Set the **PostScript Page Size** parameter to **LETTER**.
5. Set the **PostScript Page Orientation** parameter to **LANDS**.
6. Enter the string **48 0 120 60 30 50** in the **PostScript Page Format** text field.

Hex code	Explanation
48	48 lines per page
0	disable line wrap
120	120 = 12 characters per inch
60	60 = 6 lines per inch
30	30 = 3 mm left margin
50	50 = 5 mm top margin

7. Enter the string **Helvetica** in the **PostScript Font** text field.
8. Click the **OK** button.

Redirecting Print Jobs when a Printer is Busy

If print data is received for a printer that is already busy, the host normally must wait. However, with a two-port print server it is possible to use a logical printer to redirect the print data to another logical printer when the target printer is busy. If the second printer is also busy, the host must wait until the target printer is ready.

Example: Follow the instructions below to redirect PR1 print jobs to PR3, when the printer assigned to PR1 is busy (USB1 and LPT2 are used as examples here):

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** tab.
3. Set the **Physical Port** parameter to **USB1**.
1. Set the **Secondary Printer** parameter to **PR3**.
2. Set the **Wait On Busy** parameter to **NO**.
3. Click the **OK** button.
4. Select **Admin** | **Logical Printers** and the **PR3** tab.
5. Set the **Physical Port** parameter to **LPT2**.
6. Click the **OK** button.

Notes:

- The two printers must use the same printer driver.
- Logical Printer redirection cannot be nested. If PR3 is redirected to another logical printer, the print job will not be redirected if PR3 is busy.
- If both printers are busy, the print job will be printed on the printer that first finishes its active print job.

Read Back of information

The AXIS 5570e support bi-directional printing. The information from the printer is read back on the parallel port when the parameter Read Back Port (PRx_IN.) has the default setting of AUTO. However, it is required that the printer also supports bi-directional printing. Please refer to your printer documentation for further details regarding bi-directional printing support.

Example: Follow the instructions below to disable the bi-directional communication for logical printer PR1:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** tab.
3. Set the **Read Back Port** parameter to **NONE**.
4. Click the **OK** button.

Debugging using the Hex Dump Mode

When hex dump mode is enabled, the print data is printed as hexadecimal byte values rather than characters; printer control commands are also printed as hex values. This allows you to inspect what control and print characters are actually being sent to the printer, which is a useful debugging facility for more difficult printing problems.

Example: Follow the instructions below to enable the hex dump mode for PR3:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR3** tab.
3. Set the **Hex Dump Mode Enabled** radio button to **YES**.
4. Click **OK**.

Note:

The page length for hex dump printouts is determined by the lines per page value of the PostScript page format parameter.

Network Speed

With the Network Speed parameter you can manually specify the speed at which you will send and receive network packages. You can change the Network Speed setting to correspond to the type of network you are using (10 or 100 Mbit).

To change the Network Speed in an Ethernet network, log in to the print server's internal Web pages and click **Admin | General Settings => Change**. From here, you have the option of setting the network speed to:

Network Speed	Comment
AUTO_SENSE	This is the default value where the print server detects which speed is optimal for each network package you transfer.
10_HALF__DX	10 Half Duplex
10_FULL_DX	10 Full Duplex
100_HALF_DX	100 Half Duplex
100_FULL_DX	100 Full Duplex

The default Network Speed value is AUTO_SENSE, which is the correct option for the majority of users.

If you choose a faulty Network Speed option for your network, you may loose contact with the print server.

To reset the Network Speed parameter to AUTO_SENSE, you will have to reboot the print server (disconnect and then re-connect the external power supply).

NetWare Packet Signature Levels

NetWare Packet Signatures protect servers and clients using the NCP (NetWare Core Protocol) services and prevent packet forgery by requiring the server and the client to sign each NCP packet.

Server Levels

Server packet signature levels are assigned by a new SET parameter: SET NCP PACKET SIGNATURE OPTION = *n*

Key to Server Levels	Explanation
0	Server does not sign packets (regardless of the print server level)
1 (default)	Server signs packets only if the print server requests it (print server level is 2 or higher)
2	Server signs packets if the print server is capable of signing (print server level is 1 or higher)
3	Server signs packets and requires the print server to sign packets (or logging in will fail)

Print Server Levels

Print server signature levels are assigned by a new NET.CFG parameter SIGNATURE LEVEL = *n*

Key to Print Server Levels	Explanation
0	Print server does not sign packets
1 (default)	Print server signs packets only if the server requests it (server option is 2 or higher)
2	Print server signs packets if the server is capable of signing (server option is 1 or higher)
3	Print server signs packets and requires the server to sign packets (or logging in will fail)

Regardless of server level, the AXIS print server has the capability to log in in Print Server Mode since it supports NCP Packet Level 3 (which is the most restrictive).

These procedures are taken care of automatically. There are no configurable parameters in the Print Server for choosing the NCP Packet Signature Level. The AXIS print server adapts itself to the Server Level.

Flash Loading of Firmware over the Web

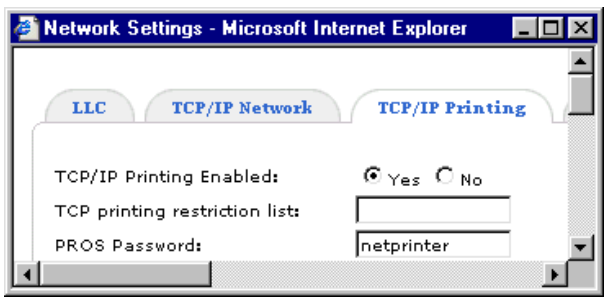
The firmware can easily be upgraded, since flash loading over the Web is possible from the print server's internal Web pages. Client software is not needed to upgrade the firmware. See *Upgrading the Firmware*, on page 173.

TCP/IP Restrictions

In a new and unconfigured Axis Network Print Server any user is allowed to send TCP/IP print jobs. Using a restriction list you can reject TCP/IP printing from specified IP addresses.

Enabling TCP/IP Restrictions

In the print server's Web interface, select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Printing**.



Print jobs from IP addresses specified in the **TCP printing restriction list** will be accepted or rejected. Comma delimited IP addresses as well as ranges of IP addresses can be entered.

IP addresses are rejected by entering an exclamation mark (!) before the IP address(es) in the **TCP printing restriction list** field.

Examples:
!192.168.0.10 will reject print jobs from IP address 192.168.0.10.

192.168.0.12, 192.168.0.32 will accept print jobs from IP addresses 192.168.0.12 and 192.168.0.32.

192.168.0.40-192.168.0.79 will accept print jobs from IP addresses within the range 192.168.0.40 – 192.168.0.79.

Disabling TCP/IP Restrictions

Empty the **TCP printing restriction list** to remove the restrictions. This is the default setting.

Enabling Secure Web Services – SSL/TLS

In a new and unconfigured AXIS 5570e, SSL/TLS is **disabled.**

Certificates

To use SSL/TLS you have to create or obtain a digital certificate. There are two kinds of certificates: self-signed certificates and third party certificates.

- Self-signed certificates are less secure but normally they are sufficiently secure for small networks with no public access. You generate such a certificate yourself and there are no fees to pay.
- For large networks and for networks with public access, third party certificates from a trusted source are normally used. You obtain them for a yearly fee from a Certificate Authority (CA).

Among other things, a certificate gives information about which domain it is issued for, its validity and the name of issuer. With SSL/TLS enabled, the installed certificate authenticates the print server to the client and all information exchanged between them will be encrypted.

Enabling SSL via the Web Interface

You enable the print server's secure Web services through its internal Web pages. If you have a valid certificate loaded, select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** and set the **HTTPS Enabled** parameter to **Yes.**

If you do not have a valid certificate loaded, select **Admin** | **Security Settings** and click **Create.**

Decide whether you want to generate a self-signed certificate or if you want to generate a certificate request.

Generating a Self-Signed Certificate

Select the **Generate Self-Signed Certificate** radio button and click **Next.**

Enter the data asked for:

- Country Name: *Example*: US
- State or Province Name: *Example*: California
- Locality Name: *Example*: Los Angeles
- Organization Name: *Example:* Printers Inc
- Organizational Unit Name: *Example:* Sales Dept
- Common Name*: *Example:* printserver2@company.com
- Current Date (yyyy/mm/dd): *Example:* 2006/09/28
- Validity Duration (in days): *Example:* 365

  * Common Name denotes the name given to the print server in the network. If you do not have a DNS server on your network, you must include the domain name, e. g. xxx@company.com

Click **Finish** and the print server will generate a public/private key pair as well as the self-signed certificate itself (this process will take a few minutes) and store these data in the print server. When the certificate is generated, the print server automatically loads it into your present

browser session. The browser reports the new state by changing into https mode. In the browser's Security Alert box, select **View Certificate** and **Install Certificate**. Follow the instructions of the Install Certificate Wizard.

Generating a Certificate Request

Select the **Generate Certificate Request** radio button and click **Next**.

Enter the data asked for:

- Country Name: *Example:* US
- State or Province Name: *Example:* California
- Locality Name: *Example:* Los Angeles
- Organization Name: *Example:* Printers Inc
- Organizational Unit Name: *Example:* Sales Dept
- Common Name*: *Example:* printserver2@company.com
- Current Date (yyyy/mm/dd): *Example:* 2006/09/28
- Validity Duration (in days): *Example:* 365

  * Common Name denotes the name given to the print server in the network. If you do not have a DNS server on your network, you must include the domain name, e. g. xxx@company.com

Click **Finish**.

Now the print server will generate a public/private key pair and a PEM-encoded Certificate Request, called *cert.pem*. Click **Save**, **Save this file to disk** and **Save**.

Send this Certificate Request to your Certificate Authority for their signature.

Importing a Certificate

When you receive the PEM-encoded certificate from your Certificate Authority, open the print server's Web interface and select **Admin** | **Security Settings**. Click **Import** and follow the instructions on the screen.

Accessing the Print Server's Web pages over https://

Whenever SSL/TLS is enabled, you can only reach the print server's Web interface through the secure services. The unsecure way via http:// is closed and now you have to address the print server's Web interface in the secure way, i.e. via https://.

Disabling Protocols

To further increase security, you must disable protocols that are considered insecure;

- FTP (used by AXIS ThinWizard. If FTP is disabled, AXIS ThinWizard can not function properly.)
- Telnet
- Auto-IP
- DHCP
- BOOTP
- Remote Config (used by AXIS NetPilot)
- SNMP Configuration (also used by AXIS ThinWizard. Note that if SNMP is disabled, AXIS ThinWizard can not function properly.)

To disable these protocols, go to **Admin** | **Security Settings** | **Protocol Settings** | **Detailed View** and mark the check boxes. Click **OK** to finish. *Only enabled protocols will be visible from this view!*

To enable these protocols, select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** for FTP, Telnet, Auto-IP, DHCP and BOOTP. Remote Config is enabled via **Admin** | **General Settings** | **RConfig Support**.

Important:

To ensure maximum security, it is highly recommended that you change your Administrator password after generating a certificate and disabling insecure protocols! This is done from **Admin** | **General Settings** | **Change =>** | **General** | **Root Password.**

Checking SSL/TLS Status

To check SSL/TLS status, open the print server's Web interface and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** to see if the **HTTPS Enabled** parameter is set to Yes or No.

To View a Certificate

To view a Certificate, open the print server's Web interface, select **Admin** | **Security Settings** and click **View** next to the Certificate.

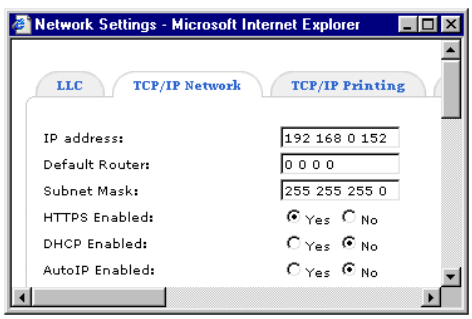
To Delete a Certificate

To delete a Certificate, open the print server's Web interface, select **Admin** | **Security Settings** and click **Delete** next to the Certificate.

Enabling the SNMP3 Protocol

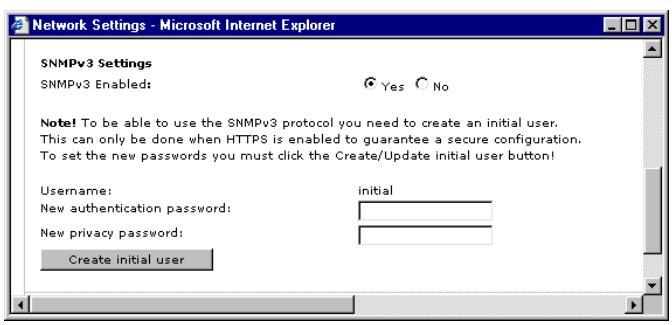
Invoke the print server's Web interface to enable the SNMPv3 protocol.

1. Select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network** and ensure that **HTTPS Enabled** is set to **yes** to guarantee a secure configuration.



   Note: You must have a valid certificate loaded to be able to enable HTTPS. See *"Enabling SSL via the Web Interface"* on page 167.

2. Select **Admin** | **Network Settings** | **Detailed View** | **SNMP** and set **SNMPv3 Enabled** to **yes**.



3. Create an **initial user** by entering two new passwords: one authentication password and one privacy password. Each password must consist of at least 8 characters.

4. Click the **Create initial user** button.

Now your print server is ready to accept communication according to the SNMPv3 protocol. For further management you will need an SNMPv3 management application; you use this application to configure the print server, to create new user accounts and to control access to it. Also see *"Accessing the Print Server's Web pages over https://"* on page 168.

To Update the Initial User

To update the initial user, select **Admin** | **Network Settings** | **Detailed View** | **SNMP**, enter the two passwords (one for authentication and one for privacy) and click the **Update initial user** button.

Overriding Port Status

Some USB printers do not deliver correct port status to the print server (for instance always reporting printer off-line even if the printer is on-line). If you set the **Override Portstatus** parameter to *Yes*, the print server will ignore the port status. To set this parameter, select **Admin** | **General Settings** | **USB1** from the print server's Web interface.

Enabling IEEE 802.1X Port-based Authentication

IEEE 802.1X port-based authentication enables the print server to access a network protected by 802.1X/EAPOL (Extensible Authentication Protocol Over Lan). There are many EAP methods available to do this. The one used here is EAP-TLS (EAP-Transport Layer Security).

To gain access to the protected network, the print server presents its certificate to the network switch and the network switch presents its certificate to the print server. If both certificates are approved, the network switch allows access on a preconfigured port.

Security Settings IEEE 802.1X

To enable and configure the IEEE 802.1X security settings, select **Admin** | **Security Settings** | **802.1X.**

Certificate settings

CA Certificate - The print server needs this to authenticate the certificate in the network switch. The network switch's certificate is signed by a trusted party, possibly an external Certificate Authority. The CA Certificate is used by the print server to verify that the network switch's certificate is signed by the CA, and that it is valid.

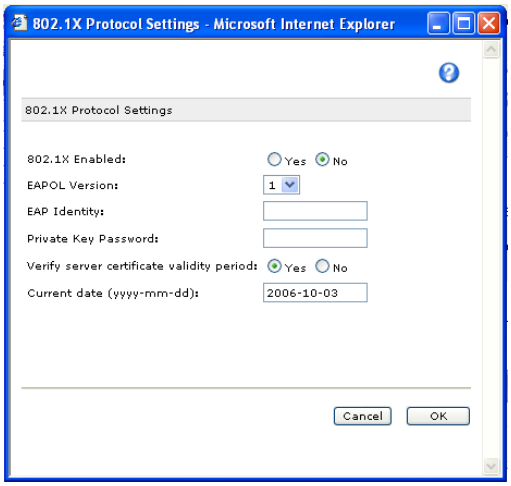
- Provide the path to the certificate, or use the browse button to locate it. Then click the **Upload** button.
- To remove a certificate, click **Delete.**

Client Certificate/Client Private Key - The Print server must also authenticate itself, using a client certificate and a private key.

- Click **Upload** and provide the path to the certificate in the first field, or use the **Browse** button to locate it and click **OK.**
- To remove a certificate, click the **Remove** button.

802.1X Protocol Settings

1. Select **Admin** | **Security Settings** | **802.1X.**
2. Click **Detailed View** to configure the 802.1X EAP/TLS settings.



To configure and enable IEEE 802.1X, enter the following information:

1. Select **EAPOL version** (1 or 2), this must correspond to the EAPOL version in your network switch.
2. Enter the user identity, **EAP identity,** associated with your certificate.
3. Enter the **Private key password** for your user identity.
4. If **Verify server certificate validity period** is enabled, the print server will check that the certificate in the network switch is valid. If disabled, the level of security will be lower as the print server will accept the certificate even if it has expired.
5. Enter the **current date** for time validation. This is necessary in order to give the print server the correct date at start up.
6. Select the **802.1X Enabled** radio button.
7. Click **OK** to save the settings.

Important! Time/date validation requires that SNTP is enabled. To enable SNTP, go to **Network Settings** | **Detailed View** | **TCP/IP Network** and select the **SNTP Enabled** radio button.

Section 13 Upgrading the Firmware

Upgrading the Firmware

You can upgrade the AXIS 5570e firmware using one of the following methods:

- AXIS ThinWizard (TCP/IP)
- From the print server's internal Web pages (TCP/IP)
- FTP (TCP/IP)

Note:

Updating instructions are supplied with the firmware release notes.

Upgrading from the Print Server's Internal Web Pages

Follow these instructions to upgrade the firmware of your print server from its internal Web pages (flash loading over the Web):

1. Open your Web browser, enter the IP address of your print server and press **Enter**. (See *"Using a Web Browser for Print Server Management"* on page 131 for detailed instructions on accessing your Axis print server on the Web).
2. From the **Admin** mode, click the **Firmware Upgrade** button. From here you can upgrade your print server with the latest available firmware.

Upgrading using AXIS ThinWizard

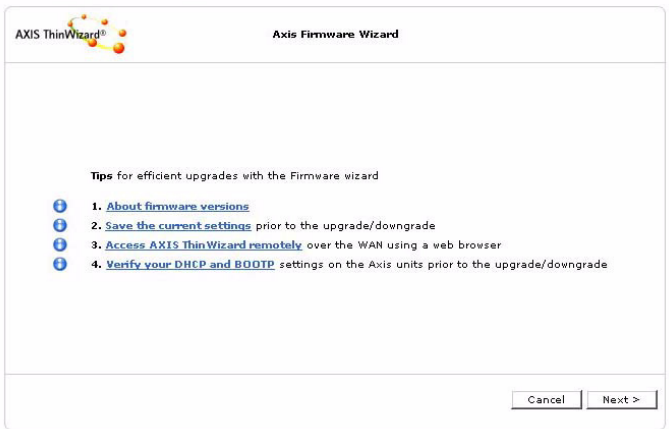
AXIS ThinWizard is a tool that enables batch upgrading of several print servers and can be used for upgrading the print server's firmware in TCP/IP networks.

Follow the instructions below to upgrade your print servers using AXIS ThinWizard:

1. Log in to AXIS ThinWizard.
2. Open the Network Group that contains the print server to be upgraded.
3. Click the **Firmware** button. The Firmware Wizard starts.
4. Browse through the upgrading tips and click **Next >** when you are done. Select **Latest Available Version**. Click **Next >**.
5. Select the servers you want to upgrade, by checking the correct upgrade boxes. Click **Next >**.
6. Enter the default User ID and Password of the servers you selected in the previous step. Select whether you want AXIS ThinWizard to verify the password immediately or when the upgrading job has started, by checking the appropriate box. Click **Next >**.

7. If you do not have a default password, just click **Next >**. If some of your servers use a different User ID or Password than the default entries, they will be displayed in the **Remaining servers** list. Enter the User ID and Password for each individual server. Click **Next >**.

8. Name the upgrade job. This is optional, so you can leave the field blank if you want. Click the **Start** button to start the upgrading job.



9. You can view the progress of the job in the Event Log.

Refer to *"Using AXIS ThinWizard for Print Server Management"* on page 136 for more information about AXIS ThinWizard.

Upgrading using FTP

To upgrade over the network using FTP you will need a file with the new print server firmware. The name of this file is in the form `product_version.bin`.

Ensure that **FTP Enabled** is set to *yes*. To check this parameter, browse to the print server and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP Network**.

