

AXIS 5470e Network Print Server

User's Manual

Safety Notices

Please take some time to read through the safety notices before installing the AXIS 5470e.

Caution! - must be observed to avoid loss of data or damage to your equipment.

Important: - must be observed to avoid operational impairment.

Do not proceed beyond any of the above notices unless you have taken appropriate measures!

Electromagnetic Compatibility (EMC) notices - USA

This equipment generates and radiates radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. Shielded cables should be used with this unit to ensure compliance with the Class A limits.

Electromagnetic Compatibility (EMC) notices - Europe



This digital equipment fulfils the requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial, and light industry (Compliance is not valid for unshielded network and printer cables).

Liability

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ThinServer, ThinWizard, IP Installer, AXIS 5470e.

Other Trademark Acknowledgments

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Preface

Thank you for purchasing the AXIS 5470e Network 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.

About this manual

This manual provides introductory information as well as detailed instructions on how to set up and manage the AXIS 5470e in various network environments. It is intended for everyone involved in installing and managing the AXIS 5470e. To fully benefit from the manual, you should be familiar with basic networking principles.

This manual is applicable for the AXIS 5470e, with firmware release 6.30 or later

About Axis

Axis Communications is dedicated to providing innovative solutions for network-connected computer peripherals. Since the start in 1984, it has been one of the fastest growing companies in the market and is now a leader in its field.

ThinServer™ Technology

enables Axis' products to act as intelligent file server independent ThinServer devices. A ThinServer device is a network server which includes "thin" embedded server software capable of simultaneous multiprotocol communication, scalable RISC hardware and a built-in Web server which allows easy access and management via any standard Web browser. The ThinServer technology makes it possible to connect any electronic device to the network, thus providing "Access to everything".

Support Services

Should you require any 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.

If you are connected to the Internet, you can find on-line manuals, technical support, firmware updates, application software, company information, on the addresses listed below.

<http://www.axis.com>

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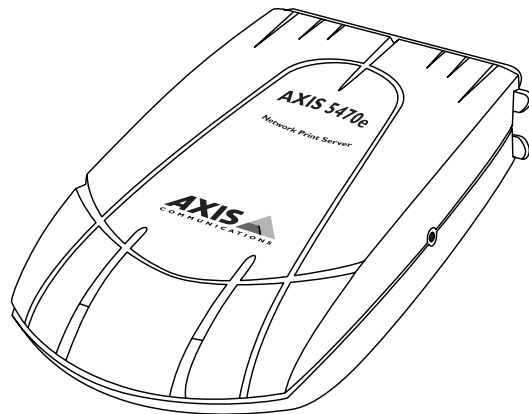
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Section 1 Introduction

Product Model Summary

The AXIS 5470e is a LAN attached multiprotocol print server that prints IBM and ASCII data streams to any ASCII printer. Supporting IBM Mainframes, AS/400, NetWare, UNIX, LAN Server Manager, Windows, OS/2 and Apple EtherTalk, this product is ideal for IBM Mainframe and AS/400 sites that are migrating from pure IBM networks to LAN environments.



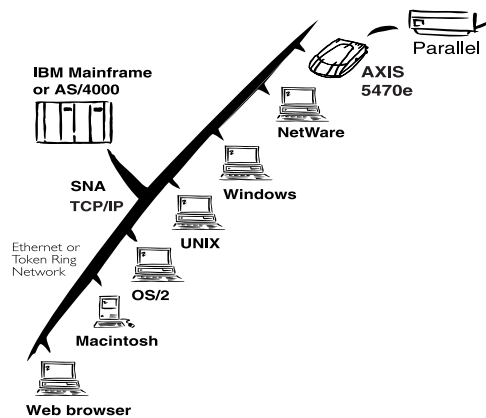
The AXIS 5470e Network Print Server

Where to use it

Supported Environments

The AXIS 5470e 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
- NetWare
- UNIX
- Windows
- Windows clients connected to LANtastic networks
- OS/2
- Macintosh
- Internet/intranet via any standard Web browser



How to use it

Installation and Integration

The installation of the AXIS 5470e and its integration into the network is performed using the appropriate client software, provided with your print server or your operating system.

Note:

The AXIS 5470e is designed for 10 Mbps Ethernet and 100 Mbps Fast Ethernet networks and connects to the network via a twisted pair category 5 cable (10baseT and 100baseTX).

Configuration and Management

As the AXIS 5470e comprises a built-in Web server, it can be configured and managed directly from its internal Web pages, using HTTP over TCP/IP. Access to the AXIS 5470e via any standard Web browser, offers you a platform-independent management tool that is suitable for all supported network environments.

AXIS 5470e can be installed in the Macintosh environment without any Axis client software.

AXIS 5470e Features and Benefits

- Reliability** The AXIS 5470e print server provides high performance and reliability combined with low power consumption. The electronic circuits are based on the improved 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 5470e can emulate IBM twinax and coax print and control functionality. This means that the AXIS 5470e 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
- .Speed** The AXIS ETRAX 100LX chip has been specifically designed for LAN products and benefits users with a faster throughput than a direct PC-to-printer connection. With a sustained data throughput of more than 1 Mbyte per second, the AXIS 5470e is fast. High speed Centronics communication such as ECP, Hewlett-Packard Fast Mode, High Speed and IBM Fast Byte is supported.
- Easy to Install** You can install the AXIS 5470e in minutes, using any standard web browser.
- Security** You can assign passwords to restrict both login and printer access.

- Monitoring** The internal AXIS 5470e Web pages allow you to continuously monitor printer status. Integrity of your printing is also monitored via interactive communication with the IBM host.

 The AXIS Print Monitor for Windows 95, Windows 98 and Windows NT can be configured to display pop-up messages that show the status of peer-to-peer print jobs.

 The AXIS 5470e additionally supports SNMP for remote monitoring.