Caution!

Be careful not to interrupt the file transfer. If the transfer is interrupted, the print server may have to be re-initialized by your dealer.

The objective of this example is to upgrade a print server to firmware version 7.10.

The description below from a typical Windows session uses the following *examples*:

- Print server model: AXIS 5570e
- IP address of print server: 10.13.4.105
- New firmware version name: 5570e_7_10.bin
- Location of firmware and upgrade procedure: c:\Axis

1. From www.axis.com, download the firmware and save it to a new directory on your computer, e.g. c:\Axis (if the directory does not exist, create it).
2. Open a command prompt from **Start => Run**. The Run window will appear. Type **cmd** and click **OK**. (Windows 98: Type **command** and click **OK**.) The DOS Command Prompt window will open.
3. Make sure you are working from the correct directory:
   type **cd c:\Axis** and press **Enter**.
4. Connect to the print server using ftp:
   type **ftp 10.13.4.105** followed by **Enter**.
   (Example using print server IP address 10.13.4.105)
5. Enter the user name, the default user is *root*. Press **Enter**. If the default password has been changed then it must also be entered. When you enter the password, it will not be echoed to the screen, nor will the cursor move.
6. Change to binary mode transfer.
   Type **bin hash** (or **binary hash**) and press **Enter**.
7. Use the **put** command to upload the upgrade file to the flash location:
   (Example using firmware named 5570e_7_10.bin):
   Type **put 5570e_7_10.bin FLASH** followed by **Enter**. (Note that FLASH is written in capital letters!) A stream of hash (#) marks will appear.

   Wait 30 seconds... You will receive a message stating *Transfer complete. Flash programming finished OK*. The print server will restart in five seconds running the new software.

   When you see a new **ftp prompt** the procedure has been completed successfully.
8. Type **bye** followed by **Enter** to end the ftp session.

Obtaining the Software

You can obtain all the print server firmware as well as the latest utility software from the following locations:

- http://www.axis.com
- your local dealer

Section 14 SNA Parameter Overview

This appendix provides summary information on the parameters that control the basic operation of the SNA communication and the IBM printer emulation. It also describes how these parameters may be changed.

An overview of how parameters are mapped during the auto-configuration process is also provided.

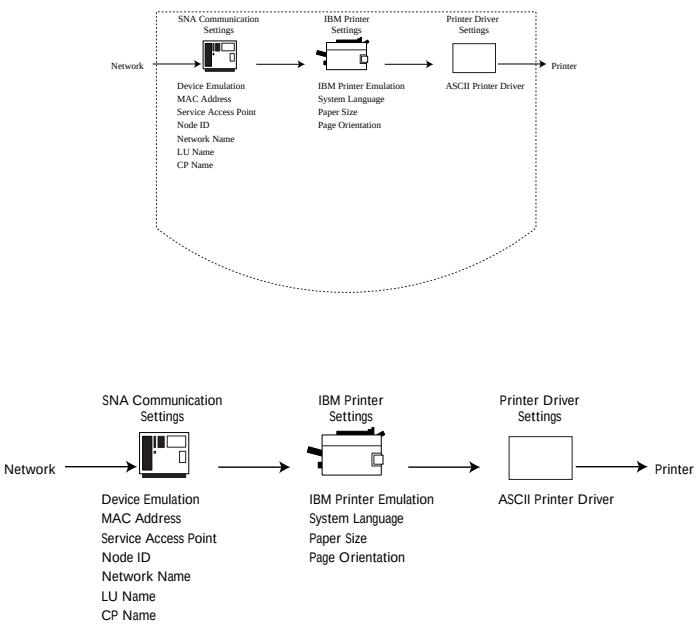
Refer to the Parameter List document on www.axis.com for a complete description of the Axis Print server parameters.

Communication Parameters

In most environments, the basic communication parameters need to be customized in order to establish a communication link to the host system. This includes setting the Host MAC Address and Host Name parameters in the Print Server. In this chapter you will find instructions on how to update these parameters.

SNA Communications Process

There are several parameters that control the basic operation of the SNA communication, and IBM printer emulation. The diagram below shows how they relate to the SNA printing process.



Schematic diagram displaying basic SNA operation and IBM printer emulation

Parameter Summary

The following tables summarize SNA host communication parameters that must be considered when installing the Axis Network Print Server.

The parameters are presented as:

- Common Mainframe and AS/400 parameters
- Mainframe specific parameters
- AS/400 specific parameters

Common Mainframe & AS/400 Parameters

Parameter	Name	Default
DEVICE_EMUL	Control Unit Device Emulation	3174
Th DEVICE_EMUL parameter controls the Control Unit emulation mode. When set to 3174, the Print Server will appear as a 3174 PU 2.0 node to the host. This mode may be used for both mainframe and AS/400 environments. When set to 5494, the Print Server will appear as a 5494 PU2.1 node to the host. This is the recommended mode for the AS/400 environment. The 5494 mode cannot be used in the mainframe environment.		
H1_ADDR	Host MAC Address	FF FF FF FF FF FF
The H1_ADDR is the Host Ethernet/Token Ring MAC address. It is normally set to the MAC address of the host. When the Print Server is connected to the host through a gateway, this parameter should be set to the MAC address of the gateway. For a directly attached AS/400 system, this value is found in the "Line Description".		
AUTODIAL	Automatic Link Establishment	no
The AUTODIAL parameter controls whether the print server will automatically try to establish the link when the print server is switched on, or if communication is lost. When running 5494 CU mode, this parameter also controls whether Automatic Configuration should be performed.		

Mainframe Specific Parameters

Parameter	Name	Default
NODE_ID	Node ID	E07xxxxx, where "xxxxx" are the last five digits of the print server's MAC address.
This is the SNA PU identification. The first 3 digits is the IDBLK and the last five is the IDNUM. When defining a VTAM Switched Major Node, this parameter should match the IDBLK and IDNUM values specified in the PU definition. Only Hexadecimal characters (0-9 and A-F) allowed.		

AS/400 Specific Parameters

Parameter	Name	Default	Emulation
NWORK_NAME	Network Name	APPN	5494 only
Description - This is the Print Server Network Name. The value of this parameter is normally the same as the "Host Network Name", indicating that both the Print Server and the AS/400 system are located on the same APPN network. The Network Name may comprise the letters A-Z and/or numerals 0-9, but must begin with a letter. The letters used should all be in UPPERCASE and a maximum of 8 characters are allowed.			
LU_NAME	LU Name	Axxxxxxx	5494 only

Parameter	Name	Default	Emulation
Description - Axxxxxxx, where "xxxxxxx" is the last 7 characters of the Axis Network Print Server serial number, in reverse order, e.g. if s.no. = 00 40 8C 1B 06 D4 the default LU Name = A4D60B1C. This will be the name of the APPC device and controller created during auto-configuration			
CP_NAME (AXIS 570 only)	Control Point Name	Axxxxxxx	5494 only
Description - Axxxxxxx, where "xxxxxxx" is the last seven characters of the Print Server serial number, in reverse order, i.e. a print server with serial number 00 40 8C 1B 06 D4 will have the default CP Name A4D60B1C. This will be the name of the APPC controller created during auto-configuration.			
H1_NW_NAME	Host Network Name	APPN	5494 only.
H1_LU_NAME	Host LU Name	DEFAULT	5494 only

Updating parameters

This is most easily done from the internal Web pages of your Axis Network Print Server. To set the parameters using a Web browser, you first need to assign an IP address to the Axis Network Print Server. For instructions on how to do this, refer to *"Setting the IP Address"* on page 16.

Alternatively, you can update the parameters via FTP, TFTP or by using extended IBM printer emulation.

Using extended IBM printer emulation means setting up the Axis Network Print Server by printing a file containing extended IBM emulation commands to it after you have established communication with your IBM host. The configuration is started by inserting the sequence `%CONFIG+` in your text. **To protect your settings, a password must be provided. By default, the password is** `pass`. You may then set the parameter values directly using the syntax shown below:

Syntax:

```
<Parameter name> = <value> [, <value>];
```

When all parameters have been set the `SAVE` command saves the settings permanently. The `%CONFIG-` command resumes normal printing. In order to maintain backward compatibility, some parameters must be preceded by a `%CONFIG++` command. See also *The Parameter List*, on page 220.

To set the parameters to their default values, enter the following in your document and print it.

```
%CONFIG+ password(If you have not changed the default
                  password (pass), the password is optional.)

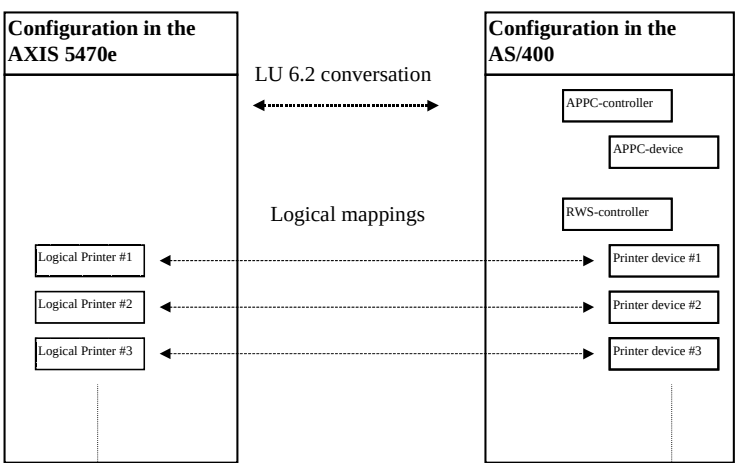
PRDRIVER = PCL5;
%CONFIG++
NODE_SAP = 4;
H1_SAP = 4;
AUTODIAL = NO;
%CONFIG--
PREMUL = 3816;
SYSL = 37;
BIN1 = LETTER, COR;
SAVE;
%CONFIG-
```

Changing Parameters after Auto-configuration

If you want to change some of the critical configuration parameters after auto-configuration is completed, you should first set AUTODIAL to NO, then remove all descriptions in the AS/400, and then change the parameter(s) and set AUTODIAL to YES to initiate a new configuration process.

Auto-configuration and Mapping

The configuration created in the AS/400 and the mapping to the Axis Network Print Server as a result of the auto-configuration process is illustrated by the figure below.



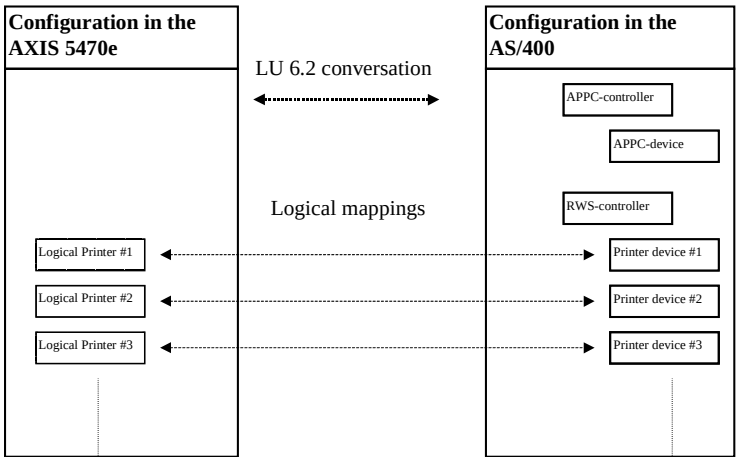


Illustration of the configuration created in the AS/400 and the mapping to the Axis Network Print Server as a result of the auto-configuration

Printer Device Descriptions

Through auto-configuration, the APPC controller, APPC device, RWS controller as well as printer device descriptions for the logical printers, will be created automatically.

Controller and Device Names

The names of the controllers and devices created in the AS/400 during auto-configuration are by default the last 7 characters from the Axis Network Print Server serial number in reverse order, preceded by the letter ”A”.

For example, serial number ”00408C180102” will result in APPC-controller ”A201081C”, APPC-device ”A201081C” and RWS-controller ”A2010RMT”.

Printer devices will be named ”A201PRT01”, A201PRT02”, A201PRT02”... The designation ”PRTnn” corresponds to the logical printers in the Print Server, i.e. printer device ”A201PRT01” will be mapped to Logical Printer #1. By default, all Logical Printers are mapped to the Physical Port LPT1.

To customize the print server, proceed to the *SNA Printing - 5494 Mode,* on page 22.

Section 15 SNA Gateways

Gateway Configuration, 3174 CU mode

Some hints specific to SNA gateways are given below.

- Axis Network Print Server appears to a gateway as a Down Stream Physical Unit (DSPU), with eight LUs, 1 to 8 (LU 1 may not be available).
- Only gateways that communicate with DSPUs using SNA over LLC type 2 are supported.
- There are basically two types of gateways that the Axis Network Print Server can be attached to: pass-through gateways and concentrator gateways, as described below.

Pass-through gateway

Devices attached downstream to this type of gateway are completely visible to the host. In other words, each DSPU will have a PU definition on the host. Examples of pass-through gateways are IBM 3745 Communications Controller, IBM 3174 Establishment Controller, IBM 3172 LAN Interconnect Controller, etc.

You need to set up at least one PU and LU definition for each Axis Network Print Server on the host, as described in the VTAM section.

When attaching an Axis Network Print Server to a remote pass-through gateway, you need to set the mapping of SDLC or sub-channel address to MAC address in the gateway.

Concentrator gateway, general

A concentrator gateway typically behaves as a PU (or a few PUs) to the host, even though a number of PUs may be available downstream. If it is an SDLC or channel attached gateway, typically only one SDLC or sub-channel address will be used. Examples of concentrator gateways are: IBM Communications Manager/2 (OS/2), Novell NetWare for SAA (NetWare 3.x), Microsoft SNA Server (Windows NT), etc.

When an Axis Network Print Server is attached to this type of gateway, you can map the chosen Axis Network Print Server LU to any host LU you like. This way, several print servers may be accessed through the same gateway.

Pooling LUs may not be used for Axis Network Print Server.

Concentrator Gateway, NetWare

This is an outline of the procedure for configuring to a Novell NetWare for SAA v 2.0 Server. More information is provided in the ‘Suppor’t section of www.axis.com

1. Customize the AUTOEXEC and STARTUP files on the server. Add the LOAD statements for the LAN and WAN cards, the BTRIEVE database, and the NetWare for SAA 2.0 Gateway
   i.e. LOAD COMMEXEC and LOAD NWSAA.
2. Configure the Communication Executive (this and the following subjects are done on a WorkStation).

3. Configure SNA Network ID. Either change the default value or let it stay on default.
4. Configure Data Link Adapters. The configuration is done on the Data Link Adapters Definitions screen by pressing insert for a new adapter config, then you always enter the Logical adapter name, Link type, Logical adapter number and Service status.
5. Configure PU and LUs. On the Configure PU Profile screen you can set default LU attributes, starting dependent LU address, number of dependent LUs, give CP a name, enable off-line test mode, status assignment of LUs activated by host, status call host at workstation attach, status PU profile start-up and logical adapter name. On the Configure Dependent LUs screen you can set VTAM LU name, lock for a session, LU type and model and preserve host session.
6. Assign LU Resources and Access Control Lists (ACLs). On the Configure Dedicated LUs you can dedicate a LU to a person or device or group of persons. This person(s) is described in the access control lists.
7. Configure Downstream PU. Choose Configure Downstream PUs and press insert. Give it a name and fill in starting LU address or leave at default, type in number of DownStream LUs and logical adapter name:

```
Configure Downstream PU Connection
  Downstream PU name (CP name):
_____________________________DPUname
  Starting downstream LU address: _____________________________2
  Number of downstream LUs: ____________________________________1
  Logical adapter name: ________________________________________
```

The CSCON adds new parameters according to the adapter type you have set. The resulting screen can look like this:

```
Netware Comm Services Config V2.0 Wednesday 1999 September 4
16.27
  Configure LUs for Downstream PUs _______________Downstream
PU: AXIS5570e
  DLU __Address __PU Profile __LU Address __LU Type __Model
__VTAM LU Name
  002 __(0x02) ____SAA_MAIN ____15 (0x0F) __Printer
_____________________ACP4
```

Concentrator gateway, Microsoft

This is an outline of the procedure for configuring to a Microsoft SNA Server. More information is provided in the Support section of the Axis Web site at http://www.axis.com

1. Configure host connection.
2. Configure downstream connection.
3. Select host connection and assign one or more DownStream LUs to it.
4. Select downstream connection and associate the DownStream LUs (from step 3) with that connection.
5. If necessary, reorder the DownStream LU numbers, that is, the LU numbers used by the downstream system.
6. To connect multiple PUs (boxes) repeat steps 2-5.

Section 16 Extended IBM Printer Emulation

When printing from an IBM host, the Axis Network Print Server allows you to make use of the following printer functions not found in standard IBM printers:

- Configuration Mode
- Hex Transparency
- User Defined Strings
- String Substitutions
- Bar Codes
- Font Selection.

This appendix provides a brief overview of some of these functions.

Configuration Mode

The Configuration Mode provides a way to configure your Axis Network Print Server from your IBM system. For more information see *SNA Parameter Overview*, on page 176.

User Defined Strings

The User Definable Strings are a set of 256 programmable sequences. The UDS are useful for storing long sequences, such as printer function sequences, within the Axis Network Print Server. Each sequence can be activated by inserting a short control command in your documents.

String Substitutions

The String Substitution function searches the output data stream for specified sequences of AIC characters (Match Strings), and substitutes them with other sequences (Substitute Strings). Up to 128 pairs of Match/Substitute Strings may be defined.

> AIC (AXIS Internal Codes) are listed in the AXIS Network Print Server Technical Reference.

Font Selection

Fonts can be selected directly by FGID (Extended Emulation commands or SCS SFG commands) or indirectly by pitch SCS SCD/SPD commands.

Notes:

- SFG control code is only supported by Twinax page printer emulations
- Matrix printers only support a few fonts

Hex Transparency

The Transparency function allows you to send ASCII data to the printer directly from the host application. The data may be Postscript, PCL, HP-GL or any other language supported by the printer. This gives you access to all the features of the connected printer from within the IBM environment.

When the percent and less-than characters (%<) are received, the Axis Network Print Server will switch to hex transparency mode. The following

data (given as hexadecimal byte values or quoted text) is passed directly to the printer without any conversion. The hex transparency mode continues until the greater-than and percent characters (>%) are received.

The following example shows how to embed HP-PCL 'start underline' (<ESC>&d0D) and 'stop underline' (<ESC>&d0@) commands in your documents:

```
The word %<1B26643044>%underline%<1B266440>% is underlined.
You can also use %<1B,"&d0D">%quoted text%<1B,"&d0@">%
```

Resulting printout:

```
The word underline is underlined
You can also use quoted text.
```

Bar Codes

The bar code function provides easy access to a range of standard bar code types resident in the Axis Network Print Server. Bar codes can only be printed on PCL printers.

Before the bar codes can be printed, a bar code format has to be defined. This format sets the type and size of the bar code to be printed. Up to 16 formats can be predefined. The definitions are made by setting up the BAR parameter.

The BAR parameter takes several arguments, separated by commas, as shown below:

```
BAR <number>=<type>,<width>,<height>,<text mode>,
<check mode>;
```

- **number** is the bar code definition number in the range 0–15. This number is used to refer to the definition when printing the bar code.
- **type** is the predefined bar code type. Valid values are:

Value	*Description*		*Value*	*Description*
CODE39	*Code 39*		**CODE128**	*Code 128*
UPCA	*UPC version A*		**INT2OF5**	*2 of 5 Interleaved*
EAN8	*EAN-8*		**CODABAR**	*Codabar matrix*
EAN13	*EAN-13*			

- **width** is the bar code module width in 1/1000 inch. Valid range is 1 to 1000. The default value is 12.
- **height** is the bar code element height in 1/24 inch. Valid range is 1 to 500. The default value is 12.
- **text mode** selects if human readable text is printed under the bar code or not. 'YES' or 'ON' will turn on text, 'NO' or 'OFF' will turn off text. The default mode is 'ON'.
- **check mode** selects if a check digit will be generated or not. 'YES' or 'ON' will generate a check digit, 'NO' or 'OFF' will not generate a check digit. The default mode is 'ON'. The check digit will always be generated for bar code types UPCA, EAN8 and EAN13, regardless of the setting of **check mode**.

To set up the BAR parameter, use the `%CONFIG` command in your document. To print bar codes, bar code commands may be included anywhere in your documents. They begin with 'percent-slash' (`%/`) followed by the word BAR. Then follows the number of the bar code definition to be used, a comma, and the sequence to be printed. The command is ended by a semi-colon (;).

Setting up the bar code parameters and printing bar codes

```
%CONFIG+
BAR 0 = EAN8,12,4,ON;
BAR 1 = EAN8,12,8,ON;
SAVE;
%CONFIG-

%/BAR 0,"0123456"; %/BAR 1,"0123456";
```

Once the BAR parameter has been set up, you will only need to use the bar code commands to print the bar codes

```
%/BAR 0,"0123456";                    %/BAR 1,"0123456";
```

Resulting printout:

AXIS Cobra products compatibility

The Axis Network Print Server supports a subset of the extended printer emulation syntax of the AXIS Cobra products, including the bar codes syntax. For more information, please refer to the AXIS Network Print Server Technical Reference supplied on the AXIS Network Product CD.

Section 17 IBM Fonts

Font Selection, Coax Printer Emulations

Fonts can be indirectly selected by the IBM system using pitch selection (CPI). In order to gain full access to the fonts the Axis Network Print Server offers an alternative font selection command. Please note that matrix printers only support a few fonts.

Font selection commands may be included anywhere in your documents. They begin with 'percent-slash' (%/) followed by the word FONT and the font number (Font Global Identifier, FGID). An optional point size value, preceded by a comma, may be included. The command is ended by a semi-colon (;).

The following example shows how to select the 10 CPI Courier (fixed pitch) font.

```
%/FONT 11;This is 10 CPI Courier
```

Resulting printout:

```
This is 10 CPI Courier
```

Font Selection, Twinax Printer Emulations

Fonts are selected by a FGID (Font Global Identifier) and mapped to a printer resident PCL font, selected to make a close match to the original IBM font. The IBM to PCL font mapping is controlled by the Font Definition Table. All entries in this table are fully editable, and you can also add new entries.

Refer to ***DBCS Support***, on page 201 for details on DBCS font types supported by the Axis Network Print Server.

Available Fonts

The fixed pitch fonts are not scalable. If a Point Size is specified, it will be used to compress or expand the character spacing. (%/FONT 11,105; will compress the 10 CPI font to 10.5 CPI without changing the size of the characters).

	FGID	IBM Font Name
Pitch 5 CPI Fonts	244	**Courier 5**
	245	**Courier Bold 5**
Pitch 8 CPI Fonts	266	**Courier Bold 8**

Pitch 10 CPI Fonts	3	**OCR-B**
	5	**Orator**
	11	**Courier 10**
	12	**Prestige Pica**
	13	**Artisan 10**
	18	**Courier Italic 10**
	19	**OCR-A**
	20	**Pica**
	30	**Math Symbol 10**
	38	**Orator Bold**
	39	**Gothic Bold 10**
	40	**Gothic Text 10**
	41	**Roman Text 10**
	42	**Serif Text 10**
	43	**Serif Italic 10**
	46	**Courier Bold 10**
	60	**Prestige Bold 10**

	FGID	IBM Font Name
Pitch 12 CPI Fonts	66	**Gothic Text 12**
	68	**Gothic Italic 12**
	69	**Gothic Bold 12**
	70	**Serif Text 12**
	71	**Serif Italic 12**
	72	**Serif Bold 12**
	80	**Math Symbol 12**
	84	**Script**
	85	**Courier 12**
	86	**Prestige Elite**
	87	**Letter Gothic 12**
	91	**Light Italic 12**
	108	**Courier Bold 12**
	110	**Letter Gothic Bold**
	111	**Prestige Elite Bold**
	112	**Prestige Elite Italic**
Pitch 13.3 CPI Fonts	204	**Gothic Text 13**
Pitch 15 CPI Fonts	221	**Prestige 15**
	223	**Courier 15**
	225	**Math Symbol 15**
	229	**Serif Text 15**
	230	**Gothic Text 15**
Pitch 17 CPI Fonts	252	**Courier 17**
	253	**Courier Bold 17**
	254	**Courier 17 (sub/super)**
Pitch 18 CPI Fonts	258	**Courier 18**
Pitch 20 CPI Fonts	281	**Gothic Text 20**
Pitch 25 CPI Fonts	289	**Gothic Text 25**
Pitch 26.7 CPI Fonts	290	**Gothic Text 27**

	FGID	IBM Font Name
Proportional PSM Fonts	155	**Boldface Italic**
	158	**Modern**
	159	**Boldface**
	160	**Essay**
	162	**Essay Italic**
	163	**Essay Bold**
	173	**Essay Light**
	175	**Document**
Proportional Typographic Fonts (Fixed Point Size)	751	**Sonoran-Serif 8-pt Roman Medium**
	1051	**Sonoran-Serif 10-pt Roman Medium**
	1053	**Sonoran-Serif 10-pt Roman Bold**
	1056	**Sonoran-Serif 10-pt Roman Italic Medium**
	1351	**Sonoran-Serif 12-pt Roman Medium**
	1653	**Sonoran-Serif 16-pt Roman Bold**
	2103	**Sonoran-Serif 24-pt Roman Bold**

	FGID	IBM Font Name
Proportional Typographic Fonts (Scalable - User Defined FGIDs)	3840	**CG Times**
	3841	**CG Times Bold**
	3842	**CG Times Italic**
	3843	**CG Times Bold Italic**
	3844	**CG Omega**
	3845	**CG Omega Bold**
	3846	**CG Omega Italic**
	3847	**CG Omega Bold Italic**
	3848	**Coronet**
	3849	**Clarendon Condensed**
	3850	**Univers Medium**
	3851	**Univers Bold**
	3852	**Univers Medium Italic**
	3853	**Univers Bold Italic**
	3854	**Univers Medium Condensed**
	3855	**Univers Bold Condensed**
	3856	**Univers Medium Condensed Italic**
	3857	**Univers Bold Condensed Italic**
	3858	**Antique Olive**
	3859	**Antique Olive Bold**
	3860	**Antique Olive Italic**
	3861	**Garamond Antiqua**
	3862	**Garamond Halbfett**

Proportional Typographic Fonts (Scalable - User Defined FGIDs)	3863	**Garamond Kursiv**
	3864	**Garamond Kursiv Halbfett**
	3865	**Marigold**
	3866	**Albertus Medium**
	3867	**Albertus Extra Bold**
	3868	**Arial**
	3869	**Arial Bold**
	3870	**Arial Italic**
	3871	**Arial Bold Italic**
	3872	**Times New**
	3873	**Times New Bold**
	3874	**Times New Italic**
	3875	**Times New Bold Italic**
	3876	**Symbol**
	3877	**Wingdings**

	FGID	IBM Font Name
Proportional Typographic Fonts (Scalable Point Size)	5687	**Times Roman**
	5707	**Times Roman Bold**
	5815	**Times Roman Italic**
	5835	**Times Roman Bold Italic**
	6199	**Palatino**
	6219	**Palatino Bold**
	6327	**Palatino Italic**
	6347	**Palatino Bold Italic**
(cont.) Proportional Typographic Fonts (Scalable Point Size)	16951	**Century Schoolbook**
	16971	**Century Schoolbook Bold**
	17079	**Century Schoolbook Italic**
	17099	**Century Schoolbook Bold Italic**
	33335	**Optima**
	33355	**Optima Bold**
	33463	**Optima Italic**
	33483	**Optima Bold Italic**
	33591	**Futura Book**
	33601	**Futura Heavy**
	33719	**Futura Book Italic**
	33729	**Futura Heavy Italic**
	34103	**Helvetica**
	34123	**Helvetica Bold**
	34231	**Helvetica Italic**
	34251	**Helvetica Bold Italic**
	41783	**Cursive**
	41803	**Cursive Bold**
	41911	**Cursive Italic**
	41931	**Cursive Bold Italic**

Section 18 IBM Print Formatting

This appendix provides general parameter information relating to non-IPDS IBM print formatting.

IBM Printer Emulation

The following tables display the valid printer emulations that can be used in coax and twinax printer emulations.

Coax Printer Emulations Mainframe

Parameter	Default	Printer Emulation Options	Printer Description
PREMUL	3816_cx	3812_cx	IBM 3812 model 2 non-IPDS, page printer
		*3816_cx	IBM 3816 models 01A and 01D non-IPDS, page printer with 5219 diskette
		3287_cx	IBM 3287 model 2C, matrix printer
		3268_cx	IBM 3268 model 2C, matrix printer
		3262_cx	IBM 3262 models 3 and 13, matrix printer
		4214_cx	IBM 4214 model 1 matrix printer
		4224_cx	IBM 4224 model 2 non-IPDS, matrix printer
		4230_cx	IBM 4230 model 201 matrix printer

Twinax Printer Emulations AS/400

Parameter Name	Default	Printer Emulation Options	Printer Description
PREMUL	3816_cx	3812_tx	IBM 3812 model 1 and 2 page printer
		3816_tx	IBM 3816 models 01S and 01D, page printer with 5219 diskette
		4214_tx	IBM 4214 model 2 matrix printer
		5224_tx	IBM 5224 models 1 and 2, matrix printer
		5225_tx	IBM 5225 models 1 through 4, matrix printer
		5256_tx	IBM 5256 models 1 through 3, matrix printer
		4230_tx	IBM 4230 model 101 matrix printer
		5x27_002_TX_KS	5x27 002 Twinax printer: Korean (KS)
		5x27_002_ TX_KSSM	5x27 002 Twinax printer: Korean (KSSM)
		5x27_001_ TX	5x27 001 Twinax printer: Japanese
		5x27_005_TX	5x27 005 Twinax printer: Chinese

System Languages

The following tables describe the valid system languages that can be used in coax and twinax mode.

Coax mode
Mainframe

Parameter Name	Default	Value	Description	Value	User defined system language
SYSL	37 US English	*37	**US English, Portuguese Alternate and Canadian Bilingual**	833	**Korean (Jamo)**
		256	**International Set 1**	836	**Chinese**
		260	**Canadian French**	838	**Thai**
		273	**Austrian/German**	870	**East Europe**
		274	**Belgian**	871	**Icelandic**
		275	**Brazilian**	875	**Greek (GKB)**
		277	**Danish/Norwegian**	892	**OCR-A**
		278	**Swedish/Finnish**	893	**OCR-B**
		280	**Italian**	1026	**Turkish (Primary)**
		281	**Japanese English**	1140	**US English (Euro)**
		282	**Portuguese**	1141	**Austrian German (Euro)**
		284	**Spanish**	1142	**Danish/Norwegian (Euro)**
		285	**UK English**	1143	**Swedish/Finnish (Euro)**
		286	**Austrian/German Alternate**	1144	**Italian (Euro)**
		287	**Danish/Norwegian Alternate**	1145	**Spanish (Euro)**
		288	**Swedish/Finnish Alternate**	1146	**UK English (Euro)**
		289	**Spanish Alternate**	1147	**French (Euro)**
		290	**Japanese**	1148	**International Set 5 (Euro)**
		293	**APL**	1149	**Icelandic**
		297	**French**	USER	**User defined**
		340	**OCR**		
		361	**International Typographic**		
		423	**Greek (GKB)**		
		500	**International set 5**		

Twinax mode
AS/400

Parameter Name	Default	Value	Description	Value	User defined system language
SYSL	37 US English	37	US English, Portuguese Alternate and Canadian Bilingual	281	Japanese English
		256	New Spanish Word Processing	282	Portuguese
		273	Austrian/German	284	Spanish and Spanish Speaking
		274	Belgian	285	UK English
		275	Brazilian	297	French Azerty
		277	Danish/Norwegian	500	Internat. Set 5 & Swiss Bilingual
		278	Swedish/Finnish	871	Icelandic
		280	Italian	USER	

Notes:

- For other languages the USER language can be used and edited.
- To find out which system language you are running type:
  `DSPSYSVAL SYSVAL(QCHRID)` on the command line and press **Enter**. The **Code page** value is the value of the system language (see the table above).
- Visit the Axis Web site http://www.axis.com/ for more information on how to edit the character translation tables

Page Formats

You can configure the formats for each paper bin separately from the Axis Network Print Server internal Web pages.

Click **Admin** | **IBM Emulators** | **Detailed View** for SCS/3270DS Common Emulator Settings. Select the **Page Format** tab to configure the parameters described below. Click **OK** at the bottom of the page to save your settings to the print server.

Paper Size

The parameters take two values, orientation and paper size. The following tables describe the paper sizes that can be used in coax and twinax mode.

Parameters	Default	Printer Emulation Options	Printer Description
BIN1 - BIN 6, MANUAL, ENVELOPE, CONTINUOUS	LETTER	EXEC	7.25 × 10.5 inches
		LETTER	8.5 × 11 inches
		LEGAL	8.5 × 14 inches
		A4	210 × 297 mm (8.27 ◊ 11.69 inches)
		A3	297 × 420 mm (11.69 ◊ 16.54 inches)
		B4	250 × 353 mm (10.12 ◊ 14.33 inches)
		MON	3.8 × 7.5 inches (Monarch envelopes)
		C10	4.1 × 9.4 inches (COM-10 envelopes)
		DL	4.3 × 8.6 inches (DL envelopes)
		CUSTOM	User defined size (see AXIS Network Print Server Technical Reference for details)

Paper Orientation

The following table describes the valid paper options:

Parameters	Default	Printer Emulation Options	Printer Description
BIN1 - BIN 6, MANUAL, ENVELOPE, CONTINUOUS	COR	**COR**	**Computer Output Reduction (COR) is enabled.**
		PORT	**Use portrait as default print orientation.**
		LAND	**Use landscape as default print orientation**

Notes:

COR printouts require a Laser Printer with the following characteristics:

- Landscape orientation
- Vertically compressed to 70%
- Horizontally compressed by using a font of higher character density
- Top and left margins of 0.5 inches each by default

ASCII Printer Driver

This parameter should match the printer type you have connected to your Axis Network Print Server. Select the correct printer type from the Axis Network Print Server internal Web pages.

Click **Admin** | **IBM Emulators** | **Detailed View** for SCS/IPDS Emulator Configuration. Select the desired emulator tab and scroll down to the Printer Driver parameter. Click **OK** at the bottom of the page to save your settings to the print server.

The table below describes the available printer emulation options:

Parameter	Default	Printer Emulation Options	Printer Description
PRDRIVER	PCL5	**GENERIC**	**Generic Printer Driver**
		PCL5	**PCL5 printer**
		PCL4	**PCL4 printer**
		IBM_PRO	**IBM Proprinter**
		EPSON_FX	**Epson FX**
		EPSON_LQ	**Epson LQ**
		USER	**Editable Printer Driver**
		Epson 15	**Epson FX 15 CPI**

Notes:

If you wish to edit the control sequences within a printer driver, the USER driver must be selected. See AXIS Technical Reference on www.axis.com

Section 19 IPDS Overview

This section describes:

- IPDS parameter settings
- IPDS fonts

IPDS Parameter Settings

Before printing IPDS data streams, the basic parameters should be set. This is done from the Axis Network Print Server Web pages under **IBM Emulators** | **Detailed View** (IBM IPDS Emulator Settings) where you can configure the common parameters of the IPDS emulator and **IBM Emulators** | **Detailed View** (SCS/IPDS Emulator Configurations) where you can configure the settings for each session.

IPDS System Languages

The Axis Network Print Server must be set up for the System Language of your IBM system configuration in order to obtain the correct characters in each specific language. This is done from the **IBM Emulators** | **Detailed View** (SCS/IPDS Emulator Configurations) page.

The default selection is US English (Code Page 37).

The following table describes the valid IPDS system languages:

Code page	System language
***37**	**US English, Portuguese Alternate and Canadian Bilingual**
256	**International set 1**
259	**Symbols set 7**
260	**Canadian French**
273	**Austrian/German**
274	**Belgian**
275	**Brazilian**
277	**Danish/Norwegian**
278	**Swedish/Finnish**
280	**Italian**
281	**Japanese English**
282	**Portuguese**
284	**Spanish and Spanish Speaking**
285	**UK English**
286	**Austrian/German Alternate**
287	**Danish/Norwegian Alternate**
288	**Swedish/Finnish Alternate**

Code page	System language
289	Spanish Alternate
290	Japanese-Katakana
293	APL
297	French Azerty
361	International Typographic
420	Arabic Bilingual
423	Greek (GKB)
424	Hebrew
437	Multinational
500	Internationa, Set 5 & Swiss Bilingual
803	Hebrew Character Set A
838	Thai
870	Latin 2 Multilingual
871	Icelandic
875	Greek (GNB)
880	Cyrillic Multilingual
892	OCR-A
893	OCR-B
1026	Latin 5

The Euro character is implemented in the Code Pages 1140 - 1149:

Code page	System language - Latin 1 EBCDIC Publishing
1140	US English, Canadian English, Canadian French, Netherlands, Brazil, Portugal
1141	Austrian, German
1142	Danish, Norwegian
1143	Finnish, Swedish
1144	Italian
1145	Castilian Spanish, Latin, American Spanish
1146	UK English
1147	French
1148	Multinational ECECP, Belgian, French, Belgian Dutch, Switzerland
1149	Icelandic

Code page	System language - Latin 1 ASCII
858	Multinational PC with Euro
860	Portuguese (Primary = 850)
861	Icelandic (Primary = 850)
863	Canadian French (Primary = 850)
865	Nordic (Primary = 850)
1004	IBM PC Desktop Publishing
819	ISO Latin 1
1252	Windows Latin 1

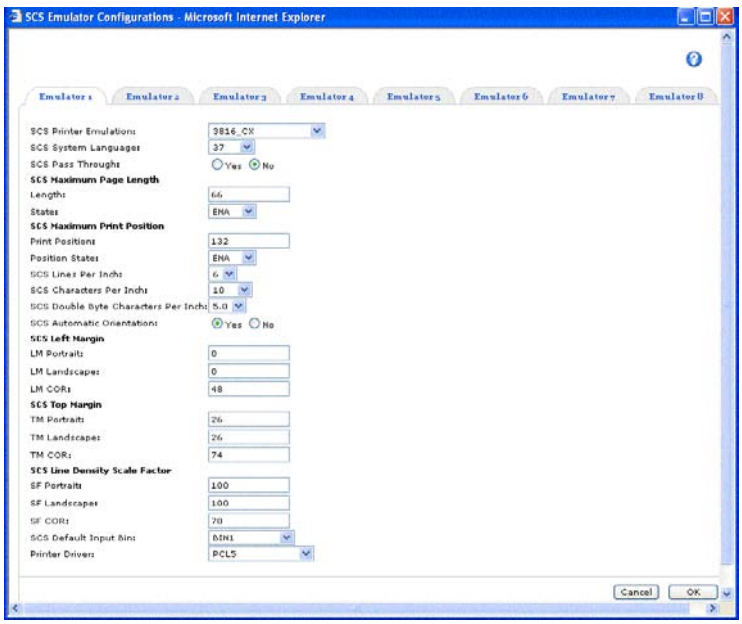
Code page	System language - Latin 2/3/4/5 EBCDIC and ASCII
852	Croatian, Czech, East German, Hungarian, Polish, Romanian, Slovak, Slovenian
912	Latin 2 ISO/ ANSI 8 Bit
853	Latin 3 Multilingual PC

905	Latin 3 Multilingual
1069	Latin 4 EBCDIC
914	Latin 4 ISO/ASCII
857	Latin 5 PC
920	Latin 5 ISO/ANSI 8 Bit
1026	Latin 5

Code page	System language - Latin 9 EBCDIC and ASCII
923	Latin 9
924	Latin 9 EBCDIC

IPDS Configuration

The basic IPDS parameters are set from the **IBM Emulators | Detailed View** (IBM IPDS Emulator Settings) page:



Enter the configuration settings for the parameters described below. When you are finished, click **OK** at the bottom of the page to save your settings to the print server.

True Color Support

The Color Support setting determines how color information is to be interpreted. **Enabled** means that color commands are sent to the printer. **Disabled** means that color information is converted to black-and-white patterns.

The default setting is **Disabled**.

Duplex Support

The Duplex Support setting determines whether duplex support for the attached printer shall be reported to the host. Enabled means that duplex commands are transferred to the printer. Disabled means that duplex printing is not supported. The default setting is **Disabled**.