- Futureproof** You can upgrade the AXIS 5470e Flash memory over the network. This allows you to quickly update and enhance the operational features of your AXIS 5470e when new print server software becomes available.

- Pocket-sized** The AXIS 5470e is equipped with one high-speed parallel port connector that plugs directly into the parallel port on the printer.

Section 2 Product Overview

Verify that nothing is missing from the print server package by using the check list below. Please contact your dealer if anything should be missing or damaged. All packing materials are recyclable.



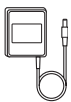
Product	Supported Datastreams & Protocols		Part Numbers
AXIS 5470e Copier	SCS + IPDS	TCP/IP + SNA Digital Copier Support	0096-021-01
AXIS 5470e IPDS	SCS + IPDS	TCP/IP + SNA	0096-007-01
AXIS 5470e SNA	SCS	TCP/IP + SNA	0096-013-01
AXIS 5470e TCP/IP	SCS	TCP/IP	0096-001-01

Note:

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



Media	Title	Revision
CD	AXIS Product CD	Rev 1.0 or higher
Printed Materials	AXIS 5470e User's Guide	Rev 1.3 or higher



Power Supply	Part nos. (AXIS PS-B)
Australia	13269
Europe	13267
Japan	13936
UK	13268
USA	13270

Optional accessories	Description	Part Number
Cables	Centronics to Mini-Centronics Cable	16453
	Printer Cable Extension	13522
Ribbons	Self-adhesive velcro ribbons	13282 and 13283
Kits	Flash Loading Kit	0041-4

AXIS Product CD

The AXIS Product CD provides an easy-to-use electronic catalog, that includes AXIS Utilities Software, Product Software, White Papers, User Documentations, etc. It is compatible for use within all of the supported Axis computing environments.

You can view the contents of the AXIS Product CD via the HTML interface. However, all documents presented on the CD are in PDF format.

Note:

If the Adobe Acrobat Reader 3.0 is not installed on to your system, you can download Acrobat Reader from the AXIS Product CD or Adobe's web site at <http://www.adobe.com>

Network Connectors

The AXIS 5470e is designed for 10 Mbps Ethernet and 100 Mbps Fast Ethernet networks and connects to the network via a twisted pair category 5 cable or better. The AXIS 5470e is equipped with an autosensing function that detects the speed of the local network segment and varies the speed of its data communication accordingly, between 10 Mbps and 100 Mbps.

Printer Port

The AXIS 5470e print server is provided with a single high-speed IEEE 1284 compatible parallel port, that connects directly, without the need of cabling, to any standard printer.

A Centronics-to-Centronics extension cable may be obtained from your local distributor for use with printers physically unable to accommodate the AXIS 5470e.

Test Button

The test button is used for:

- Printing a test page to check the connection to the printer.
- Printing the parameter list showing all the AXIS 5470e settings.
- Resetting the AXIS 5470e parameters to the factory default settings.

Refer to **Test Button**, on page 248, for more information about the test Button.

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 it flashes, there is a problem with the AXIS 5470e or its power supply.

Section 3 Basic Installation

Getting Started

After you have verified that no items in *Product Overview*, on page 12, are missing from the package, you are ready to install your AXIS 5470e.

Follow the instructions below to install the AXIS 5470e in your environment:

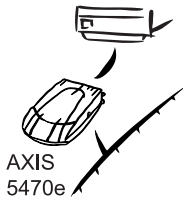
1. Start the procedure by connecting the AXIS 5470e to your network and printer. Refer to *Connecting a printer to the Ethernet Network*, on page 16.
2. When the AXIS 5470e is successfully connected, proceed to the *Installation Guide*, on page 17, where you will find further information about how to install and integrate the AXIS 5470e in your network environments.

Connecting a printer to the Ethernet Network

Follow the instructions below to connect a printer to the network via the AXIS 5470e print server.

Important:

Make sure that the AXIS 5470e external power supply is marked with the correct voltage!



1. Switch off the printer and disconnect the AXIS 5470e external power supply.
2. Locate the serial number, found on the backside label of the AXIS 5470e, and write it down. You will need this number later during the network configuration.
3. Connect the AXIS 5470e to the printer, either directly to the parallel printer port, or using the optional printer cable extension with the optional velcro ribbons. Connect your AXIS 5470e to the network using a twisted pair category 5 cable.
4. Switch on the printer and connect the external power supply to the AXIS 5470e. The power indicator will light up. When the network indicator starts to flash, the AXIS 5470e is successfully connected to the network.
5. Press and release the test button on the AXIS 5470e to print a test page. If the printer and the AXIS 5470e are correctly connected, the internal test page will be printed.

You are now ready to install your print server onto your network using one of the methods detailed in the *Installation Guide*, on page 17.

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 134, for more information.
- The AXIS 5470e 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 *Section 11 Management and Configuration*, on page 134, for more information.

Installation Guide

After connecting the AXIS 5470e 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.

Installation Methods Select the appropriate installation method from the table below:

Environment	Network Configuration		Action
AS/400	SNA		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - AS/400</i> , on page 31
	TCP/IP	TN5250E	Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - AS/400</i> , on page 31
		PPR/PPD	
IBM Mainframe	SNA		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - IBM Mainframe</i> , on page 54
	TCP/IP	TN3270E	Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - IBM Mainframe</i> , on page 54
		PPR/PPD	
Windows	NetBIOS/NetBEUI		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - Windows</i> , on page 104
	TCP/IP		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - Windows</i> , on page 104
NetWare	IP/IPX	PSERVER mode	Start with <i>Assigning an IP address</i> , on page 20 then See <i>Setup using NDPS</i> , on page 97 and proceed to <i>Setup using Queue-based printing over IP/IPX in PSERVER Mode</i> , on page 99
	IP/IPX	Remote Printer mode	Start with <i>Assigning an IP address</i> , on page 20 then See <i>Setup using NDPS</i> , on page 97 and proceed to <i>Setup for Queue-based printing over IPX/SPX (Remote Printer Mode)</i> , on page 101
OS/2	NetBIOS/NetBEUI		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - OS/2</i> , on page 117
Macintosh	AppleTalk		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - Macintosh</i> , on page 122
	TCP/IP		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - Macintosh</i> , on page 122
UNIX	TCP/IP		Start with <i>Assigning an IP address</i> , on page 20 Proceed with <i>Setting Up - UNIX</i> , on page 128