Optimize Duplex

Use this option to optimize duplex print jobs. Optimization means that sheets are printed in simplex if the reverse side of the sheet is empty, resulting in higher throughput.

Important:

> Some printers will internally turn the sheet upside down when duplex is used. This may cause undesired effects when using pre-printed forms. Setting this parameter to **No** will force the entire job to be printed in duplex mode

N-up

The N-up parameter defines if 1, 2 or 4 pages in your document are to be printed on each physical page.

Default output bin

This selection defines which output paper bin should be used as default. The default selection is **Bin 1**.

Default input bin

This selection defines which input paper bin should be used as default. The default selection is **Bin 1**.

IPDS bin 1-5

The physical paper size selection must match the actual paper size you are using for Bin 1-5. The predefined sizes are *Statement*, *Ledger*, *Folio*, *Hagaki*, *Executive, Letter*, *Legal*, *A4* and *A3*. The default size is A4.

If you are using another paper format, select *Custom*. This selection requires that you define the paper size by setting the parameters **Physical Paper Width** and **Physical Paper Length** to the appropriate values.

IPDS PostScript Configuration

Click the **IPDS PostScript Driver Settings** tab and enter the configuration settings for the parameters as described below. When you are finished, click **OK** at the bottom of the page to save your settings to the print sever.

Loaded Font Smoothing

A downloaded 240 dpi font may appear jagged when printed on a 300 dpi printer. The Axis Network Print Server uses a font smoothing feature to enhance the appearance of these fonts. The font smoothing may be disabled if you want to speed up the font loading or if your printer has insufficient PostScript virtual memory.

Loaded font smoothing is **Enabled** by default.

Note:

> Font smoothing is optimized for printers with 300 dpi resolution. If your printer has a resolution of 600 dpi or higher, the smoothing effect will be less significant. In these cases we recommend that you disable the font smoothing to avoid reduction in the performance.

PostScript Error Handler

Use this parameter to download a PostScript Error Handler to the printer at power on. Once downloaded, the Error Handler will print an error message if a PostScript error occurs. The Error Handler is **Disabled** by default.

Optimize Overlays — Enabling this parameter will activate an overlay optimization feature resulting in faster throughput when using host downloaded overlays. Enabling this feature will require more free Postscript Virtual Memory in the printer.

Virtual Memory kB — This value defines how much memory the Axis Network Print Server can use in the PostScript printer for storing resources.

The default value is 2000 kbytes.

PostScript bin 1-5 — Map each PostScript bin (1-5) to a bin number or choose **Default**. Enter the desired values in the **Horizontal scale factor**, **Vertical scale factor**, **Horizontal offset** and **Vertical offset** fields.

PostScript output bin settings — These parameters are for mapping the IPDS bin numbers to the bin numbers of the connected postscript printer.

IPDS PCL Configuration — Click the **IPDS PCL Driver Settings** tab and enter the configuration settings for the parameters as described below. When you are finished, click **OK** at the bottom of the page to save your settings to the print sever.

Language version — Select the correct PCL language version depending on your connected printer.

Symbol set — Select the preferred symbol set from the drop-down list. The default and recommended value is **AUTOMATIC**. The print server will automatically select the appropriate symbol set.

PCL bin 1-5 — Define the positioning by setting the parameters **Horizontal Offset** and **Vertical Offset** to the desired values.

PCL Output Bin — These parameters are for mapping the IPDS bin numbers to the bin numbers of the connected PCL printer.

IPDS Fonts

This section describes how IPDS fonts are handled by the Axis Network Print Server. There are two different approaches to font handling:

- downloading fonts from the host.
- using fonts that are already resident in the printer.

Both methods are supported by the Axis Network Print Server.

Host Downloaded fonts — IPDS provides functions for downloading fonts from the host computer. The font resolutions of 240, 300 and 600 dpi are automatically converted by Axis Network Print Server to the resolution of the attached printer.

AS/400 downloaded fonts requires [AFP = *YES] in the AS/400 device description.

Printer Resident Fonts

The rest of this section deals with printer resident fonts. The non-standard PostScript fonts are resident in the Axis Network Print Server (OCR-B is one example), so you do not need font cards etc. to use the listed fonts.

In IPDS mode, printer resident fonts can be selected by the system referring to the FGID (Font Global IDentifier) and FW (Font Width). Axis Network Print Server supports a large set of resident fonts.

Note:

(IBM Mainframe only) For PSF systems, resident fonts need to be mapped to the host font name and code page. In PSF/MVS, this is done using the APSRMARK utility and in PSF/VM using the APRFTBLV (RSCS) or APRFTIDB files. For more information, refer to the PSF/MVS and PSF/VM manuals.

The FGIDs are grouped according to the following table:

FGID (hex)	FGID (dec)	TYPE
0001 - 0041	1 -65	10 CPI
0042 - 0099	66 - 153	12 CPI
009A - 00C8	154 - 200	Proportional PSM
00C9 - 00D2	201 - 210	13 CPI
00D3 - 00EF	208 - 239	15 CPI
00F0 - 00F7	240 - 247	5 CPI
00F8 - 0103	248 - 259	17 CPI
0104 - 0111	260 - 273	8 CPI
0112 - 0117	274 - 279	17 CPI
0118 - 011B	280 - 283	20 CPI
011C - 0120	284 - 288	25 CPI
0121 - 012B	289 - 299	27 CPI
012C - 01FF	300 - 511	10 CPI

FGID (hex)	FGID (dec)	TYPE
0200 - 0EFF	512 - 3839	Typographic
0F00 - 0FFF	3840 - 4095	User Defined Fonts
1000 - FFFE	4096 - 65534	Typographic

The Axis Network Print Server supports extended font mapping at PostScript level, making it possible to redefine any of the FGIDs.

Immediate Font Substitutions

Certain FGIDs will be immediately substituted by the Axis Network Print Server. The substitution table depends on the selected IBM printer emulation.

Unsupported Fonts

A selection of an unsupported FGID value will result in a substitution to a default font. The Axis Network Print Server uses the same default fonts as the emulated IBM printers.

Typographical Fonts

This section deals with font width selections for typographical (proportional pitch) fonts.

Note that when an unsupported typographical font (FGID range 512 - 65534) is selected, the resulting font will be a fixed pitch and the selected font width value will be ignored.

Default Font Width When the default font width is selected, the Axis Network Print Server will set a font width in one of the following ways depending on the selected IBM printer emulation:

IBM 4028/4332 The font width is set to 67 (corresponding to a 10 point font).

IBM 3812/3816 The font width is set to the smallest available value for the selected FGID. For FGID 16951 (Century Schoolbook), the resulting font width is 102 (12 points), and for FGID 5687 (Times Roman), the resulting font width is 40 (6 points).

Scalable Fonts If the selected font width (point size) is not available for the selected FGID, the Axis Network Print Server will set a point size in one of the following ways depending on the font:

Times Roman, Helvetica and Century Schoolbook The font width value is converted to a point size used to dynamically scale the selected font. This means that you have a completely free choice of point sizes (only limited by the host application) when printing with these fonts.

Any other typographical font The nearest smaller available font width for the selected FGID will be used. If a smaller font width is not available, the nearest larger font width will be used.

Section 20 DBCS Support

The Axis Network Print Server supports Double-Byte Character Set (DBCS) for SNA and TN5250E printing. This facilitates printing from an IBM AS/400 host system for languages employing double-byte character sets.

The following Chinese, Japanese and Korean DBCS tables are used in the Axis Network Print Server:

Country	Printer Emulation	Character Table
Korea (KS)	5x27_002_TX_KS	KS
Korea (KSSM)	5x27_002_TX_KSSM	KSSM
Japan	5x27_001_TX	Shift - JIS
China	5x27_005_TX	GB

Axis Network Print Server Double-byte Character Tables

Important! The Axis Network Print Server supports SNA DBCS printing in IBM 5494 emulation only.

Configuring the AS/400 Host, 5494 CU mode

Follow the instructions below to configure the AS/400 Host for DBCS support:

1. Type **`WRKSYSVAL`** on the AS/400 command line and press **Enter**.
2. Check that the DBCS version installed indicator (QIGC) *sysval* is set to 1 (on).
3. Check that the QIGCCDEFNT *sysval* is set to a DBCS font installed in the system.
4. Proceed with the steps detailed in *The AS/400 Host System Checklist*, on page 23.

Configuring the Axis Network Print Server

A number of printer emulations exist for DBCS printing. To set the correct system language and printer driver, refer to the tables below and enter the values in the IBM Configuration Wizard.

Country	Printer Emulation	System Language
Korea (KS)	5x27_002_TX_KS	833
Korea (KSSM)	5x27_002_TX_KSSM	833
Japan	5x27_001_TX	290
China	5x27_005_TX	836

Printer Emulation and System Language for Country options

Country	PCL Printer Driver	Matrix Printer Driver
Korea (KS)	PCL5	Epson LQ KS
Korea (KSSM)		None
Japan		None
China		Epson LQ 1600K
Taiwan		Epson LQ 1600K

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the Axis Network Print Server in the location field and press the **Enter** key on your keyboard. The internal Web pages of the Axis Network Print Server will appear.

Important:

To protect the **admin** pages and the **Configuration Wizard** from unauthorized use, enter a password (default Pass) in the **Root Password** field under **Admin** | **General Settings**.

3. Click the **Configuration Wizard for IBM sessions** button.
4. Click the **Add Session** button. This will start the **Configuration Wizard** which is a step-by-step guide through the required IBM configuration settings.

Note:

Default fonts will be changed when switching printer emulations.

Verifying the Communications Link

Having configured the AS/400 host Axis Network Print Server in accordance with the above, verify that the communications link is functioning correctly by following instructions 1-4 detailed in *Verifying the Communication Link,* on page 29.

Amending Device Features

After automatic setup, it may be necessary to change the Device features and Last Code Point of the printer device. Failure to do so may cause corruption within your print data.

Follow the instructions below, to set the appropriate Device features and Last Code Point for your chosen printer device:

1. Make sure that the writer is stopped by typing **ENDWTR xxxxPRT01** on the AS/400 command line, where ***xxxxPRT01*** is the printer device name. Press ENTER.
2. Type **VRYCFG CFGOBJ(xxxxPRT01) CFGTYPE(*DEV) STATUS(*OFF)** to vary off the printer device, where ***xxxxPRT01*** is the printer device name. Press ENTER.
3. Type **CHGDEVPRT xxxxPRT01** to change the printer device name, where ***xxxxPRT01*** is the printer device name. Press F4.
4. Under DBCS Feature (IGCFEAT) amend the Device Features and Last Code Point to the appropriate value corresponding to the country language.

Country	Device features	Last Code Point
Korea	2424K1	D3FE
Japan	2424J1	68FE
China	2424S1	6FFE

Device features and Last Code Point for Country options

5. Type **VRYCFG CFGOBJ(xxxxPRT01) CFGTYPE(*DEV) STATUS(*ON)** on the AS/400 command line to vary on the printer device, where ***xxxxPRT01*** is the printer device name. Press ENTER.
6. Type **STRPRTWTR xxxxPRT01** to start the Writer, where ***xxxxPRT01*** is the printer device name. Press ENTER.
7. Direct a printout to this printer device to confirm that the above changes have been implemented correctly.

Extended IBM Printer Emulation

Extended emulation will only work in SBCS mode. Before entering extended emulation you will have to change to single byte mode by sending shift in.

```
<SI>(SCS Shift In Control Code)
%CONFIG+
SAVE;
%CONFIG-
<SO>(SCS Shift Out Control Code)
```

Example (with DBCS mode before entering extended emulation)

Font Tables

The following tables define the DBCS font types supported in the Axis Network Print Server (5494 CU Mode):

DBCS FONTS (Japan)			DBCS FONTS (China)		
FGID	IBM Font Name		FGID	IBM Font Name	
50000	**MS Mincho**	**10 CPI**	50100	**SimSun**	**10 CPI**
50001	**MS Mincho**	**10 CPI**	50101	**SimSun**	**10 CPI**
50014	**MS Mincho**	**10 CPI**	50114	**SimSun**	**10 CPI**
50002	**MS Mincho**	**12 CPI**	50102	**SimSun**	**12 CPI**
50015	**MS Mincho**	**12 CPI**	50115	**SimSun**	**12 CPI**
50003	**MS Mincho**	**13.3 CPI**	50103	**SimSun**	**13.3 CPI**
50016	**MS Mincho**	**13.3 CPI**	50116	**SimSun**	**13.3 CPI**
50007	**MS Mincho**	**14.3 CPI**	50107	**SimSun**	**14.3 CPI**
50008	**MS Mincho**	**14.3 CPI**	50108	**SimSun**	**14.3 CPI**
50019	**MS Mincho**	**14.3 CPI**	50119	**SimSun**	**14.3 CPI**
50004	**MS Mincho**	**15 CPI**	50104	**SimSun**	**15 CPI**
50005	**MS Mincho**	**15 CPI**	50105	**SimSun**	**15 CPI**
50017	**MS Mincho**	**15 CPI**	50117	**SimSun**	**15 CPI**
50009	**MS Mincho**	**17.1 CPI**	50109	**SimSun**	**17.1 CPI**
50020	**MS Mincho**	**17.1 CPI**	50120	**SimSun**	**17.1 CPI**
50006	**MS Mincho**	**18 CPI**	50106	**SimSun**	**18 CPI**
50018	**MS Mincho**	**18 CPI**	50118	**SimSun**	**18 CPI**
50010	**MS Mincho**	**18.9 CPI**	50110	**SimSun**	**18.9 CPI**
50021	**MS Mincho**	**18.9 CPI**	50121	**SimSun**	**18.9 CPI**
500111	**MS Mincho**	**21.5 CPI**	50111	**SimSun**	**21.5 CPI**
50012	**MS Mincho**	**21.5 CPI**	50112	**SimSun**	**21.5 CPI**
50022	**MS Mincho**	**21.5 CPI**	50122	**SimSun**	**21.5 CPI**
50013	**MS Mincho**	**25.7 CPI**	50113	**SimSun**	**25.7 CPI**
50023	**MS Mincho**	**25.7 CPI**	50123	**SimSun**	**25.7 CPI**

DBCS FONTS (Korea KS)			DBCS FONTS (Korea KSSM)		
FGID	IBM Font Name		FGID	IBM Font Name	
50030	**HanYang**	**10 CPI**	50130	**Compst**	**10 CPI**
50031	**HanYang**	**10 CPI**	50131	**Compst**	**10 CPI**
50044	**HanYang**	**10 CPI**	50144	**Compst**	**10 CPI**
50032	**HanYang**	**12 CPI**	50132	**Compst**	**12 CPI**
50045	**HanYang**	**12 CPI**	50145	**Compst**	**12 CPI**
50033	**HanYang**	**13.3 CPI**	50133	**Compst**	**13.3 CPI**
50046	**HanYang**	**13.3 CPI**	50146	**Compst**	**13.3 CPI**
50037	**HanYang**	**14.3 CPI**	50137	**Compst**	**14.3 CPI**
50038	**HanYang**	**14.3 CPI**	50138	**Compst**	**14.3 CPI**
50049	**HanYang**	**14.3 CPI**	50149	**Compst**	**14.3 CPI**
50034	**HanYang**	**15 CPI**	50134	**Compst**	**15 CPI**
50035	**HanYang**	**15 CPI**	50135	**Compst**	**15 CPI**
50047	**HanYang**	**15 CPI**	50147	**Compst**	**15 CPI**
50039	**HanYang**	**17.1 CPI**	50139	**Compst**	**17.1 CPI**
50050	**HanYang**	**17.1 CPI**	50150	**Compst**	**17.1 CPI**
50036	**HanYang**	**18 CPI**	50136	**Compst**	**18 CPI**
50048	**HanYang**	**18 CPI**	50148	**Compst**	**18 CPI**
50040	**HanYang**	**18.9 CPI**	50140	**Compst**	**18.9 CPI**
50051	**HanYang**	**18.9 CPI**	50151	**Compst**	**18.9 CPI**
50041	**HanYang**	**21.5 CPI**	50141	**Compst**	**21.5 CPI**
50042	**HanYang**	**21.5 CPI**	50142	**Compst**	**21.5 CPI**
50052	**HanYang**	**21.5 CPI**	50152	**Compst**	**21.5 CPI**
50043	**HanYang**	**25.7 CPI**	50143	**Compst**	**25.7 CPI**
50053	**HanYang**	**25.7 CPI**	50153	**Compst**	**25.7 CPI**

Section 21 Digital Copier Support

The logical printers support the printing options available on digital copiers and multi-functional printers. It is recommended that you configure the eight logical printers (PR1-PR8) to allow for eight different combinations of the following options to suit your printing needs.

For more information on how to configure the logical printers, please refer to *"Logical Printers for Customized Printing"* on page 157.

The added functionality includes the following options:

Copier Model From the drop-down list of supported copiers, select the digital copier that is connected the Axis Network Print Server, or select

- NONE if you do not have a digital copier connected to the print server (default).
- **Custom_copier_driver** to use a custom copier driver (see below).

Copier Duplex The Axis Network Print Server supports duplex printing i.e. printing on both sides of the paper. The options in the drop-down list are:

- OFF - duplex printing is not activated (default).
- SIMPLEX - printing on one side only.
- LONG_EDGE_BINDING - printing on both sides, long-edge first.
- SHORT_EDGE_BINDING - printing on both sides, short-edge first.

Copier Staple The Axis Network Print Server supports stapling with the following options:

- OFF - turn off stapling (default).
- TOP_LEFT_SLANT - one staple in a slanted position in the top left corner of the document.
- TOP_LEFT_HORIZONTAL - one staple placed horizontally in the top left corner of the document.
- TOP_LEFT_VERTICAL - one staple placed vertically in the top left corner of the document.
- TOP_RIGHT - one staple in the top right corner of the document.
- BOTTOM_LEFT - one staple in the bottom left corner of the document.
- BOTTOM_RIGHT - one staple in the bottom right corner of the document.
- TOP_DOUBLE - two staples at the top of the document.
- LEFT_DOUBLE - two staples on the left hand side of the document.
- CENTER - two staples set in the center of the page. This option is intended for documents printed in A3 format. The staples are placed in the center of the page where the document is to be folded. Please refer to the documentation of your digital copier for more information on these features.

Copier Hole Punch

The Axis Network Print Server supports hole punching with the following options:

- **Off** - hole punching is not activated (default).
- **LONG_EDGE** - punch placed on long-edged side.
- **SHORT_EDGE** - punch placed on short-edged side.

Copier Fold

The Axis Network Print Server supports folding with the following options:

- **Off** - turn off folding (default).
- **HALF_FOLD** - use center folding.
- **Z_FOLD** - use a Z-fold.

Copier Paper Source

Enter the desired input bin i.e. paper tray on your digital copier. Default = Default.

Copier Copies

Enter how many collated (sorted) copies you wish to print. Default = 1.

Note:

- The options are all available in the drop-down lists under Model, Duplex, Staple, Punch, Fold, Paper Source and Copies. However, you must refer to the documentation of your specific Digital Copier to check that all the options are supported.

If you experience problems with this functionality the Digital Copier printing options may have been set inconsistently. Please check your configuration settings and try again.

Custom Copier Driver

To add a custom copier driver to the Axis Network Print Server, browse to its Web interface and click **Admin** | **This Print Server** | **Custom copier driver** | **Change**.

This section lets you specify a custom driver for a digital copier connected to the print server. Please consult the copier documentation for proper code sequencies.

If you do not want to write the entire driver from scratch, select a driver template and click **Load** to pre-fill all sequencies.

Custom Copier Driver Activation

The custom copier driver can then be activated via Logical printers.

Section 22 IP Addressing

IP Address and Subnet Mask

The print server must be correctly configured with the following information to function properly:

- an IP address
- a subnet mask
- a default gateway (or router)

IP Address

Each device on your network must have a unique IP address to operate correctly. An IP address identifies the address of the device to which data is being sent and the address of the destination network. IP addresses have the format n.n.n.x where n is a decimal number between 0 and 255 and x is a number between 1 and 254 inclusive.

Subnet Mask

In addition to the IP address, you need to set a subnet mask. All networks are divided into smaller sub-networks and a subnet mask is a number that enables a device to identify the sub-network to which it is connected. For your network to work correctly, all devices on the subnet must have:

- The same sub-network address
- The same subnet mask

The only value that will be different is the specific host device number. This value must always be unique. The size of the network determines the structure of the IP addresses in it.

Default Gateway

In a network using subnets, the **router** that forwards traffic to a destination outside of the subnet of the transmitting device. If there is a server or a router which functions as a gateway, enter the IP address of the server or the router.

IP Address and Subnet Mask Structures

Two of the most common types of IP address and subnet mask structures are described here:

Type One

In a small (Class C) network, the IP address example '192.168.3.191' is split into two parts:

- Part one ('192.168.3') identifies the network on which the device resides.
- Part two ('.191') identifies the device within the network.

This type of IP address generally operates on a subnet mask of '255.255.255.0'.

Type Two

In larger (Class B) networks, where there are more devices, the IP address of '162.168.3.191' is split into two parts but is structured differently:

- Part one ('162.168') identifies the network on which the device resides.
- Part two ('.3.191') identifies the device within the network.

This type of IP address operates on a subnet mask of '255.255.0.0'.

Default Gateway Examples

1. This example shows a network with:

- one computer
- one networked printer
- no router

Device	*IP address*	*Subnet Mask*	*Default Gateway*
print server	192.168.3.191	255.255.255.0	*
pc1	192.168.3.192	255.255.255.0	*

** When no router is present on the network, the default gateway can be left undefined.*

2. This example shows a network with:

- one computer
- one networked printer
- a router with IP value: 192.168.3.**1**

Device	*IP address*	*Subnet Mask*	*Default Gateway*
print server	192.168.3.191	255.255.255.0	192.168.3.**1**
pc1	192.168.3.192	255.255.255.0	192.168.3.**1**

Obtaining an IP Address and Subnet Mask

There are three different ways to obtain an IP address and subnet mask. These are:

- Dynamic Host Configuration Protocol (DHCP) Addressing
- Static Addressing
- Automatic Addressing (Auto-IP Addressing)

DHCP Addressing

If your network contains a DHCP server, print servers on your network will obtain an IP address and subnet mask automatically. DHCP assigns a temporary IP address and subnet mask which gets reallocated once you disconnect from the network. DHCP will work on any client Operating System such as Windows 95, 98 or NT. Also, using DHCP means that the same IP address and subnet mask will never be duplicated for devices on the network. DHCP is particularly useful for networks with large numbers of users on them.

Static Addressing

With this method you must enter an IP Address and the subnet mask manually on every device. Using a static IP and subnet mask means the address is permanently fixed.

Auto-IP Addressing

Network devices use automatic IP addressing if they are configured to acquire an address using DHCP but are unable to contact a DHCP server. Automatic IP addressing is a scheme where devices allocate themselves an IP address at random from the industry standard subnet of 169.254.x.x (with a subnet mask of 255.255.0.0). If two devices allocate themselves the same address, the conflict is detected and one of the devices allocates itself a new address.

Registering and Resolving Host Names

In order to register the host name of the print server in networks with dynamic IP address settings, WINS (Windows Internet Name Service) and DDNS (Dynamic Domain Name System) are supported. It is recommended that at least one of these methods should be used if you are setting the IP address of the print server using DHCP.

The host name of the print server is specified by the PS_NAME. parameter. Refer to the *"The Parameter List"* on page 220.

WINS Host Name Rules

WINS only supports 15 character long host names. If your host name is longer than 15 characters, the print server truncates the host name to 15 characters when registering with a WINS server. You can view the print server's host name that is registered at a WINS server in the print server's Web interface. Refer to *"Using a Web Browser for Print Server Management"* on page 131.

DDNS Host Name Rules

DDNS supports 47 character long host names and can only consist of the characters 'A-Z', 'a-z', '0-9' and '-'. If your host name consists of any other characters, they are converted to '-' when registering with a DDNS server. You can view which host name that is registered at a DDNS server in the print server's Web interface. Refer to *"Using a Web Browser for Print Server Management"* on page 131.

If the host name matches another entry in the DDNS data base, the print server deletes that entry before registering.

Notes:

- The default host name of the print server is 'AXIS' followed by the last 6 digits in the serial number. e.g. AXIS181636. The host name (Print server name) can be changed in the PS_NAME. field on the **Admin** | **General Settings** page.
- The host name limitations conclude that if you want to register the same host name at a WINS server and a DDNS server, the host name should be no longer than 15 characters and it should only contain the characters 'A-Z', 'a-z', '0-9' and '-'.
- Refer to your system manuals or to your network administrator for instructions on how host name resolutions are performed on your system.

Setting the IP Address using DHCP

Follow the instructions below to download the IP address using DHCP:

1. Edit or create a scope in the DHCP manager of the DHCP daemon. The entries included in this scope should contain the following parameters:
   - range of IP addresses
   - subnet mask
   - default router IP address
   - WINS server IP address(es) or DDNS server IP address(es)
   - lease duration
2. Activate the scope. The print server automatically downloads the DHCP parameters. If you are using WINS or DNS, you should include at least one WINS or DNS server IP address in the DHCP scope. Immediately after the IP address has been received, the print server registers its host name and IP address on the WINS alternatively DNS server. Refer to *"Registering and Resolving Host Names"* on page 210 for more information. The print server can automatically download a customized *config* file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your DHCP scope. The *config* file is downloaded immediately after the print server receives its IP address.
3. You have now successfully set the IP address of your print server.

Note:

You have to restart the print server to download the IP address.

Section 23 The Test Button

The test button is located on the front right hand side of the AXIS 5570e and is used for:

- Printing a test page to check the connection to the printer.
- Printing a parameter list to see the print server's current settings.
- Performing a Factory Default of the print server.

If you want to change any of the parameters, use one of the methods described in *"Management and Configuration"* on page 131.

Printing a Test Page

Press the test button **once** to print a test page. The Test Page contains basic information about the AXIS 5570e. It is recommended that you print a test page every time you have connected the print server to a printer.

Printing the Server Report & Parameter List

Press the test button **twice** to print a server report and parameter list showing the current AXIS 5570e settings.

Server Report

The Server Report includes the settings of the Axis Network Print Server, information about your connected printers as well as the current network settings.

Parameter List

This list provides comprehensive details of all the parameters and their current status. Refer to *The Parameter List*, on page 220.

If you want to change any of the parameters, use one of the methods that are described in *Management and Configuration*, on page 131.

Performing a Factory Default

1. Remove the external power supply to switch off the print server.
2. Press and hold down the test button while you reconnect the external power supply.
3. Continue to hold down the test button until the network indicator remains constantly lit. This should take about 20 seconds.
4. Restart the print server by disconnecting and reconnecting the external power supply.

Important!

A Factory Default will reset all AXIS 5570e parameters and settings to their default values except:

- Installed certificate
- Private key

Section 24 Troubleshooting

This section provides useful information to help you resolve difficulties you might have with your AXIS 5570e. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

Please visit the Axis Web site for latest troubleshooting tips, more support and additional help through the FAQ database or to fill in and submit a Support question.

Overriding Port Status

Some USB printers do not deliver correct port status to the print server (for instance always reporting printer off-line even if the printer is on-line). To override this, see *"Overriding Port Status"* on page 171.

LED Indicators

Indicator	Color/Behavior	Explanation
Power	Green	OK
	Not lit	No power/Error
Network	Orange	OK - network connected
	Orange flashing	Activity on network
	Not lit	No physical connection to the network

Web Interface

Symptoms	Possible causes	Remedial actions
The AXIS 5570e Web interface cannot be accessed from a Web browser.	The AXIS 5570e is not connected properly.	1. Check Power and Network indicator. 2. Check that assignment of IP addresses for the AXIS 5570e is correct. 3. To further check the IP addresses, run the Ping command from another computer as described in "IP address check" at the end of this chapter. Follow the appropriate recommendations.
	Problem with your proxy server.	Verify the proxy server settings in your Web browser.
	Other networking problems.	1. Verify that your network is accessible through your network socket. 2. Verify that your network cable is functional.

IP Address Check with Ping

By sending a data packet to a specific IP address and waiting for a reply, Ping can determine whether that IP address is accessible. Ping can also help you to determine IP address conflicts with your AXIS 5570e and troubleshoot TCP/IP problems on the network. Follow the instructions below to diagnose your problem.

Windows:

Open a Command Prompt and enter the following commands:

Syntax	Example
ping <IP address>	ping 192.168.3.191

The host will return reply from 192.168.3.191, or a similar message. This indicates that the address has been set and that communication is established

UNIX/Linux and Mac OS X

Open a Terminal and enter the following commands:

Syntax	Example
ping <IP address>	ping 192.168.3.191

The host will return psname is alive, or a similar message. This indicates that the address has been set and that communication is established.

Replies:

Subsequent replies will provide an explanation of the cause of the problem. Replies from DOS can be interpreted as defined in the table below (for UNIX/Linux replies please refer to the UNIX/Linux chapter of this manual):

Ping Reply	Interpretation and recommendation	
	Axis Network Print Server connected	Axis Network Print Server disconnected
bytes = 32 time = 2 ms..... - or something similar	The AXIS 5570e is responding correctly. There are probably no conflicts with the IP address - disconnect the AXIS 5570e and ping again to verify.	The IP address is already in use and cannot be used again. You must obtain a new IP address for your AXIS 5570e.
destination host unreachable	The AXIS 5570e is not accessible. Check your network settings.	–
request timed out	The IP address is not in use. You are either pinging the wrong IP address or your AXIS 5570e does not have the correct IP address.	This IP address is not used by anyone and is available for use for your AXIS 5570e. Set the IP address again, power on the AXIS 5570e and then try accessing the unit.
no response from ping command	The AXIS 5570e is not accessible. Check your network settings.	–

SNMP Device Index

If you are using the TCP/IP protocol, check that the SNMP Device Index is correct. See *"SNMP Device Index"* on page 251.

Axis Support Server Report

In order to obtain optimal support from Axis support technicians, please follow these instructions when filling in and submitting a Support question.

1. Go to the print server's Web pages by typing the print server's IP address in the **Address/Location** field of your Web browser.
2. Go to **Admin** | **Support**. Click the **Server Report** link. A new window will open.
3. Save the Server report as an HTML file (with an .html file extension) and go to the Axis Web site.
4. Choose **Support** and report your case, attaching the Server Report.

Section 25 Technical Specification

Supported Printers

All printers and copiers except except host-based printers such as Windows GDI.

IBM Capabilities

IBM Mainframe (zSeries)

- OS: IBM S/370, S/390, 30xx, 43xx, 47xx, 937x, 81xx
- TCP/IP based protocols: TN3270E, PPR/PPD, LPR/LPD and RawTCP
- SNA support: LU1 and LU3 (node type 2.0) for IBM 3174 Control unit emulation
- Data streams: IPDS, SCS, 3270DS as well as PostScript, PCL and ASCII
- Emulated printers: 4332, 4028, 3812 model 2, 3816 model 01S and 01D, 4224, 4230, 3287, 3268, 4214 and 3262

IBM AS/400 (iSeries)

- OS: IBM OS/400
- TCP/IP based protocols: TN5250E, PPR/PPD, LPR/LPD and RawTCP.
- SNA support: LU6.2 (node type 2.1) for IBM 5494 Control unit emulation
- Data streams: IPDS, SCS as well as PostScript, PCL and ASCII
- Emulated printers: 4332, 4028, 3812, 3816, 4214-2, 5224, 5225, 5256, 4230, 5x27-2 KS, 5x27-3 KSSM, 5x27-3 and 5x27-5

Supported Systems

Microsoft Windows: 95, 98, Me, NT, 2000, XP, Vista and 2003 Server

Novell NetWare: 3.X, 4.X, 5.X, 6.X. Supports bindery and NDS mode. Supports user messages and printer status. NDPS supported over IP and IPX. Support for iPrint using both LPR and IPP protocols. PSERVER (IP/IPX), RPRINTER/NPRINTER supported

Apple: Mac OS 7, 8, 9, Mac OS X version 10.X

Unix/Linux: All Unix systems supporting TCP/IP (Linux, BSD, System V, Solaris, HP-UX, IBM AIX, Silicon Graphics IRIX, etc.)

Additional Systems: Other systems supporting TCP/IP:
IBM (MVS, VM, VSE, OS/400), DEC, VMS
Microsoft LAN Manager
IBM LAN Server
LANtastic

Supported Web browsers	Any standard Web browser (Netscape 6.x and higher and MS Internet Explorer 5.x and higher)
Supported Protocols	NetBIOS/NetBEUI
TCP/IP	ARP, DHCP, BOOTP, RARP, DNS, DDNS, Telnet, TFTP, FTP, LPR, Reverse Telnet, PROS, IPP, IP, TCP, UDP, HTTP, HTTPS, SSL/TLS, SNMP, SNMP v2c, v3, SLP v1/v2, ICMP, IGMP, Bonjour
NetWare	IPX, SPX, SAP, NCP (extended with NDS), NDPS, NLSP, LIP, RIP, RIP-II, OSPF
Apple EtherTalk	AAPR, ATP, DDP, NBP, PAP, RTMP, ZIP
Logical Printers	Logical printer ports can be programmed to perform auto ASCII to PostScript conversion, add string before and after job, string substitution, alternative output and character set conversion
Copiers	Each logical printer port can be configured to activate a number of finishing options in the digital copier. Please visit the support pages at www.axis.com for a list of supported copiers
Security	Password protected configuration SSL/TLS support for HTTPS secure management NetWare: Encrypted passwords, NetWare Packet Signature Level 1, 2, 3 Option to disable protocols
Print Server Management	AXIS ThinWizard for installation, configuration, monitoring and firmware upgrading of multiple units Bonjour support for quick and easy installation in Mac OS X evironments AXIS AddPrinter for easy and automated installation in Windows environments Internal Web pages or FTP for installation, configuration, monitoring and firmware upgrading SNMP-MIB II compliant (RFC 1213), Axis private enterprise MIB included Netware: Full PCONSOLE, NWAdmin, ConsoleOne and iPrint-iManager support
Firmware Upgrade	Firmware upgrade using AXIS ThinWizard, the print server's Web pages or FTP

Network Connection	All standard Ethernet and Fast Ethernet networks: RJ-45 connector (Category 5 or 6, shielded twisted pair cable) for 10baseT or 100baseTX Ethernet with full duplex
	Supports: IEEE802.2, IEEE802.3, SNAP and Ethernet II frame types simultaneously
	NWay for autodetection of network speed
Printer Connection	Bi-directional support for Apple EtherTalk, Reverse Telnet and PROS
AXIS 5570e	Parallel: 36-pin Centronics connector, high-speed IEEE 1284 compliant with ECP support and throughput of 1 MB/sec
	USB: USB 1.1 Low and Full speed. Successfully tested with USB 2.0 Printers
	Note: If the AXIS 5570e is powered from the printer via the parallel port (i.e. instead of via the Power Adapter), the USB port will be switched off. To make both ports work, use the Power Adapter supplied with the print server.
Hardware	
Processor	AXIS Etrax 100LX 32-bit 100 MHz RISC
Memory	2 MB Flash, 8 MB RAM
Front Panel	2 LED indicators: Power and Network
	Test button for information printouts
Power Consumption	Power provided by external supply. Maximum 5.6W (Type PS-H, 5.1 VDC 2000mA)

Dimensions

AXIS 5570e
Height: 2.9 cm/1.1 in,
Width: 6.2 cm/2.4 in,
Depth: 11.7 cm/4.6 in,
Weight: 0.081 kg/ 0.18lb

Environmental
Temperature: 40-105 °F (5-40 °C)
Humidity: 10-90% non-condensing

Approvals

EMC
-EN 55022/1998
-EN 55024:1998
-EN 61000-3-2
-EN 61000-3-3
-VCCI Class B
-C-TICK AS/NZS 3548
-Compliance to FCC part 15 Subpart B, Class B

Safety
EN 60950

Included Accessories
AXIS Network Product CD with software for installation, management and printing, including AXIS ThinWizard (the recommended Axis management software)

Installation Guide

Power adapter

All specifications are subject to change without prior notice.

Section 26 The Parameter List

These are the default parameters in a new, unconfigured print server. A complete list of all Axis print server parameters can be found on www.axis.com