Installation Tools

The recommended installation tools for the AXIS 5470e are summarized in the following table:

Protocols	Operating Systems	Configuration/Management methods
TCP/IP	Windows 95/98/NT/Me/2000/XP UNIX Mac OS X	Web Browser, AXIS ThinWizard, FTP, Telnet, SNMP, HP Web JetAdmin
IPX/SPX	NetWare	HP JetAdmin, Novell Utilities
NetBIOS/Net-BEUI	Windows 95/98/NT/Me/2000 OS/2	Axis Print Monitor
AppleTalk	Macintosh	Web browser, Mac-FTP

Recommended installation tools for the AXIS 5470e

- * A shareware LPR spooler is available for Windows for Workgroups. You can download this software from <http://www.axis.com/>

Assigning an IP address

To establish communication with the TCP/IP network, enabling TCP/IP printing and Web browser management, an IP address must be assigned to your AXIS 5470e.

Before you start

- | | |
|--------------------------------|--|
| System privileges | You need root privileges on your UNIX system, or administrator privileges on a Windows NT server. |
| Ethernet address
AXIS 5470e | You need to know the Ethernet address of your AXIS 5470e to perform the installation. The Ethernet address is based upon the serial number of your AXIS 5470e. This means, for example, that an AXIS 5470e 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 bottom 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 5470e. Always consult your network administrator before assigning an IP address to your AXIS 5470e.

- | | |
|--|---|
| Registering and
Resolving
Host Names | In order to register the host name of the AXIS 5470e 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 5470e using DHCP. |
|--|---|

The host name of the AXIS 5470e is specified by the PS_NAME parameter. Refer to *The Parameter List*, on page 231.

WINS host name rules WINS only supports 15 character long host names. If your host name is longer than 15 characters, the AXIS 5470e truncates the host name to 15 characters when registering with a WINS server. You can view the AXIS 5470e 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 134.

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 5470e 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 134.

If the host name matches another entry in the DDNS data base, the AXIS 5470e 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.

Setting the IP address

To establish communication with the TCP/IP network, an IP Address must be assigned to your AXIS 5470e. Choose an appropriate method from the table below:

Method:	Server Required:	Comment:
DHCP	DHCP server	Dynamic assignment of IP addresses
RARP	RARP server	Static assignment of IP addresses
BOOTP	BOOTP server	Static assignment of IP addresses
Auto-IP	Windows environments	Automatic assignment of IP addresses

All methods are enabled by default

If you are working in a Windows network with automatic IP address assignment, your print server will obtain an IP address automatically when you connect it to the network. Follow the instructions on this page to verify the IP address:

1. Open a web browser (e.g. Internet Explorer or Netscape Communicator).
2. In the Web browser's Location/Address field, enter the print server's IP address, found on the test page (see **Connecting a printer to the Ethernet Network**, on page 16) and press **Enter**.
3. If the **Network Print Server** web page appears in your Web browser, the IP address was set automatically when you connected the AXIS 5470e to your network.
4. If the **Network Print Server** web page does **not** appear, you need to set the print server's IP address manually using one of the methods described in **Manual IP address assignment**, on page 24.

Notes:

- Use a Web browser with JavaScript support and Java enabled.
- The AXIS 5470e 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 24 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 5470e. Choose the appropriate method according to your network:

- **AXIS IP JumpStarter™** is an easy-to-use Windows application that allows you to assign an IP address to your AXIS 5470e and find Axis servers already installed in your network. Refer to **Setting the IP address using AXIS IP JumpStarter**, on page 25 for instructions.
- **arp/ping** - use this method to set the IP address for each new device individually. This method cannot be used over routers. Refer to **Setting the IP address using arp/ping**, on page 26 for instructions.

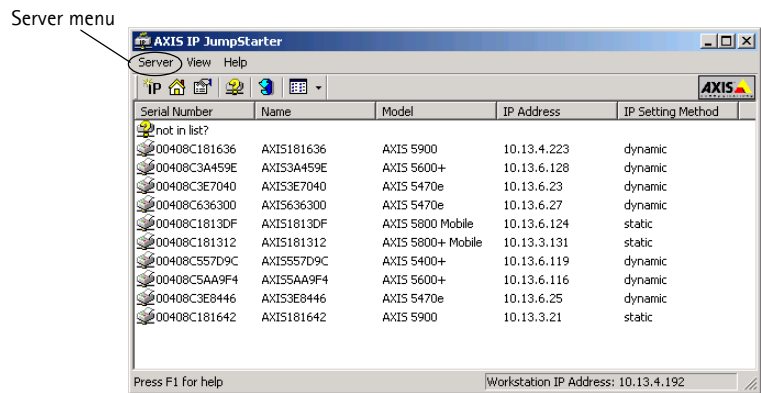
Note:

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 AXIS IP JumpStarter

Use AXIS IP JumpStarter to set the IP address. Install AXIS IP JumpStarter which is available from the AXIS Product CD or from the Axis web site at www.axis.com.

1. Select the required server from the serial number list in the IP JumpStarter dialog window.



2. From the Server menu, select Set IP Address.
3. Click the radio button that corresponds to your choice of IP setting method.
4. Click OK to save your settings.
5. Enter the server root password (by default set to pass), and click OK.
6. The AXIS 5470e will appear in the list with the assigned IP address.
7. To access the print server's web pages, highlight the AXIS 5470e in the list and select Server Home Page from the Server menu.

Note:

If your print server does not appear in the serial number list, refer to the AXIS IP JumpStarter online help files.