AXIS 5570e

```
(AXIS 5570e Network Print Server V7.10 Nov  4 2006. S/N:
00408C181EC4)

Parameter settings:

--- General Menu
NODE_ADDR.   : 00 40 8C 18 1E C4
NETWORK_SPEED. : AUTO_SENSE  (AUTO_SENSE, 10_HALF_DX,
10_FULL_DX, 100_HALF_DX, 100_FULL_DX)
PS_NAME.     : AXIS181EC4
ROOT_PWD.    : pass
SWUP_KEY.    :
USERS.       :
BASE_URL.    : www.axis.com
CHARSET.     : ISO-8859-1  (ISO-8859-1, UTF-8)
AXIS_PRINT_SYSTEM. : YES
RCONFIG_ENB. : YES
HPPI.        : NO  (YES, NO)
DEF_OUT.     : PR1  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
SYS_LOC.     :
SYS_CONT.    :

--- SNA Menu
SNA_ENB.     : YES
DEVICE_EMUL. : 3174  (3174, 5494)
SNA_FR_TYPE. : FR_802_2  (FR_AUTO, FR_802_2, FR_DIX)
NODE_ID.     : E0 78 1E C4
NODE_SAP.    : $4
NWORK_NAME.  : APPN
LU_NAME.     : A4CE181C
H1_SAP.      : $4
H1_ADDR.     : FF FF FF FF FF FF
H1_NW_NAME.  : APPN
H1_MOD_NAME. : QRMTWSC
H1_LU_NAME.  : DEFAULT
SNA_LU1.     : NONE, 1
SNA_LU2.     : NONE, 2
SNA_LU3.     : NONE, 3
SNA_LU4.     : NONE, 4
SNA_LU5.     : NONE, 5
SNA_LU6.     : NONE, 6
SNA_LU7.     : NONE, 7
SNA_LU8.     : NONE, 8
AUTODIAL.    : NO
DIALTIME.    : 20
JOB_TIME.    : 10
IR_TIME.     : 0
SNA_HEXDUMP. : NONE  (NONE, PR1, PR2, PR3, PR4, PR5, PR6, PR7,
PR8)

--- LLC Menu
```

```
LLC_RESPONSE. : 1300
LLC_REC_ACK. : 20
LLC_INACTIVITY. : 15

--- TN3270E
TN3270E_IR.  : 0
TN3270E_COMP. : NO
TN3270E_1.   : OFF, 0 0 0 0, 23, PR1, 1, AXPR1
TN3270E_2.   : OFF, 0 0 0 0, 23, PR2, 2, AXPR2
TN3270E_3.   : OFF, 0 0 0 0, 23, PR3, 3, AXPR3
TN3270E_4.   : OFF, 0 0 0 0, 23, PR4, 4, AXPR4
TN3270E_5.   : OFF, 0 0 0 0, 23, PR5, 5, AXPR5
TN3270E_6.   : OFF, 0 0 0 0, 23, PR6, 6, AXPR6
TN3270E_7.   : OFF, 0 0 0 0, 23, PR7, 7, AXPR7
TN3270E_8.   : OFF, 0 0 0 0, 23, PR8, 8, AXPR8

--- TN5250E
TN5250E_KA.  : YES
TN5250E_1.   : OFF, 0 0 0 0, 23, PR1, 1, AXPR1, QSYSOPR, QSYS
TN5250E_2.   : OFF, 0 0 0 0, 23, PR2, 2, AXPR2, QSYSOPR, QSYS
TN5250E_3.   : OFF, 0 0 0 0, 23, PR3, 3, AXPR3, QSYSOPR, QSYS
TN5250E_4.   : OFF, 0 0 0 0, 23, PR4, 4, AXPR4, QSYSOPR, QSYS
TN5250E_5.   : OFF, 0 0 0 0, 23, PR5, 5, AXPR5, QSYSOPR, QSYS
TN5250E_6.   : OFF, 0 0 0 0, 23, PR6, 6, AXPR6, QSYSOPR, QSYS
TN5250E_7.   : OFF, 0 0 0 0, 23, PR7, 7, AXPR7, QSYSOPR, QSYS
TN5250E_8.   : OFF, 0 0 0 0, 23, PR8, 8, AXPR8, QSYSOPR, QSYS

--- TCP/IP Network Menu
INT_ADDR.    : 192 168 35 62
DEF_ROUT.    : 0 0 0 0
NET_MASK.    : 0 0 0 0
HTTPS_ENB.   : NO
DHCP_ENB.    : YES
AUTOIP_ENB.  : YES
BOOTP_ENB.   : YES
RARP_ENB.    : YES
WINS_ENB.    : YES
WINS_ADDR1.  : 0 0 0 0
WINS_ADDR2.  : 0 0 0 0
NBT_SCOPE_ID. :
DNS_ENB.     : YES
DNS_ADDR1.   : 0 0 0 0
DNS_ADDR2.   : 0 0 0 0
DOMAIN_NAME. :
SLP_ENB.     : YES
SLP_SCOPE_LIST. : DEFAULT
BONJOUR_ENB. : YES
BONJOUR_SRVNAME_LPT1. :
BONJOUR_SRVNAME_USB1. :
SMTP_SERVER. :
FTP_ENB.     : YES
TELNET_ENB.  : YES
DEF_IP_FRAME_TYPE. : EthernetII  (EthernetII, SNAP)

--- TCP/IP Printing Menu
TCP_ENB.     : YES
PAR_TCP_RESTRICT_LIST. :
PROS_PWD.    : netprinter
PROS_PRT.    : 35
LPD_BANN.    : OFF  (OFF, AUTO, LAST)
DEFAULT_RAW_TCP. : 9100-9101  (9100-9101, CLOSED)
```

```
RTN_OPT.     : NO
PPR_PRSTAT.  : NO
RTN_PR1.     : 5001, IPDS, 1
RTN_PR2.     : 0, ASCII, 2
RTN_PR3.     : 0, ASCII, 3
RTN_PR4.     : 5011, SCS, 4
RTN_PR5.     : 5012, SCS, 5
RTN_PR6.     : 5013, SCS, 6
RTN_PR7.     : 0, ASCII, 7
RTN_PR8.     : 0, ASCII, 8

--- SNMP Menu
SNMP_V1_ENB. : YES
SNMP_V2_ENB. : YES
READ_COM.    : public
WRT_COM.     : pass
TRAPADDR.    : 0 0 0 0
TRAP_COM.    : public
SYS_NAME.    :
SNMP_AUT.    : DISABLE  (DISABLE, ENABLE)
TRAP_PRT.    : DISABLE  (DISABLE, ENABLE)

--- SNMPv3 Menu
SNMP_V3_ENB. : NO

--- NetWare Menu
NETW_ENB.    : YES
NETW_TRANSPORT_PROTOCOL. : DUAL_STACK  (IPX_ONLY, IP_ONLY,
DUAL_STACK)
NDPS.        : TCP_AND_SPX  (TCP_AND_SPX, TCP_ONLY, SPX_ONLY,
DISABLED)
JOB_CHECK_DELAY. : 5
CONF_CHECK_DELAY. : 300
FR_802_3.    : YES
FR_ETH_2.    : YES
FR_802_2.    : YES
FR_SNAP.     : YES
NCP_BURST_MODE. : YES
PSERVER_NDS_TREE. :
PSERVER_NDS_FILESERVER. :
PSERVER_NDS_DISTINGUISHED_NAME. :
PSERVER_BINDERY1. :
PSERVER_BINDERY2. :
PSERVER_BINDERY3. :
PSERVER_BINDERY4. :
PSERVER_BINDERY5. :
PSERVER_BINDERY6. :
PSERVER_BINDERY7. :
PSERVER_BINDERY8. :
PSERVER_BINDERY9. :
PSERVER_BINDERY10. :
PSERVER_BINDERY11. :
PSERVER_BINDERY12. :
PSERVER_BINDERY13. :
PSERVER_BINDERY14. :
PSERVER_BINDERY15. :
PSERVER_BINDERY16. :
NPRINTER1.   :
NPRINTER2.   :
NPRINTER3.   :
NPRINTER4.   :
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NPRINTER5.   :
NPRINTER6.   :
NPRINTER7.   :
NPRINTER8.   :

--- NetBIOS/NetBEUI Menu
LSLM_ENB.    : YES
NB_FR_TYPE.  : FR_802_2  (FR_AUTO, FR_802_2, FR_DIX)
LPRINT_1.    : AX181EC4.LP1
LLOGIC_1.    : PR1  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_2.    : AX181EC4.US1
LLOGIC_2.    : PR2  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_3.    :
LLOGIC_3.    : PR3  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_4.    :
LLOGIC_4.    : PR4  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_5.    :
LLOGIC_5.    : PR5  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_6.    :
LLOGIC_6.    : PR6  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_7.    :
LLOGIC_7.    : PR7  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
LPRINT_8.    :
LLOGIC_8.    : PR8  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)

--- AppleTalk Menu
ATLK_ENB.    : YES
ATK_ZONE.    :
ZONER_EN.    : YES
ATK_FONT.    : DEFAULT  (DEFAULT, 35N, ALL)
AUTO_DT_PRIN1. : YES
APRINT_1.    : AXIS181EC4_LPT1
ATYPE_1.     : LaserWriter
ALOGIC_1.    : PR1  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
BINARY_TYPE_1. : TBCP  (TBCP, BCP, NONE)
AUTO_DT_PRIN2. : YES
APRINT_2.    : AXIS181EC4_USB1
ATYPE_2.     : LaserWriter
ALOGIC_2.    : PR2  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8,
LPT1, USB1)
BINARY_TYPE_2. : TBCP  (TBCP, BCP, NONE)

--- Printer1 Menu
PR1_OUT.     : LPT1  (NONE, LPT1, USB1)
PR1_NAME.    :
PR1_SCND.    : PR1  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR1_WAIT.    : YES
PR1_IN.      : AUTO  (AUTO, NONE)
PR1_BEF.     :
PR1_STR.     :
PR1_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
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PR1_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR1_AFT.     :
PR1_DUMP.    : NO
PR1_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR1_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR1_FORM.    : 66 0 100 60 30 50
PR1_FONT.    :
PR1_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR1_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR1_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR1_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR1_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR1_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR1_DC_COP.  : 1

--- Printer2 Menu
PR2_OUT.     : USB1  (NONE, LPT1, USB1)
PR2_NAME.    :
PR2_SCND.    : PR2  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR2_WAIT.    : YES
PR2_IN.      : AUTO  (AUTO, NONE)
PR2_BEF.     :
PR2_STR.     :
PR2_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR2_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR2_AFT.     :
PR2_DUMP.    : NO
PR2_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR2_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR2_FORM.    : 66 0 100 60 30 50
PR2_FONT.    :
PR2_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
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Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR2_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR2_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR2_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR2_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR2_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR2_DC_COP.  : 1

--- Printer3 Menu
PR3_OUT.     : LPT1  (NONE, LPT1, USB1)
PR3_NAME.    :
PR3_SCND.    : PR3  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR3_WAIT.    : YES
PR3_IN.      : AUTO  (AUTO, NONE)
PR3_BEF.     :
PR3_STR.     :
PR3_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR3_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR3_AFT.     :
PR3_DUMP.    : NO
PR3_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR3_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR3_FORM.    : 66 0 100 60 30 50
PR3_FONT.    :
PR3_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR3_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR3_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR3_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR3_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR3_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR3_DC_COP.  : 1
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--- Printer4 Menu
PR4_OUT.     : USB1  (NONE, LPT1, USB1)
PR4_NAME.    :
PR4_SCND.    : PR4  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR4_WAIT.    : YES
PR4_IN.      : AUTO  (AUTO, NONE)
PR4_BEF.     :
PR4_STR.     :
PR4_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR4_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR4_AFT.     :
PR4_DUMP.    : NO
PR4_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR4_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR4_FORM.    : 66 0 100 60 30 50
PR4_FONT.    :
PR4_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR4_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR4_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR4_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR4_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR4_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR4_DC_COP.  : 1

--- Printer5 Menu
PR5_OUT.     : LPT1  (NONE, LPT1, USB1)
PR5_NAME.    :
PR5_SCND.    : PR5  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR5_WAIT.    : YES
PR5_IN.      : AUTO  (AUTO, NONE)
PR5_BEF.     :
PR5_STR.     :
PR5_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR5_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR5_AFT.     :
PR5_DUMP.    : NO
PR5_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR5_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR5_FORM.    : 66 0 100 60 30 50
PR5_FONT.    :
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PR5_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR5_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR5_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR5_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR5_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR5_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR5_DC_COP.  : 1

--- Printer6 Menu
PR6_OUT.     : USB1  (NONE, LPT1, USB1)
PR6_NAME.    :
PR6_SCND.    : PR6  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR6_WAIT.    : YES
PR6_IN.      : AUTO  (AUTO, NONE)
PR6_BEF.     :
PR6_STR.     :
PR6_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR6_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR6_AFT.     :
PR6_DUMP.    : NO
PR6_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR6_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR6_FORM.    : 66 0 100 60 30 50
PR6_FONT.    :
PR6_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
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PR6_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR6_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR6_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR6_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR6_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR6_DC_COP.  : 1

--- Printer7 Menu
PR7_OUT.     : LPT1  (NONE, LPT1, USB1)
PR7_NAME.    :
PR7_SCND.    : PR7  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR7_WAIT.    : YES
PR7_IN.      : AUTO  (AUTO, NONE)
PR7_BEF.     :
PR7_STR.     :
PR7_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR7_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR7_AFT.     :
PR7_DUMP.    : NO
PR7_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR7_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR7_FORM.    : 66 0 100 60 30 50
PR7_FONT.    :
PR7_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR7_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR7_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR7_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR7_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR7_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR7_DC_COP.  : 1

--- Printer8 Menu
PR8_OUT.     : USB1  (NONE, LPT1, USB1)
PR8_NAME.    :
PR8_SCND.    : PR8  (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)
PR8_WAIT.    : YES
PR8_IN.      : AUTO  (AUTO, NONE)
PR8_BEF.     :
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PR8_STR.     :
PR8_CSET.    : NONE  (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,
7FR>IBM, 7ND>IBM, DEC>IBM)
PR8_FILT.    : NONE  (NONE, POSTSCR, AUTO_PS)
PR8_AFT.     :
PR8_DUMP.    : NO
PR8_SIZE.    : A4  (A4, LETTER, LEGAL, EXECUT)
PR8_ORNT.    : PORTR  (PORTR, LANDS, R_PORTR, R_LANDS)
PR8_FORM.    : 66 0 100 60 30 50
PR8_FONT.    :
PR8_DC_MOD.  : NONE  (NONE, Canon_GP335, Canon_GP605,
Canon_IR3300, Gestetner_3235, Gestetner_3245, Gestetner_3255,
Gestetner_3265, Gestetner_P7032, HP_LaserJet_5Si,
Konica_Minolta_Pi3502, Konica_Minolta_Pi3505e,
Konica_Minolta_Pi4700e, Konica_Minolta_Pi5500,
Konica_Minolta_Pi5501, Konica_Minolta_Pi6500e,
Konica_Minolta_Pi7200e, Konica_Minolta_Pi7500,
Konica_Minolta_CF2001, Ricoh_Aficio_220, Ricoh_Aficio_270,
Ricoh_Aficio_350, Ricoh_Aficio_450, Ricoh_Aficio_550,
Ricoh_Aficio_650, Ricoh_Aficio_AP4500, Ricoh_Aficio_AP3200,
Savin_9935DP, Savin_9945DP, Savin_9955DP, Savin_9965DP,
Sharp_AR286_FN1, Sharp_AR336_FN1, Sharp_AR405_FN1,
Sharp_AR505_FN1, Sharp_AR286_FN2, Sharp_AR336_FN2,
Sharp_AR405_FN2, Sharp_AR505_FN2, Toshiba_DP_4580,
Toshiba_DP_5570, Toshiba_DP_6570, Toshiba_DP_8070,
Toshiba_eSTUDIO35, Toshiba_eSTUDIO45, Toshiba_eSTUDIO55,
Toshiba_eSTUDIO65, Toshiba_eSTUDIO80, Custom_copier_driver)
PR8_DC_DUP.  : OFF  (OFF, SIMPLEX, LONG_EDGE_BINDING,
SHORT_EDGE_BINDING)
PR8_DC_STAP. : OFF  (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL,
TOP_LEFT_VERTICAL, TOP_RIGHT, BOTTOM_LEFT, BOTTOM_RIGHT,
TOP_DOUBLE, LEFT_DOUBLE, CENTER)
PR8_DC_HOLE. : OFF  (OFF, LONG_EDGE, SHORT_EDGE)
PR8_DC_FOLD. : OFF  (OFF, HALF_FOLD, Z_FOLD)
PR8_DC_TRAY. : DEFAULT  (DEFAULT, 1, 2, 3, 4, 5)
PR8_DC_COP.  : 1

--- DC General Menu
PAR_CUST_DC_CTRL_NAME. :

--- DC PCL Control Menu
PAR_CUST_DC_PCL_CTRL_METHOD. : PCL  (None, PS, PJL, PCL,
PS_PJL)
PAR_CUST_DC_PCL_CTRL_ENTER. :
PAR_CUST_DC_PCL_CTRL_POSTSCRIPT. :
PAR_CUST_DC_PCL_CTRL_PCL. :
PAR_CUST_DC_PCL_CTRL_PCLXL. :
PAR_CUST_DC_PCL_CTRL_EXIT. :

--- DC PCL Duplex Menu
PAR_CUST_DC_PCL_DUP_SIMPLEX. :
PAR_CUST_DC_PCL_DUP_LONG. :
PAR_CUST_DC_PCL_DUP_SHORT. :

--- DC PCL Staple Menu
PAR_CUST_DC_PCL_STP_TOP_L_SLN. :
PAR_CUST_DC_PCL_STP_TOP_L_HOR. :
PAR_CUST_DC_PCL_STP_TOP_L_VER. :
PAR_CUST_DC_PCL_STP_TOP_RIGHT. :
PAR_CUST_DC_PCL_STP_LOW_LEFT. :
PAR_CUST_DC_PCL_STP_LOW_RIGHT. :
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PAR_CUST_DC_PCL_STP_TOP_2. :
PAR_CUST_DC_PCL_STP_LEFT_2. :
PAR_CUST_DC_PCL_STP_MID_2. :

--- DC PCL Punch Menu
PAR_CUST_DC_PCL_PUNCH_LONG. :
PAR_CUST_DC_PCL_PUNCH_SHORT. :

--- DC PCL Fold Menu
PAR_CUST_DC_PCL_FOLD_HALF. :
PAR_CUST_DC_PCL_FOLD_Z. :

--- DC PCL Media Menu
PAR_CUST_DC_PCL_MEDIA_DEFAULT. :
PAR_CUST_DC_PCL_MEDIA_TRAY1. :
PAR_CUST_DC_PCL_MEDIA_TRAY2. :
PAR_CUST_DC_PCL_MEDIA_TRAY3. :
PAR_CUST_DC_PCL_MEDIA_TRAY4. :
PAR_CUST_DC_PCL_MEDIA_TRAY5. :

--- DC PCL Copies Menu
PAR_CUST_DC_PCL_COPIES_LEAD. :
PAR_CUST_DC_PCL_COPIES_TRAILER. :

--- DC PS Control Menu
PAR_CUST_DC_PS_CTRL_METHOD. : PS  (None, PS, PJL, PCL, PS_PJL)
PAR_CUST_DC_PS_CTRL_ENTER. :
PAR_CUST_DC_PS_CTRL_POSTSCRIPT. :
PAR_CUST_DC_PS_CTRL_PCL. :
PAR_CUST_DC_PS_CTRL_PCLXL. :
PAR_CUST_DC_PS_CTRL_EXIT. :

--- DC PS Duplex Menu
PAR_CUST_DC_PS_DUP_SIMPLEX. :
PAR_CUST_DC_PS_DUP_LONG. :
PAR_CUST_DC_PS_DUP_SHORT. :

--- DC PS Staple Menu
PAR_CUST_DC_PS_STP_TOP_L_SLN. :
PAR_CUST_DC_PS_STP_TOP_L_HOR. :
PAR_CUST_DC_PS_STP_TOP_L_VER. :
PAR_CUST_DC_PS_STP_TOP_RIGHT. :
PAR_CUST_DC_PS_STP_LOW_LEFT. :
PAR_CUST_DC_PS_STP_LOW_RIGHT. :
PAR_CUST_DC_PS_STP_TOP_2. :
PAR_CUST_DC_PS_STP_LEFT_2. :
PAR_CUST_DC_PS_STP_MID_2. :

--- DC PS Punch Menu
PAR_CUST_DC_PS_PUNCH_LONG. :
PAR_CUST_DC_PS_PUNCH_SHORT. :

--- DC PS Fold Menu
PAR_CUST_DC_PS_FOLD_HALF. :
PAR_CUST_DC_PS_FOLD_Z. :

--- DC PS Media Menu
PAR_CUST_DC_PS_MEDIA_DEFAULT. :
PAR_CUST_DC_PS_MEDIA_TRAY1. :
PAR_CUST_DC_PS_MEDIA_TRAY2. :
PAR_CUST_DC_PS_MEDIA_TRAY3. :
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PAR_CUST_DC_PS_MEDIA_TRAY4. :
PAR_CUST_DC_PS_MEDIA_TRAY5. :

--- DC PS Copies Menu
PAR_CUST_DC_PS_COPIES_LEAD. :
PAR_CUST_DC_PS_COPIES_TRAILER. :

--- LPT1 Menu
L1_CENTR.    : HISPEED  (IBM_PC, STNDRD, FAST, HISPEED, HINOACK,
ECP)
L1_BSYTM.    : 60
L1_MGM_INFO. : AUTO  (DISABLE, AUTO)
L1_COMMENT.  :
L1_BIDIR.    : AUTO  (DISABLE, AUTO)
L1_READT.    : 3

--- USB1 Menu
U1_MGM_INFO. : AUTO  (DISABLE, AUTO)
U1_COMMENT.  :
U1_BIDIR.    : AUTO  (DISABLE, AUTO)
U1_READT.    : 3
U1_BUFFER_SIZE. : 0
U1_PORT_STATUS_OVERRIDE. : NO

--- IBM IPDS Configuration
IPDS_COLSUP. : Disabled
IPDS_DUPSUP. : Enabled
IPDS_OPTDUP. : Enabled
IPDS_RAF.    : Disabled
IPDS_NUP.    : 1-up  (1-up, 2-up, 4-up)
IPDS_OVLXOFF. : 0
IPDS_OVLYOFF. : 0
IPDS_RPTXOFF. : 0
IPDS_RPTYOFF. : 0
IPDS_DOB.    : Bin1  (Bin1, Bin2, Bin3, Bin4, Bin5, Bin6)
IPDS_DIB.    : Bin1  (Bin1, Bin2, Bin3, Bin4, Bin5)
PS_IPLINK.   : Off  (Off, Sheet, Bin)
IPDS_BIN1.   : Letter, 0, 0
IPDS_BIN2.   : Letter, 0, 0
IPDS_BIN3.   : Letter, 0, 0
IPDS_BIN4.   : Letter, 0, 0
IPDS_BIN5.   : Letter, 0, 0

--- IBM IPDS PostScript Driver Settings
PS_LFSM.     : Enabled
PS_ERRH.     : Disabled
PS_OPTOVL.   : Enabled
PS_G4SUP.    : Disabled
PS_VM.       : 2000
PS_BIN1.     : Default, 100, 100, 0, 0
PS_BIN2.     : Default, 100, 100, 0, 0
PS_BIN3.     : Default, 100, 100, 0, 0
PS_BIN4.     : Default, 100, 100, 0, 0
PS_BIN5.     : Default, 100, 100, 0, 0
PS_DEST.     : 0, 0, 0, 0, 0, 0

--- IBM IPDS PCL Driver Settings
PCL_VER.     : 5  (3, 4, 5)
PCL_SBSET.   : AUTOMATIC  (AUTOMATIC, US-ASCII, Latin1, Latin5,
Latin9, PC437, PC850, PC852, Roman8, ISO8859-7)
PCL_OCR_ENB. : Enabled
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PCL_OPTOVL.  : Disabled
PCL_BIN1.    : 8, 0, 0
PCL_BIN2.    : 1, 0, 0
PCL_BIN3.    : 4, 0, 0
PCL_BIN4.    : 5, 0, 0
PCL_BIN5.    : 0, 0, 0
PCL_DEST.    : 0, 0, 0, 0, 0, 0

--- IBM EMULATOR 1
IPDS_PREMUL1. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES1. : 0
IPDS_SYSL1.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD1.    : PostScript  (PostScript, PCL)
IPDS_SOJS1.  :
IPDS_EOJS1.  :
PREMUL1.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL1.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR1.    : NO
MPL1.        : 66, ENA
MPP1.        : 132, ENA
LPI1.        : 6  (3, 4, 6, 8)
CPI1.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI1.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI1.     : YES
LM1.         : 0, 0, 48
TM1.         : 26, 26, 74
LDSF1.       : 100, 100, 70
DEFBIN1.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER1.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 2
IPDS_PREMUL2. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES2. : 0
IPDS_SYSL2.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD2.    : PostScript  (PostScript, PCL)
IPDS_SOJS2.  :
IPDS_EOJS2.  :
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PREMUL2.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL2.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR2.    : NO
MPL2.        : 66, ENA
MPP2.        : 132, ENA
LPI2.        : 6  (3, 4, 6, 8)
CPI2.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI2.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI2.     : YES
LM2.         : 0, 0, 48
TM2.         : 26, 26, 74
LDSF2.       : 100, 100, 70
DEFBIN2.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER2.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 3
IPDS_PREMUL3. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES3. : 0
IPDS_SYSL3.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD3.    : PostScript  (PostScript, PCL)
IPDS_SOJS3.  :
IPDS_EOJS3.  :
PREMUL3.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL3.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR3.    : NO
MPL3.        : 66, ENA
MPP3.        : 132, ENA
LPI3.        : 6  (3, 4, 6, 8)
CPI3.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI3.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI3.     : YES
LM3.         : 0, 0, 48
TM3.         : 26, 26, 74
LDSF3.       : 100, 100, 70
DEFBIN3.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
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PRDRIVER3.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 4
IPDS_PREMUL4. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES4. : 0
IPDS_SYSL4.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD4.    : PostScript  (PostScript, PCL)
IPDS_SOJS4.  :
IPDS_EOJS4.  :
PREMUL4.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL4.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR4.    : NO
MPL4.        : 66, ENA
MPP4.        : 132, ENA
LPI4.        : 6  (3, 4, 6, 8)
CPI4.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI4.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI4.     : YES
LM4.         : 0, 0, 48
TM4.         : 26, 26, 74
LDSF4.       : 100, 100, 70
DEFBIN4.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER4.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 5
IPDS_PREMUL5. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES5. : 0
IPDS_SYSL5.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD5.    : PostScript  (PostScript, PCL)
IPDS_SOJS5.  :
IPDS_EOJS5.  :
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PREMUL5.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL5.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR5.    : NO
MPL5.        : 66, ENA
MPP5.        : 132, ENA
LPI5.        : 6  (3, 4, 6, 8)
CPI5.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI5.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI5.     : YES
LM5.         : 0, 0, 48
TM5.         : 26, 26, 74
LDSF5.       : 100, 100, 70
DEFBIN5.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER5.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 6
IPDS_PREMUL6. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES6. : 0
IPDS_SYSL6.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD6.    : PostScript  (PostScript, PCL)
IPDS_SOJS6.  :
IPDS_EOJS6.  :
PREMUL6.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL6.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR6.    : NO
MPL6.        : 66, ENA
MPP6.        : 132, ENA
LPI6.        : 6  (3, 4, 6, 8)
CPI6.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI6.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI6.     : YES
LM6.         : 0, 0, 48
TM6.         : 26, 26, 74
LDSF6.       : 100, 100, 70
DEFBIN6.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
```

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PRDRIVER6.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 7
IPDS_PREMUL7. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES7. : 0
IPDS_SYSL7.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD7.    : PostScript  (PostScript, PCL)
IPDS_SOJS7.  :
IPDS_EOJS7.  :
PREMUL7.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL7.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR7.    : NO
MPL7.        : 66, ENA
MPP7.        : 132, ENA
LPI7.        : 6  (3, 4, 6, 8)
CPI7.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI7.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI7.     : YES
LM7.         : 0, 0, 48
TM7.         : 26, 26, 74
LDSF7.       : 100, 100, 70
DEFBIN7.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER7.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM EMULATOR 8
IPDS_PREMUL8. : IPDS_4332  (IPDS_4224_C2, IPDS_4224_E3,
IPDS_3812_2, IPDS_3812_2_00, IPDS_3816, IPDS_4028_1,
IPDS_4028_2, IPDS_4312, IPDS_4317, IPDS_4324, IPDS_4332)
IPDS_PRRES8. : 0
IPDS_SYSL8.  : 37  (37, 256, 259, 260, 273, 274, 275, 277, 278,
280, 281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 361,
420, 423, 424, 437, 500, 803, 819, 838, 852, 853, 857, 858, 860,
861, 863, 865, 870, 871, 875, 880, 892, 893, 905, 912, 914, 920,
923, 924, 1004, 1026, 1069, 1140, 1141, 1142, 1143, 1144, 1145,
1146, 1147, 1148, 1149, 1252)
IPDS_PD8.    : PostScript  (PostScript, PCL)
IPDS_SOJS8.  :
IPDS_EOJS8.  :
```

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PREMUL8.     : 3816_CX  (3287_CX, 3268_CX, 3262_CX, 4214_CX,
4224_CX, 4230_CX, 3812_CX, 3816S_CX, 3816_CX, 5224_TX, 5225_TX,
5256_TX, 4214_TX, 4230_TX, 3812_TX, 3816S_TX, 3816_TX,
5X27_001_TX, 5X27_002_KS_TX, 5X27_002_KSSM_TX, 5X27_003_TX,
5X27_005_TX)
SYSL8.       : 37  (37, 256, 260, 273, 274, 275, 277, 278, 280,
281, 282, 284, 285, 286, 287, 288, 289, 290, 293, 297, 340, 361,
423, 500, 833, 836, 838, 870, 871, 875, 892, 893, 1026, 1140,
1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, USER)
PASSTHR8.    : NO
MPL8.        : 66, ENA
MPP8.        : 132, ENA
LPI8.        : 6  (3, 4, 6, 8)
CPI8.        : 10  (5, 10, 12, 13.3, 15, 17, 18)
DCPI8.       : 5.0  (5.0, 6.0, 6.7, 7.5, 9.0)
AUTORI8.     : YES
LM8.         : 0, 0, 48
TM8.         : 26, 26, 74
LDSF8.       : 100, 100, 70
DEFBIN8.     : BIN1  (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6,
MANUAL, ENVELOPE, CONTINUOUS)
PRDRIVER8.   : PCL5  (USER, GENERIC, PCL4, PCL5, IBM_PRO,
EPSON_FX, EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI,
EPSON_LQ_1600K, EPSON_LQ_KS)

--- IBM SCS PAGE FORMAT
PCORI.       : NO
DWSISO.      : NO
BIN1.        : COR, LETTER, 0, 0
BIN2.        : COR, LETTER, 0, 0
BIN3.        : COR, LETTER, 0, 0
BIN4.        : COR, LETTER, 0, 0
BIN5.        : COR, LETTER, 0, 0
BIN6.        : COR, LETTER, 0, 0
MANUAL.      : COR, LETTER, 0, 0
ENVELOPE.    : COR, LETTER, 0, 0
CONTINUOUS.  : COR, LETTER, 0, 0
SIMBF.       : YES

--- IBM SCS CPI MAPPING
FGID_DEFAULT. : 11
FGID_CPI5.   : 244, 11
FGID_CPI10.  : 11, 204
FGID_CPI12.  : 86, 230
FGID_CPI15.  : 230, 281
FGID_CPI17.  : 252, 281
FGID_CPI8COR. : 86
FGID_CPI20COR. : 281
FGID_CPI25COR. : 289
FGID_CPI27COR. : 290
PROPOCOR.    : 230
TYPOCOR.     : 230

--- IBM SCS JOB CONTROL
REINIT.      : YES
SUPFFBLANK.  : NO

--- IBM 3270 OPTIONS
CASE.        : DUAL  (DUAL, MONO)
BASCOL.      : BLACK, ENA
XSTRN.       : 0
```

```
AUTNL.       : 1
ADDNL.       : 1
FFWPB.       : 0
FFEOPB.      : 1
NULSUP.      : 0
FFCPOS.      : 0
AFEOPB.      : 0

--- IBM SCS EXTENDED EMULATION
XEMUL.       : YES
WARN.        : NO
SSUBST.      : YES
SBTS.        :
TLIS.        : 025 03C
TTRS.        : 03E 025
FLIS.        : 025 02F
EECS.        : 025 041 058 049 053
COBXEM.      : SETALL  (OFF, SETESC, SETALL)
CCLIS.       : 025 050

--- UDS
-------

--- BAR        NUMBER TYPE WIDTH HEIGHT TEXT-MODE CHECK-MODE
-------------------------------------------------------------

--- SSTR
--------

--- MSTR
--------

--- IBM PRINTER DRIVER
PRDRIVERBASE. : PCL5  (GENERIC, PCL4, PCL5, IBM_PRO, EPSON_FX,
EPSON_FX_15CPI, EPSON_LQ, EPSON_LQ_8LPI, EPSON_LQ_1600K,
EPSON_LQ_KS)
SOJS.        : 1B 45 1B 26 6C 30 4C
EOJS.        : 1B 45
BACKSPS.     : 08
CRS.         : 0D
LFS.         : 0A
NLS.         : 0D 0A
FFS.         : 0C
SOS.         :
SIS.         :
BLKS.        :
GRNS.        :
BLUS.        :
REDS.        :
MAGS.        :
CYNS.        :
YELS.        :
BIN1S.       : 1B 26 6C 31 48
BIN2S.       : 1B 26 6C 34 48
BIN3S.       : 1B 26 6C 35 48
BIN4S.       : 1B 26 6C 32 30 48
BIN5S.       : 1B 26 6C 32 31 48
BIN6S.       : 1B 26 6C 32 32 48
MANUALS.     : 1B 26 6C 32 48
ENVELOPES.   : 1B 26 6C 36 48
CONTINUOUSS. : 1B 26 6C 31 48
```

```
CSIZS.       :
LAC.         : HP_PCL  (DISABLE, HP_PCL, EPSON_LQ)
GRD.         : HP_PCL  (DISABLE, HP_PCL, EPSON_LQ)
JOGS.        : 1B 26 6C 31 54
SSUS.        :
SBSET.       : PC850  (ECMA94, ISO8859-7, LATIN9, PC437, PC850,
PC852, PC857, PC858, PC869, PC874, PC891, PC903, PC904, PC942,
ROMAN8, USASCII, USER)

--- FONT       FGID  CSSF SBSET SPACING PITCH HEIGHT STYLE
STROKE TYPEFACE STRING
------------------------------------------------------------
------------------
FONT.        : 3,    98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4102,    1B 28 31 4F
FONT.        : 5,    98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 11,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 12,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 13,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 18,   98,  DEFAULT,FIXED,  100,  0,
ITALIC,MEDIUM,4099,
FONT.        : 19,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4200,    1B 28 30 4F
FONT.        : 20,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 30,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 38,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,BOLD,  4102,
FONT.        : 39,   98,  DEFAULT,FIXED,  135,  0,
UPRIGHT,BOLD,  4102,
FONT.        : 40,   98,  DEFAULT,FIXED,  135,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 41,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 42,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 43,   98,  DEFAULT,FIXED,  100,  0,
ITALIC,MEDIUM,4099,
FONT.        : 46,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 60,   98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 66,   98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 68,   98,  DEFAULT,FIXED,  150,  0,
ITALIC,MEDIUM,4102,
FONT.        : 69,   98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,BOLD,  4102,
FONT.        : 70,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 71,   98,  DEFAULT,FIXED,  120,  0,
ITALIC,MEDIUM,4099,
FONT.        : 72,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 80,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,MEDIUM,4099,
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FONT.        : 84,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 85,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 86,   98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 87,   98,  DEFAULT,FIXED,  130,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 91,   98,  DEFAULT,FIXED,  120,  0,
ITALIC,MEDIUM,4099,
FONT.        : 108,  98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 110,  98,  DEFAULT,FIXED,  130,  0,
UPRIGHT,BOLD,  4102,
FONT.        : 111,  98,  DEFAULT,FIXED,  120,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 112,  98,  DEFAULT,FIXED,  120,  0,
ITALIC,MEDIUM,4099,
FONT.        : 155,  100, DEFAULT,PROP,   0,    110,
ITALIC,BOLD,  4101,
FONT.        : 158,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,MEDIUM,4101,
FONT.        : 159,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,BOLD,  4101,
FONT.        : 160,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,MEDIUM,4148,
FONT.        : 162,  100, DEFAULT,PROP,   0,    110,
ITALIC,MEDIUM,4148,
FONT.        : 163,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,BOLD,  4148,
FONT.        : 173,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,LIGHT, 4148,
FONT.        : 175,  100, DEFAULT,PROP,   0,    110,
UPRIGHT,MEDIUM,4101,
FONT.        : 204,  98,  DEFAULT,FIXED,  167,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 221,  98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 223,  98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 225,  98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 229,  98,  DEFAULT,FIXED,  150,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 230,  98,  DEFAULT,FIXED,  180,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 244,  98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 245,  98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 252,  98,  DEFAULT,FIXED,  171,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 253,  98,  DEFAULT,FIXED,  171,  0,
UPRIGHT,BOLD,  4099,
FONT.        : 254,  98,  DEFAULT,FIXED,  220,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 258,  98,  DEFAULT,FIXED,  180,  0,
UPRIGHT,MEDIUM,4099,
FONT.        : 266,  98,  DEFAULT,FIXED,  100,  0,
UPRIGHT,BOLD,  4099,
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FONT.        : 281,  98,  DEFAULT,FIXED,  233,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 289,  98,  DEFAULT,FIXED,  267,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 290,  98,  DEFAULT,FIXED,  300,  0,
UPRIGHT,MEDIUM,4102,
FONT.        : 751,  100, DEFAULT,PROP,   0,    80,
UPRIGHT,MEDIUM,4101,
FONT.        : 1051, 100, DEFAULT,PROP,   0,    100,
UPRIGHT,MEDIUM,4101,
FONT.        : 1053, 100, DEFAULT,PROP,   0,    100,
UPRIGHT,BOLD,  4101,
FONT.        : 1056, 100, DEFAULT,PROP,   0,    100,
ITALIC,MEDIUM,4101,
FONT.        : 1351, 100, DEFAULT,PROP,   0,    120,
UPRIGHT,MEDIUM,4101,
FONT.        : 1653, 100, DEFAULT,PROP,   0,    160,
UPRIGHT,BOLD,  4101,
FONT.        : 2103, 100, DEFAULT,PROP,   0,    240,
UPRIGHT,BOLD,  4101,
FONT.        : 3840, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4101,
FONT.        : 3841, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4101,
FONT.        : 3842, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4101,
FONT.        : 3843, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4101,
FONT.        : 3844, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4113,
FONT.        : 3845, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4113,
FONT.        : 3846, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4113,
FONT.        : 3847, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4113,
FONT.        : 3848, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4116,
FONT.        : 3849, 100, DEFAULT,PROP,   0,    0,     NONE,
MEDIUM,4140,    1B
                28 73 34 53
FONT.        : 3850, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4148,
FONT.        : 3851, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4148,
FONT.        : 3852, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4148,
FONT.        : 3853, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4148,
FONT.        : 3854, 100, DEFAULT,PROP,   0,    0,     NONE,
MEDIUM,4148,    1B
                28 73 34 53
FONT.        : 3855, 100, DEFAULT,PROP,   0,    0,     NONE,
BOLD,  4148,    1B
                28 73 34 53
FONT.        : 3856, 100, DEFAULT,PROP,   0,    0,     NONE,
MEDIUM,4148,    1B
                28 73 35 53
FONT.        : 3857, 100, DEFAULT,PROP,   0,    0,     NONE,
BOLD,  4148,    1B
                28 73 35 53
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FONT.        : 3858, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4168,
FONT.        : 3859, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4168,
FONT.        : 3860, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4168,
FONT.        : 3861, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4197,
FONT.        : 3862, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4197,
FONT.        : 3863, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4197,
FONT.        : 3864, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4197,
FONT.        : 3865, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4297,
FONT.        : 3866, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,NONE,  4362,    1B 28 73 31 42
FONT.        : 3867, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,NONE,  4362,    1B 28 73 34 42
FONT.        : 3868, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,16602,
FONT.        : 3869, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  16602,
FONT.        : 3870, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,16602,
FONT.        : 3871, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  16602,
FONT.        : 3872, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,16901,
FONT.        : 3873, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  16901,
FONT.        : 3874, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,16901,
FONT.        : 3875, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  16901,
FONT.        : 3876, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,16686,   1B 28 31 39 4D
FONT.        : 3877, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,31402,   1B 28 35 37 39 4C
FONT.        : 5687, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,16901,
FONT.        : 5707, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  16901,
FONT.        : 5815, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,16901,
FONT.        : 5835, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  16901,
FONT.        : 6199, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4197,
FONT.        : 6219, 100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4197,
FONT.        : 6327, 100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4197,
FONT.        : 6347, 100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4197,
FONT.        : 16951,100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4101,
FONT.        : 16971,100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4101,
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```
FONT.        : 17079,100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4101,
FONT.        : 17099,100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4101,
FONT.        : 33335,100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4113,
FONT.        : 33355,100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4113,
FONT.        : 33463,100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4113,
FONT.        : 33483,100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4113,
FONT.        : 33591,100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,16602,
FONT.        : 33601,100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  16602,
FONT.        : 33719,100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,16602,
FONT.        : 33729,100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  16602,
FONT.        : 34103,100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4148,
FONT.        : 34123,100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4148,
FONT.        : 34231,100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4148,
FONT.        : 34251,100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4148,
FONT.        : 41783,100, DEFAULT,PROP,   0,    0,
UPRIGHT,MEDIUM,4116,
FONT.        : 41803,100, DEFAULT,PROP,   0,    0,
UPRIGHT,BOLD,  4116,
FONT.        : 41911,100, DEFAULT,PROP,   0,    0,
ITALIC,MEDIUM,4116,
FONT.        : 41931,100, DEFAULT,PROP,   0,    0,
ITALIC,BOLD,  4116,
FONT.        : 50000,100, PC942,PROP,   0,    144,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50001,100, PC942,PROP,   0,    144,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50002,100, PC942,PROP,   0,    120,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50003,100, PC942,PROP,   0,    108,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50004,100, PC942,PROP,   0,    96,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50005,100, PC942,PROP,   0,    96,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50006,100, PC942,PROP,   0,    80,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50007,100, PC942,PROP,   0,    101,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
```

```
FONT.        : 50008,100, PC942,PROP,   0,    101,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50009,100, PC942,PROP,   0,    84,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50010,100, PC942,PROP,   0,    76,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50011,100, PC942,PROP,   0,    67,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50012,100, PC942,PROP,   0,    67,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50013,100, PC942,PROP,   0,    56,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50014,100, PC942,PROP,   0,    144,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50015,100, PC942,PROP,   0,    120,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50016,100, PC942,PROP,   0,    108,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50017,100, PC942,PROP,   0,    96,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50018,100, PC942,PROP,   0,    80,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50019,100, PC942,PROP,   0,    101,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50020,100, PC942,PROP,   0,    84,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50021,100, PC942,PROP,   0,    76,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50022,100, PC942,PROP,   0,    67,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50023,100, PC942,PROP,   0,    56,
UPRIGHT,MEDIUM,28752,   1B
               28 31 39 4B 1B 26 74 33 31 50
FONT.        : 50030,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50031,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50032,100, PC891,PROP,   0,    120,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50033,100, PC891,PROP,   0,    108,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
```

```
FONT.        : 50034,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50035,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50036,100, PC891,PROP,   0,    80,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50037,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50038,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50039,100, PC891,PROP,   0,    84,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50040,100, PC891,PROP,   0,    76,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50041,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50042,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50043,100, PC891,PROP,   0,    56,
UPRIGHT,MEDIUM,43088,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50044,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50045,100, PC891,PROP,   0,    120,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50046,100, PC891,PROP,   0,    108,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50047,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50048,100, PC891,PROP,   0,    80,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50049,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50050,100, PC891,PROP,   0,    84,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50051,100, PC891,PROP,   0,    76,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50052,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
FONT.        : 50053,100, PC891,PROP,   0,    56,
UPRIGHT,MEDIUM,41040,   1B
               28 31 39 48 1B 26 74 33 38 50
```