Setting the IP address using arp/ping

Refer to the appropriate section below to assign an IP address to your AXIS 5470e 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
3.	arp -d <Internet address>	arp -d 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 using FTP or Reverse Telnet.

UNIX, Mac OS X

Open a Terminal and enter the following syntax:

	Syntax	Example
1.	arp -s <host name> <Ethernet address> temp	arp -s psname 00:40:8c:18:16:36 temp
2.	ping <host name>	ping psname

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 using FTP or Reverse Telnet.

Notes:

- The AXIS 5470e 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 ten 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`

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)
 - lease duration
2. Activate the scope.

The AXIS 5470e 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 5470e registers its host name and IP address on the WINS server.

The AXIS 5470e 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 5470e receives its IP address.

Using ARP in Windows and OS/2

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

1. Start a DOS window.
2. Type the following commands:

```
arp -s <IP address> <Ethernet address>
ping <IP address>
arp -d <IP address>
```

Example

```
arp -s 192.168.3.191 00-40-8c-10-00-86
ping 192.168.3.191
arp -d 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.

Using ARP in UNIX Follow the instructions below to set the IP address using ARP:

Type the following commands in the shell window:

```
arp -s <host name> <Ethernet address> temp  
ping <host name>
```

Example:

```
arp -s npsname 00:40:8c:10:00:86 temp  
ping npsname
```

The host will return `npsname is alive`, or a similar message. This indicates that the address has been set and that communication is established.

Notes:

- The `Ethernet address` is equal to the serial number, which is located on the underside label of the AXIS 5470e.
- 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.

Using RARP in UNIX

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>
```

```
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 5470e 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 5470e.
- 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

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>
```

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

The AXIS 5470e 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 5470e receives its IP address.

Section 4 Setting Up - AS/400

This section describes how to configure the AXIS 5470e for printing SCS and IPDS data streams using SNA and TCP/IP transport protocols in the AS/400 environment.

Note:

SNA is only available for AXIS 5470e models with the SNA option installed. Please refer to *Product Model Summary*, on page 7

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 5470e.

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	<i>SNA Printing - 5494 Mode, on page 32</i>	Recommended method for SNA
	IPDS		
TN5250E (TCP/IP)	SCS	<i>TN5250E printing (SCS over IP), on page 43</i>	Recommended method for SCS over TCP/IP
PPR/PPD (TCP/IP)	IPDS	<i>PPR/PPD Printing - IPDS data streams, on page 46</i>	Recommended method for IPDS over TCP/IP

If you intend to operate your AXIS 5470e in a multi-protocol environment, you should also proceed to the other relevant sections in this manual:

Section 5 Setting Up – IBM Mainframe, on page 54

Section 6 Setting Up – NetWare, on page 96

Section 7 Setting Up – Windows, on page 104

Section 8 Setting Up – OS/2, on page 117

Section 9 Setting Up – Macintosh, on page 122

Section 10 Setting Up – UNIX, on page 128

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 222 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 AXIS 5470e models with the SNA option installed. Please refer to *Product Model Summary*, on page 7.

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

- The AS/400 Host System Checklist
- Configuring the AXIS 5470e
- 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 5470e 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-----
CONTROLLER1
CONTROLLER2
CONTROLLER3

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.

- 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          *APN
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

- Type **DSPSYSVAL QCHRID** on the command line and press **Enter**. Note the code page for future reference. Press **F3** to exit.
- 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 . . . . . : QDFTJOB
  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 5470e 5494 LU Name) and press **Enter** to delete any previously created Controller and Device descriptions specific to your AXIS 5470e. Delete the Device Descriptions (indented text) first and then the Controllers. Print a test page if you are unsure of the AXIS 5470e 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...