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FONT.        : 50060,100, PC904,PROP,   0,    144,
UPRIGHT,MEDIUM,0,
FONT.        : 50061,100, PC904,PROP,   0,    144,
UPRIGHT,MEDIUM,0,
FONT.        : 50062,100, PC904,PROP,   0,    120,
UPRIGHT,MEDIUM,0,
FONT.        : 50063,100, PC904,PROP,   0,    108,
UPRIGHT,MEDIUM,0,
FONT.        : 50064,100, PC904,PROP,   0,    96,
UPRIGHT,MEDIUM,0,
FONT.        : 50065,100, PC904,PROP,   0,    96,
UPRIGHT,MEDIUM,0,
FONT.        : 50066,100, PC904,PROP,   0,    80,
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FONT.        : 50067,100, PC904,PROP,   0,    101,
UPRIGHT,MEDIUM,0,
FONT.        : 50068,100, PC904,PROP,   0,    101,
UPRIGHT,MEDIUM,0,
FONT.        : 50069,100, PC904,PROP,   0,    84,
UPRIGHT,MEDIUM,0,
FONT.        : 50070,100, PC904,PROP,   0,    76,
UPRIGHT,MEDIUM,0,
FONT.        : 50071,100, PC904,PROP,   0,    67,
UPRIGHT,MEDIUM,0,
FONT.        : 50072,100, PC904,PROP,   0,    67,
UPRIGHT,MEDIUM,0,
FONT.        : 50073,100, PC904,PROP,   0,    56,
UPRIGHT,MEDIUM,0,
FONT.        : 50074,100, PC904,PROP,   0,    144,
UPRIGHT,MEDIUM,0,
FONT.        : 50075,100, PC904,PROP,   0,    120,
UPRIGHT,MEDIUM,0,
FONT.        : 50076,100, PC904,PROP,   0,    108,
UPRIGHT,MEDIUM,0,
FONT.        : 50077,100, PC904,PROP,   0,    96,
UPRIGHT,MEDIUM,0,
FONT.        : 50078,100, PC904,PROP,   0,    80,
UPRIGHT,MEDIUM,0,
FONT.        : 50079,100, PC904,PROP,   0,    101,
UPRIGHT,MEDIUM,0,
FONT.        : 50080,100, PC904,PROP,   0,    84,
UPRIGHT,MEDIUM,0,
FONT.        : 50081,100, PC904,PROP,   0,    76,
UPRIGHT,MEDIUM,0,
FONT.        : 50082,100, PC904,PROP,   0,    67,
UPRIGHT,MEDIUM,0,
FONT.        : 50083,100, PC904,PROP,   0,    56,
UPRIGHT,MEDIUM,0,
FONT.        : 50100,100, PC903,PROP,   0,    144,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50101,100, PC903,PROP,   0,    144,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50102,100, PC903,PROP,   0,    120,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50103,100, PC903,PROP,   0,    108,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
```

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FONT.        : 50104,100, PC903,PROP,   0,    96,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50105,100, PC903,PROP,   0,    96,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50106,100, PC903,PROP,   0,    80,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50107,100, PC903,PROP,   0,    101,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50108,100, PC903,PROP,   0,    101,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50109,100, PC903,PROP,   0,    84,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50110,100, PC903,PROP,   0,    76,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50111,100, PC903,PROP,   0,    67,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50112,100, PC903,PROP,   0,    67,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50113,100, PC903,PROP,   0,    56,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50114,100, PC903,PROP,   0,    144,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50115,100, PC903,PROP,   0,    120,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50116,100, PC903,PROP,   0,    108,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50117,100, PC903,PROP,   0,    96,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50118,100, PC903,PROP,   0,    80,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50119,100, PC903,PROP,   0,    101,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50120,100, PC903,PROP,   0,    84,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50121,100, PC903,PROP,   0,    76,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50122,100, PC903,PROP,   0,    67,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
FONT.        : 50123,100, PC903,PROP,   0,    56,
UPRIGHT,MEDIUM,37058,   1B
               28 31 38 43 1B 26 74 33 38 50
```

```
FONT.        : 50130,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50131,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50132,100, PC891,PROP,   0,    120,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50133,100, PC891,PROP,   0,    108,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50134,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50135,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50136,100, PC891,PROP,   0,    80,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50137,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50138,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50139,100, PC891,PROP,   0,    84,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50140,100, PC891,PROP,   0,    76,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50141,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50142,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50143,100, PC891,PROP,   0,    56,
UPRIGHT,MEDIUM,43088,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50144,100, PC891,PROP,   0,    144,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50145,100, PC891,PROP,   0,    120,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50146,100, PC891,PROP,   0,    108,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50147,100, PC891,PROP,   0,    96,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50148,100, PC891,PROP,   0,    80,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50149,100, PC891,PROP,   0,    101,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
```

```
FONT.        : 50150,100, PC891,PROP,   0,    84,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50151,100, PC891,PROP,   0,    76,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50152,100, PC891,PROP,   0,    67,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50
FONT.        : 50153,100, PC891,PROP,   0,    56,
UPRIGHT,MEDIUM,41040,   1B
               28 31 38 48 1B 26 74 33 38 50

--- Email Menu
EMAIL_NOTIFICATION. : NO
REPLY_ADDRESS. :
PAPER_JAM_ADDRESS. :
OUT_OF_PAPER_ADDRESS. :
TONER_LOW_ADDRESS. :
NO_TONER_ADDRESS. :
PRINTER_OFFLINE_ADDRESS. :
```

NetWare Parameter Combinations

In AXIS 5570e, when NetWare is enabled (i.e. when the NETW_ENB. parameter is set to “yes” in the NetWare Menu), the different settings of the NETW_TRANSPORT_PROTOCOL. and NDPS. parameters will result in these functionalities:

NETW_ENB	NETW_TRANSPORT_PROTOCOL	NDPS	Functionality
YES	DUAL_STACK	TCP_AND_SPX	1, 2, 3, 4, 5, 6, 7
YES	DUAL_STACK	TCP_ONLY	1, 2, 3, 5, 6, 7
YES	DUAL_STACK	SPX_ONLY	2, 3, 4, 5, 6, 7
YES	DUAL_STACK	DISABLED	3, 5, 6, 7
YES	IP_ONLY	TCP_AND_SPX	1, 2, 5
YES	IP_ONLY	TCP_ONLY	1, 2, 5
YES	IP_ONLY	SPX_ONLY	2, 5
YES	IP_ONLY	DISABLED	5
YES	IPX_ONLY	TCP_AND_SPX	2, 3, 4, 6, 7
YES	IPX_ONLY	TCP_ONLY	2, 3, 6, 7
YES	IPX_ONLY	SPX_ONLY	2, 3, 4, 6, 7
YES	IPX_ONLY	DISABLED	3, 6, 7

Functionality

1. Raw TCP ports 9100 = LPT1 and 9101 = USB1 are opened for NDPS printing. To create TCP NDPS printer objects, AXIS_PRINT_SYSTEM must be enabled (see Note a).
2. The HP-MIB is enabled.
3. Services are SAP’ed and enabled on SPX sockets 8060 and 4114 (see Notes b and c).
4. Print services are SAP’ed and enabled on SPX sockets, 400C = LPT1 and 401C = USB1 (see Notes b and c).
5. Pure IP queue mode printing is enabled.
6. IPX queue mode printing is enabled (see Note c).
7. Looking for SAP NetwWare fileservers on the net (see Note c).

Notes:

(a) TCP printing must be enabled (TCP_ENB. = YES).

(b) Some other SAP service must be present on the network.

(c) At least one frametype must be enabled for NetWare.

TCP Ports Opened for Raw Printing

AXIS 5570e

Port Number	Port	Via Logical Printer	Condition
9100	LPT1	–	DEFAULT_RAW_TCP. set to 9100
9101	USB1	–	
9900	LPT1	–	AXIS_PRINT_SYSTEM. Enabled
9902	USB1	–	
9100	LPT1	–	NDPS. Enabled
9101	USB1	–	

Note: The TCP port numbers entered in RTEL_PRx. will override the settings in the two tables above.

SNMP Device Index

When using the TCP/IP protocol (and if the printer driver permits), the print server can use **SNMP Status** to find out if the printer is ready to accept a new job.

By default, Windows uses the value "1" when addressing an SNMP device, which is correct for single port print servers. For a multiport print server, obtain the SNMP Device Index from the table below.

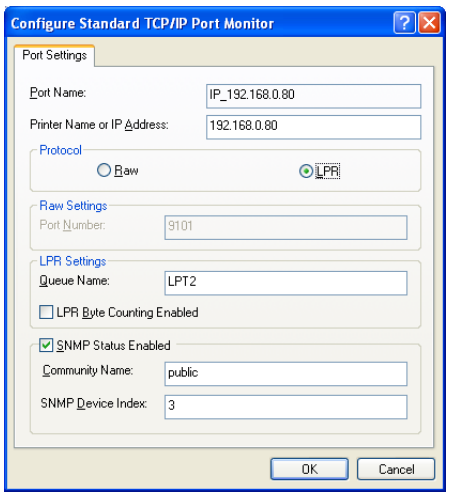
Print Server	*LPR Queue Name*	*Raw Port Number*	*SNMP Device Index*
Single Port: Parallel	 LPT1	 9100	 1
Single Port: USB	 USB1	 9100	 1
Dual Port: Parallel USB	 LPT1 USB1	 9100 9101	 1 2
Dual Port: Parallel Parallel	 LPT1 LPT2	 9100 9101	 1 2
Three Port: Parallel Parallel Serial	 LPT1 LPT2 COM1	 9100 9101 9102	 1 3 2

Enable SNMP Status SNMP Status is enabled through Windows' printer port settings.

Example You have a three port print server and want to enable SNMP Status for LPT2. The table above tells you to set the SNMP Device Index to 3.

Using Windows XP as an example:

1. Go to **Start** | **Printers and Faxes**.
2. Select **Printer** and then **Properties**.
3. Select **Port** and mark the **Port** you would like to change.
4. Click **Configure Port...**



5. Ensure that **SNMP Status Enabled** is ticked and enter the correct index number in **SNMP Device Index**, taken from the table above (3 in this example).
6. Click **OK** and **Close**.

Section 27 Glossary

3270DS 3270 Data Stream is a control language used for the 3270 family of terminals and controllers. Also used for printing.

Active Directory Active Directory - a structure supported by Windows 2000 that lets any object on a network be tracked and located. Active Directory is the directory service used in Windows 2000 Server and provides the foundation for Windows 2000 distributed networks.

AIX Advanced Interactive eXecutive. A version of the UNIX operating system from IBM that runs on various IBM computers including Mainframe systems.

APPC Advanced Program-to-Program Communication. SNA facility (based on LU6.2 and PU2.1) for general purpose inter-program communications. Often used synonymously with LU6.2 but LU6.2 is the architecture and APPC is the programming interface.

AppleTalk A local area network protocol for communication between Apple Computer products and other computers and peripherals.

arp Address Resolution Protocol. A protocol within the TCP/IP suite of network protocols that allows a host to find the physical address of a node on the same network. It is available in UNIX, Windows 95, Windows 98 and Windows NT. arp cannot be used across routers.

ASCII American Standard Code for Information Interchange, a plain text format used by computers.

Authentication Verification of identity, for instance by use of digital signatures.

Auto-IP A method to automatically set an IP address in the absence of a DHCP server.

Bonjour Bonjour enables automatic discovery of computers, devices, and services on IP networks without the need to enter IP addresses or configure DNS servers.

BOOTP BOOT Protocol. A TCP/IP protocol, used for downloading start-up information such as the IP address to hosts on the network. It is only available in UNIX. BOOTP requires a BOOTP daemon on your system. A request made to an active BOOTP daemon initiates a search of the Boot Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.

BSD Berkeley Software Distribution. The University of California, Berkeley additions to the UNIX operating system.

Certificate Authority, CA	An organization or company that issues digital certificates.
Client/server Printing	Means that print jobs are sent to a file server, with different clients attached to the print queue, rather than directly to the print server (Peer-to-Peer printing).
config file	This is a file that resides in the print server's memory and contains all the parameters that determine the Axis Network Print Server functionality. By editing the *config* file (changing the parameter settings), you can configure the Axis Network Print Server to meet the printing needs of your network.
CPGID	Code Page Global ID
DHCP	Dynamic Host Configuration Protocol. Enables e.g. a print server to automatically obtain an unused IP address from the DHCP server. To fully benefit from this method, the print server also supports DDNS, which is available in Windows 2000 networks.
Digital Certificate	Used to create digital signatures and public/private key pairs for secure Web services.
DNS	Domain Name System. Resolves host names into IP addresses.
Dynamic DNS	Dynamic Domain Name System. Allows hosts to dynamically change the IP address in DNS, e.g. when the host is given a new IP address by DHCP.
EBCDIC	Extended Binary Coded Decimal Interchange Code. Coded 8-bit character set used by SNA and native IBM data streams.
FEP	Front End Processor. Generic term for a specialized computer linked to a host machine to support a specialized function (e.g. communications). IBM 3705, 3720, 3725, and 3745 are communications FEPs.
Dynamic DNS	Dynamic Domain Name System. Allows hosts to dynamically change the IPs address in DNS, e.g. when the host is given a new IP address by DHCP.
Firmware	Firmware is the print server's internal software.
Flash Memory	The print server software is stored in Flash Memory.
FTP	File Transfer Protocol. A TCP/IP protocol used for logging in to network servers and for transferring files.
HPR	High Performance Routing. IBM implementation of APPN (Advanced Peer-to-Peer Networking). Includes pro-active congestion control and non-disruptive re-routing

HTML Hypertext Markup Language. A standard hypertext language used for creating World Wide Web pages and other hypertext documents.

HTTP Hypertext Transfer Protocol. The TCP/IP protocol for Web based communication.

HTTPS HyperText Transmission Protocol, Secure, i.e. HTTP for secure transactions.

IP Internet Protocol. The TCP/IP network-layer protocol that regulates packet forwarding by tracking IP addresses, routing outgoing messages and recognizing incoming messages.

IPDS Intelligent Printer Data Stream. An IBM protocol for data sent to page printers. A page description language analogous to PostScript.

IPP Internet Printing Protocol. A developing industry standard that allows users to print to remote printers across the Internet. With IPP, a user with an Internet connection can send a document to any printer connected to the Internet. IPP is platform independent and can be used to print over any LAN or WAN that supports TCP/IP.

IPX Internetwork Packet Exchange, a networking protocol used by NetWare.

LAN Local Area Network.

LED Light Emitting Diode.

Linux An open source implementation of UNIX.

LLC Logical Link Control. An additional data link layer protocol which operates on top of the MAC protocol defined in the original Ethernet standard (the ”Blue Book”).

Logical Printer A logical printer acts as a filter between the network and the physical printer. It appears to the user as a normal printer with additional characteristics. For example a UNIX workstation may only send a line feed (LF) to a shared printer that needs carriage return (CR) and LF. The logical printer can solve this problem by adding a CR.

LPD The Line Printer Daemon is a protocol for transferring print jobs between hosts. This is the recommended method for UNIX/Linux systems, but some System V versions do not support LPD.

LPR Line PRinter. The Unix print command. This does not actually print files but rather copies or links them to a spool area from where a daemon copies them to the printer.

LU	Logical Unit. The user's port into an SNA network. LU1 is a high performance print stream. LU2 is a 3270 terminal data stream. LU3 is a 3270 print data stream. LU6 is a host-to-host data exchange stream. LU7 is the 5250 terminal data stream.
LU6.2	IBM Peer-to-peer data stream for NOS functions. Supports asynchronous (store-and-forward) networking.
MIB	Management Information Base. A database of network configuration information used by SNMP and CMIP to monitor or change network settings.
NAU	Network Addressable Unit. Entities within an SNA network (SSCP, PU, LU) that can send or receive requests and responses. An SNA network is made up of NAUs and the underlying path control network.
NCP	NetWare Core Protocol. Network clients use the NCP to request services of servers, and servers use NCP to provide services, such as file and print services.
NCP(2)	Network Control Program. SNA program resident in the FEP. NCP off-loads certain line protocol and routing functions from the host CPU.
NDS	NetWare Directory Services. A hierarchical data base that manages NetWare network resources such as servers and volumes.
NetBIOS/NetBEUI	Network Basic Input Output System, a network protocol with special functions for local area networks. NetBIOS Enhanced User Interface is an enhanced version of NetBIOS.
NetWare	An operating system for local area networks.
PCL	Printer Control Language — a set of command codes used when printing. A PCL driver is a small program that works between the operating system and the printer.
Peer-to-Peer Printing	When selecting Peer-to-peer printing, all print jobs are sent directly to the print server, rather than through a file server (client/server).
PEM	Privacy Enhanced Mail.
PPR/PPD	Page Printer Requester/Page Printer Daemon. Bidirectional IBM proprietary TCP/IP application protocol. Supported on AS/400s and Mainframes for transporting IPDS printer data over TCP/IP. This is not an open standard.
PU	Physical Unit type within SNA. The software in an SNA node controlling the node's communications hardware.

PU2.1 SNA PU type 2.1 allows local user ports to communicate without going thorough a host node's SSCP services.s

RARP Reverse Address Resolution Protocol. A TCP/IP protocol used for downloading IP addresses in UNIX/Linux networks. It requires a RARP daemon on your system, and only operates within a single network segment. A request made to an active RARP daemon initiates a search of the Ethernet Address Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.

RISC Reduced Instruction Set Computing. A processor that recognizes only a limited number of assembly-language instructions.

SAP Service Advertising Protocol. A NetWare network name advertising service that e.g. file servers can use for advertising their existence to network clients.

SAP(2) Service Access Point. Field defined by the IEEE 802.2 specification that is part of an address specification. Thus, the destination plus the DSAP define the recipient of a packet. The same applies to the SSAP

SCS SNA Character String. A sequence of control commands that allows sophisticated control of printers and other devices.

SNA Systems Network Architecture. IBM's data communications architecture defining levels of protocols for communications between terminals and applications as well as between programs. Originally SNA was strictly host-based with VTAM controlling the network except for path control which was provided by NCP in the FEP. Recently, with the APPN/APPC and HPR additions SNA has become more distributed.

SNMP Simple Network Management Protocol. Standard management protocol for network attached devices.

SPX Sequenced Packet Exchange, a NetWare communications protocol used to transmit messages reliably over a network.

SSCP System Services Control Point. SNA software within VTAM which handles network name/address conversion, device configuration, network diagnostics and recovery. The SSCP is a NAU located on a host node in the network.

SSL Secure Sockets Layer, a protocol designed to provide secure communications on the Internet.

TCP Transmission Control Protocol. The connection-oriented, transport-level protocol used in the TCP/IP suite of protocols.

Telnet A terminal emulation program for networks, often used to remotely control Web servers.

TFTP Trivial File Transfer Protocol (TFTP) is an Internet software utility for transferring files that is simpler to use than the File Transfer Protocol (FTP) but less capable. It is used where user authentication and directory visibility are not required. TFTP uses the User Datagram Protocol (UDP) rather than the Transmission Control Protocol (TCP).

TLS Transport Layer Security, a protocol that guarantees privacy and data integrity between applications communicating over the Internet.

TN3270E Extension to the Telnet protocol for transporting 3270 terminal and print data over TCP/IP.

TN5250E Extension to the Telnet protocol for transporting 5250 terminal and print data over TCP/IP.

UNIX A 32-bit multi-tasking, multi-user operating system originally developed by AT&T.

URL Uniform Resource Locator. A way of specifying the location of publicly available information on the Internet.

USB Universal Serial Bus.

VPDI Virtual Printer Driver Interface

VTAM Virtual Telecommunications Access Method. Mainframe software that performs network control and management. VTAM's most important objective is to provide the SSCP services.

WAN Wide Area Network.

WINS Windows Internet Name Service. A NetBIOS Name Server that maps NetBIOS names to dynamically assigned IP addresses.

Wizard A special form of user assistance that automates a task through a dialog with the user. Wizards help the user to accomplish tasks that are complex and require experience.

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