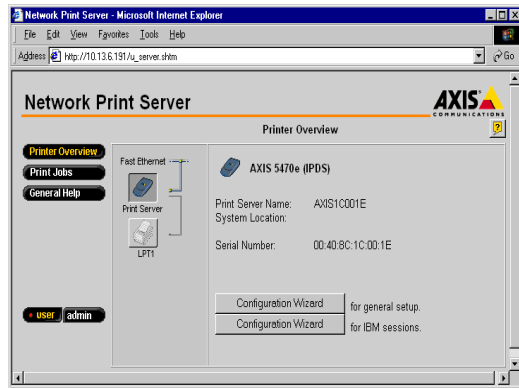
Opt  Description      Status                -----Job-----
      FS1OP           ACTIVE
      ETHERNET        ACTIVE
      AXIS11          ACTIVE
      AXIS11          ACTIVE
      AXIS11          ACTIVE/TARGET      SHEILA    QUSER    010190
      AXIS11          ACTIVE/SOURCE      SHEILA    QUSER    010190
      AXIS11          ACTIVE/SOURCE      SHEILA    QUSER    010190
      AXIS11          ACTIVE/SOURCE      SHEILA    QUSER    010190
  
```

Configuring the AXIS 5470e

To perform the instructions presented in this section, you should first assign an IP address to your AXIS 5470e using one of the methods presented in **Assigning an IP address**, on page 20.

After you have completed the procedures in the AS/400 Host system checklist above, follow the instructions below to configure the AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 Laser-Writer 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 5470e 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 5470e 5494 LU Name.
 - One APPC device with the same name as the AXIS 5470e 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 5470e 5494 LU Name.
 - One, two or three twinax printer device named **xxxxPRT0z** (**xxxx** are the first four characters of the AXIS 5470e 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 5470e 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 5470e.

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

Note:

You will find an AS/400 Parameter checklist in the AXIS 5470e 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**.

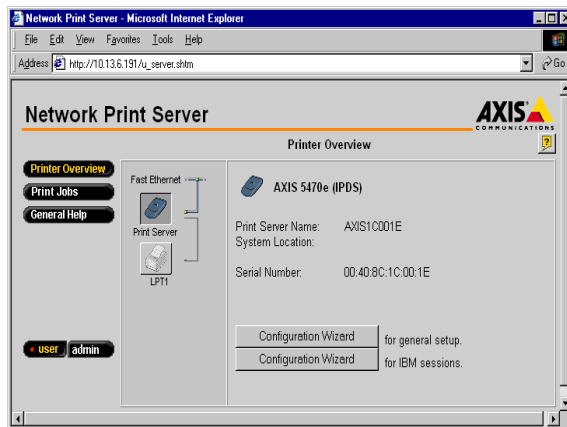
Configuring the AXIS 5470e

Follow the instructions below to configure the AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 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 5470e 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 5470e models with the IPDS option installed. For more information, refer to *Product Model Summary*, on page 7.

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

- Configuring the AS/400 host
- Configuring the AXIS 5470e
- Verifying the communication between the AXIS 5470e 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.

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 (DEV D)` 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 5470e.
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:
  Identifier . . . . .                    > 11
  Point size . . . . .                    *NONE
Form feed. . . . . FORMFEED               *FILE
Separator drawer . . . . . SEPDRAWER      *FILE
Separator program . . . . . SEPPGM        *NONE
  Library . . . . .
Printer error message . . . . . PRTERMSG   *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...

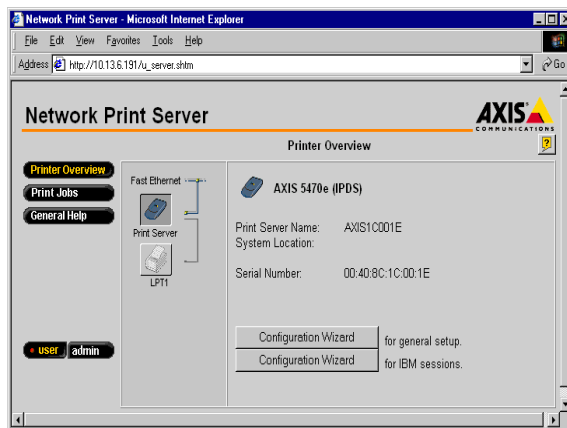
Configuring the AXIS 5470e

Follow the instructions below to configure your AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 5470e:

Note:

AXISPR1 is an example. Refer to *Creating a Printer Device Description*, on *page 48* 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 5470e.

The AXIS 5470e is now ready for printing in the AS/400 environment.

Section 5 Setting Up – IBM Mainframe

This section describes how to configure the AXIS 5470e for printing SCS, 3270 and IPDS data streams using SNA and TCP/IP transport protocols in the IBM Mainframe 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	<i>SNA Printing, on page 55</i>
	3270DS	
	IPDS	
TN3270E (TCP/IP)	SCS	<i>TCP/IP TN3270E Printing, on page 64</i>
	3270DS	
	IPDS	
PPR/PPD (TCP/IP)	IPDS	<i>PPR/PPD Printing - IPDS data streams, on page 77</i>

Notes:

- IPDS is only available for AXIS 5470e models with the IPDS option installed. Please refer to *Product Model Summary*, on page 7.
- SNA is only available for AXIS 5470e models with the SNA option installed. Please refer to *Product Model Summary*, on page 7.

If you intend to operate your AXIS 5470e in a multi- protocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 4 Setting Up - AS/400

Section 6 Setting Up - NetWare

Section 7 Setting Up - Windows

Section 8 Setting Up - OS/2

Section 9 Setting Up - Macintosh

Section 10 Setting Up - UNIX

SNA Printing

The AXIS 5470e supports printing of SCS, 3270 and IPDS data streams via the SNA transport protocol.

Important:

The AXIS 5470e 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 5470e
- 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 5470e.
- 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 5470e serial number that is found on the backside label of the print server.

Procedures

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 5470e. You will instead be working with the gateway VTAM definitions. Since the AXIS 5470e 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 5470e MAC address) entries to the PU definition.
- Code a PATH definition using the unit's full 12 digit MAC address.

Example: An AXIS 5470e with a MAC/node address of 00408C100086 will be defined as:

```
PA5470e1      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 5470e.

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 5470e.

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 5470e.

Logon-mode entry for LU type 1 printing)

```

*
* For application output of LU-1 SNA Character Stream (SCS)
*
          TITLE 'SCS5470e'
SCS5470e  MODEENTLOGMODE=SCS5470e,           X
          FMPPROF=X'03',                      X
          TSPROF=X'03',                      X
          PRIPROT=X'B1',                      X
          SECPROT=X'B0',                      X
          COMPROT=X'3080',                    X
          RUSIZES=X'8585',                    X
          PSERVIC=X'014000010000000001000000', X
          PSNDPAC=X'03',                      X
          SRCVPAC=X'03'

```

Logon-mode entry for LU type 3 printing

```

*
* For application output of LU-3 3270 Data Stream (3270DS)
*
          TITLE 'DSC5470e'
DSC5470e  MODEENT LOGMODE=DSC5470e,           X
          FMPPROF=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'030000000000185018507F00', 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 5470e.
*
PU5470e1      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 5470e
*
PA5470e1      PATHDIALNO=0104xxxxxxxxxxx, X
              GID=1,                    X
              PID=1,                    X
              GRPNM=gggggg
*
* LU definitions. Use either LU5470e1 or LU5470e3
*
* LU type 1 (SCS)
*
LU5470e1      LULOCADDR=2,              X
              DLOGMOD=SCS5470e,         X
              VPACING=7,                 X
              PACING=3
*
* LU type 3 (3270DS)
*
LU5470e3      LULOCADDR=2,              X
              DLOGMOD=DSC5470e,         X
              VPACING=7,                 X
              PACING=3
    
```

Note:

In the PU definition, IDNUM should be set to the five last digits of the AXIS 5470e node address, NODE_ADDR. By default NODE_ADDR stands for the five last digits of the AXIS 5470e 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 5470e Ethernet or Node address. By default the Ethernet/Node address is identical to the AXIS 5470e 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 5470e. 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 *Section 13 Using Logical Printers*, on page 170 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:

```
* 5470e DSPU DEFINITION
DSPU5470e PU  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=SCS5470e
DSPULU03 LU   LOCADDR=3, X
               SSCPFM=USSSCS, X
               USSTAB=USSTAB, X
               PACING=1, X
               VPACING=2, X
               ISTATUS=ACTIVE, X
               LOGAPPL=MWTC, X
               DLOGMOD=SCS5470e
```

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 5470e 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 5470e must be bit-order reversed in the PATH entry. An AXIS 5470e 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 5470e is configured in the gateway. The address must be reversed, as in case 1 above.

Configuring the
 AXIS 5470e

To perform the instructions presented in this section, you should first assign an IP address to your AXIS 5470e using one of the methods presented in **Assigning an IP address**, on page 20.

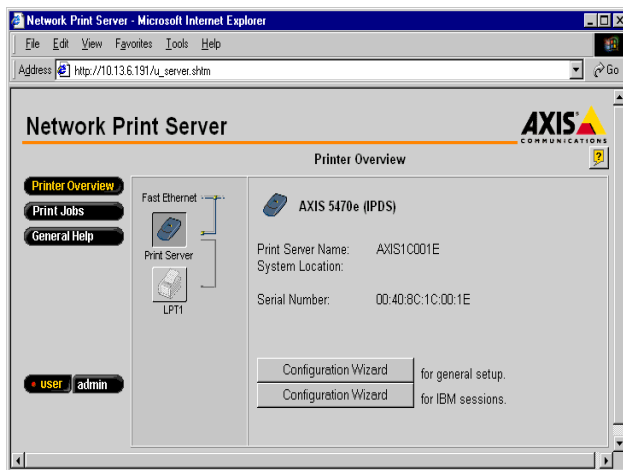
The purpose of the configuration of the AXIS 5470e is to emulate a LAN attached IBM 3174 Control Unit running SNA PU2.0.

Follow the instructions below to configure the AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 Laser-Writer 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 5470e. 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 Axis' Technical Notes and FAQ on the Axis Web site, if the status line indicates that the SNA link is not active.

The AXIS 5470e is now ready for use in the SNA environment.

TCP/IP TN3270E Printing

The following procedures describe how to configure the AXIS 5470e for SCS, 3270DS and IPDS printing, using TCP/IP TN3270E.

This is achieved by establishing communication between the AXIS 5470e and Mainframe host via a TN3270E server, using the TCP/IP transport protocol for the SCS, 3270 and IPDS data streams, as illustrated below:



Note:

IPDS is only available for AXIS 5470e units with the IPDS option installed. Please refer to *Product Model Summary*, on page 7

Configuring for TN3270E printing is described in four separate stages:

- Configuring the IBM Mainframe Host system
- Configuring the AXIS 5470e
- 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.

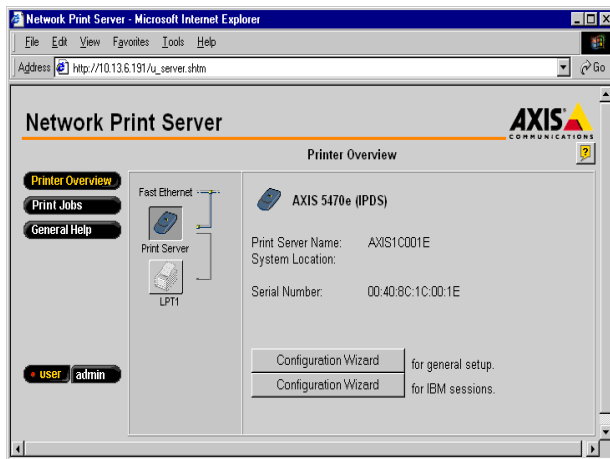
Configuring the
AXIS 5470e

Follow instructions below to configure the AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 5470e 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 5470e 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 Technical Notes section on the Axis Web pages.

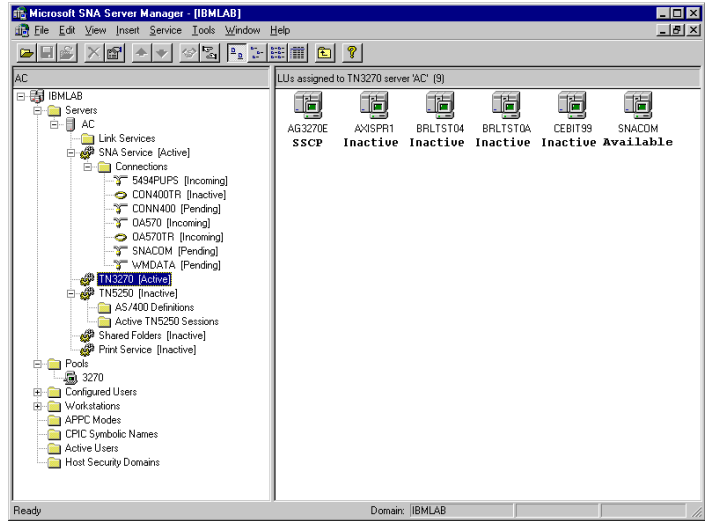
Microsoft SNA Server Communication is established in two separate stages, SNA Server-to-Host connection and SNA Server to AXIS 5470e connection, as described below:

SNA Server-to-Host Connection

Follow the steps below to set-up a SNA Server-to-Host connection for the AXIS 5470e:

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 5470e.

6. Click OK.



SNA Server Manager Main Window

SNA Server - AXIS 5470e 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 5470e, 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 5470e 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 5470e. The LUA should change status to `SSCP`.
4. Check that the printer is connected to the AXIS 5470e.
5. Send a print job from the host.

The AXIS 5470e 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 via the AXIS Web pages.

NetWare for SAA Server To set-up a TN3270E connection to the AXIS 5470e 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.

The screenshot shows a dialog box titled "NetWare for SAA Administrator". At the top, it displays "NetWare for SAA Version: 2.20.10" and "Number of installed user licenses: 125". Below this is a section titled "Peer PU profile default setting" with the following fields:

Profile Name:	NWSAA
SNA network ID:	SEEDB
Peripheral node CP name:	CPNAME
Node ID (block/PU ID):	05D 66204 hex
Local/partner SAP for independent LUs:	04 hex

At the bottom of the dialog box are three buttons: "OK", "Cancel", and "Help". To the right of the dialog box is a vertical panel with a blue header labeled "Description" and a "TN3270" icon.


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:	<input type="text" value="NWSAAPU"/>
Number of dependent LUs:	<input type="text" value="8"/>
Starting dependent LU number:	<input type="text" value="4"/>
Peripheral node control point name:	<input type="text" value="NWSAAPU"/>
Node ID (block/PU ID):	<input type="text" value="05D"/> <input type="text" value="66204"/> hex
<input type="checkbox"/> Offline test mode	
<input checked="" type="checkbox"/> Assign only LUs activated by the host	
<input type="checkbox"/> Call host on workstation attach	
<input type="checkbox"/> SDDL support	
Logical adapter name:	<input type="text" value="E100R_1"/>
Adapter Settings	
Maximum frame size to transmit inbound:	<input type="text" value="0521"/>
802.2 remote node address:	<input type="text" value="0200"/> <input type="text" value="66800000"/> hex
802.2 remote service access point:	<input type="text" value="04"/> hex
802.2 local service access point:	<input type="text" value="04"/> hex
<input checked="" type="checkbox"/> Enable PU profile at startup	
<input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Help"/>	

Description

 LU Defaults

 Profile Notes

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.

Default LU category:

Default LU type:

VTAM LU name prefix:

Append LU address to prefix using

Hex Decimal

Ok Cancel Help

Description

LU Defaults

Profile Notes

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

Profile Name	NWSAA
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):	66204 05D
Offline test mode:	No
Assign only LUs activated by the host:	Yes
Enable SDDL Support:	No
Adapter Name:	E100B_1
Adapter Type:	802.2 LLC
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 5470e.

1. Make sure the printer is connected to the AXIS 5470e and the corresponding LU in the host is activated.
2. Send a print job from the host.

The AXIS 5470e 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 194.

Note:

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 via the AXIS Web pages.

PPR/PPD Printing - IPDS data streams

Note:

IPDS is only available for AXIS 5470e models with the IPDS option installed. Please refer to *Product Model Summary*, on page 7.

Before you begin

In order to use the AXIS 5470e 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 5470e
5. Verifying the communication between the AXIS 5470e and the IBM Mainframe
6. Defining the AXIS 5470e 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:

```

ACBPOOLSIZ          1000
ADDRSTRANS          1500
CCBPOOLSIZ          150
DATABUFFERPOOLSIZ  160   32768
ENVELOPEPOOLSIZ    750
IPROUTEPOOLSIZ     300
LARGEENVELOPEPOOLSIZ  50
RCBPOOLSIZ          50
SCBPOOLSIZ          256
SKCBPOOLSIZ         256
SMALLDATABUFFERPOOLSIZ  256
TCBPOOLSIZ          512
TINYDATABUFFERPOOLSIZ  256
UCBPOOLSIZ          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	<p>PSF relies on TCP to detect when a connection with a TCP/IP-attached printer or an AXIS 5470e 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.</p> <p>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.</p> <p>Also, if any target host on you network requires that the keep-alive packet contains data, specify SENDGARBAGE TRUE</p>
GATEWAY	<p>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.</p> <p>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.</p> <p>For values in the GATEWAY statement other than the packet size, specify the values that are correct for your installation.</p>

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

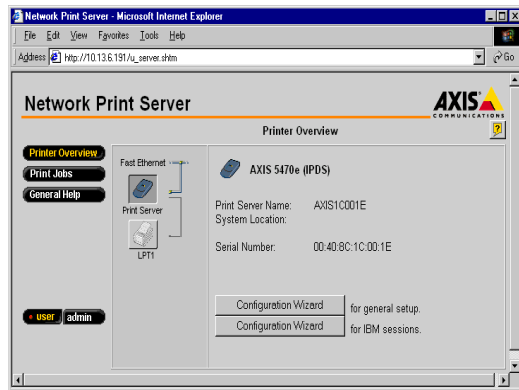
- IBM TCP/IP MVS Customization and Administration Guide
- IBM TCP/IP Performance and Tuning Guide

Configuring the AXIS 5470e

Follow the instructions below to configure your AXIS 5470e 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 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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 5470e by pinging the print server from the MVS system. A successful ping indicates that the MVS system can communicate with the AXIS 5470e.

From an TSO session, enter the following command:

```
TSO PING <IP_address>
```

Note:

The IP address is the IP address of the AXIS 5470e.

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 5470e.

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 5470e is configured according to the instructions in **Assigning an IP address**, on page 20 and in **Configuring the AXIS 5470e**, on page 65. 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 5470e:

```
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 <code>PRTnnnn</code> 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 <code>SYS1.PROCLIB</code> or a library concatenated to <code>SYS1.PROCLIB</code> .
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 (<code>HASPFSSM=HASPFSSM</code>).

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 5470e 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 5470e 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 5470e. 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 5470e you should specify the parameter value <code>PRTAFP1</code> . 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 <code>HEADER=YES</code> .
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 <code>CNTL</code> , <code>ENDCNTL</code> , and <code>PRINTDEV</code> statements for the PSF startup procedure specified in the <code>PNAME</code> parameter. This parameter is required.

Device Statement	Explanation
JUNIT	<p>Specifies:</p> <ol style="list-style-type: none"> 1. The device address (host-connected, channel-attached, non-SNA printers only). Do not specify a device address for the AXIS 5470e 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 <p>This parameter is required.</p>
MODE	<p>Specifies that the printer is managed by an FSS. This parameter is required.</p>
PM	<p>Specifies which data-set processing mode is supported. For the AXIS 5470e attached to Postscript printers, the correct setting is <code>PRMODE=(LINE,PAGE,)</code>, indicating that composed-page and line data sets can be printed.</p>
WC	<p>Specifies the print output class that the printer is to process. You may want to consider handling disabled mechanisms by defining print classes.</p>

Defining the printer to PSF

Each AXIS 5470e 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 5470e 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 5470e in **Configuring the AXIS 5470e**, on page 65.

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 than 1024, can be used as long as the same port is set up in the AXIS 5470e.

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 'SGAP5PR'.
/**
/**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 DKULJAU : 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 FONTPDD=*.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 */
//          DATAK=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 5470e 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 5470e 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 5470e.
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
```

Note:

The variable `printer-name` specifies the name of the printer FSA as defined in **JES definitions**, on page 83.

You can now disconnect the power supply from the AXIS 5470e.

Section 6 Setting Up – NetWare

This section describes how to continue the installation of the AXIS 5470e 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	See <i>Setup using NDPS</i> , on page 97
	IPX/SPX	Proceed with <i>Installing the AXIS 5470e in an NDPS environments</i> , on page 97.

Printer Configuration method	Transport protocol	Action
PSERVER mode	IP/IPX	See <i>Setup using Queue-based printing over IP/IPX in PSERVER Mode</i> , on page 99 and then <i>Queue-based Printing Methods</i> , on page 102
Remote Printer mode	IPX/SPX	See <i>Setup for Queue-based printing over IPX/SPX (Remote Printer Mode)</i> , on page 101 and then <i>Queue-based Printing Methods</i> , on page 102

If you intend to operate your AXIS 5470e in a multi-protocol, mixed environment, you should also proceed to the other relevant sections in this manual, namely:

Section 7 Setting Up – Windows, on page 104

Section 9 Setting Up – Macintosh, on page 122

Section 10 Setting Up – UNIX, on page 128

Section 12 IPP (Internet Printing Protocol), on page 158



Setup using NDPS

The AXIS 5470e supports Novell Distributed Print Services (NDPS), which is Novell's new generation architecture for printing and printer administration. You can run NDPS over Pure IP (TCP/IP) or IPX/SPX.

Before the AXIS 5470e can be installed, make sure that NDPS is installed and a Broker is loaded on your NetWare file server.

AXIS 5470e 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.

Notes:

- NDPS requires that you run NetWare 4.11 or higher.
- Pure IP is only supported by NetWare 5 or higher.

Installing the AXIS 5470e in an NDPS environments

Having assigned an IP address to the AXIS 5470e as described in *Assigning an IP address*, on page 20, you are now ready to install the AXIS 5470e 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 5470e using NDPS:

Notes:

- The HP-JETADMIN parameter of the AXIS 5470e must be set to **YES** in order for the communication between the AXIS 5470e and the NDPS gateway to be enabled. Set this parameter in the print server's internal web pages: **admin | General Settings | HP JetAdmin Support** (default value=NO)
- If you do not have an NDPS Manager object available, start out with creating one in the NetWare Administrator.

- Public Access** To create a public access printer using the NDPS Manager object in your NetWare administrator, do the following:
1. Double-click on the NDPS Manager object you will be using to control the Printer Agents.
 2. At 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. Choose the Axis Gateway configuration in the **Gateway Type** window. Select TCP/IP or IPX as transport protocol. (See Note below).
 6. Click **OK**.
 7. Once you have completed the required tasks, you are ready to print in your NDPS environment. Use the Novell Print Manager to install the Public Access Printer on the client workstation.

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. To use the Axis Gateway with earlier versions of NetWare, you can download the Axis Gateway Configuration Utility 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.

- Controlled Access
1. Make sure that the HP NDPS Gateway is **not** configured to automatically create a public access printer, before you connect the AXIS 5470e to the network.
 2. Connect the AXIS 5470e to the NetWare network.
 3. Use the NetWare Administrator to create an NDPS printer as an object in the NDS Tree.
 4. Create a new Printer Agent (PA) or convert a Public Access Printer to a Controlled one.
 5. Choose the Axis Gateway configuration. Select TCP/IP or IPX as transport protocol and complete required tasks.
 6. You are now ready to print in your NDPS environment. Your printer will appear as an NDS object in the Directory Tree and will offer a full range of network security options.

Use the Novell Print Manager to install the controlled access printer on a client workstation.

Setup using Queue-based printing over IP/IPX in PSERVER Mode

All previous firmware versions of Axis print servers allow users to print in an IPX environment using traditional queue-based printing in PSERVER mode. This method is supported in both Bindery and NDS mode.

Axis Communications is one of the few companies in the world that offers the possibility of printing in a Pure IP environment, using queue-based printing in PSERVER mode. This method is only supported by Axis print servers with firmware version 6.0 and later and only in NDS environments. Pure IP is only supported by NetWare 5 or higher.

In a Pure IP NetWare environment, the NetWare Administrator should be used to create the printer, print server and queue objects.

Installing the AXIS 5470e in IP/IPX

Follow the instructions below:

1. From the AXIS 5470e internal web pages, go to **admin | Network Settings | NetWare**.
2. Set the **NDS mode** 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)
3. Click **OK** when finished.
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.

Additional configuration and management can be performed from any standard Web browser. Please refer to *Using a Web browser*, on page 135.

Notes:

- 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.
- Pure IP requires that you run NetWare 5 or higher.

Important!

In order for the print server to log in using the IP protocol, RCONAG6.NLM has to be loaded to a specified tree. If you have multiple trees, make sure that one file server in the specified tree has RCONAG6.NLM loaded.

Setup for Queue-based printing over IPX/SPX (Remote Printer Mode)

If you don't have a PSERVER created on the file server, start out with creating one in the NetWare Administrator, as described here:

1. Start the NetWare Administrator.
2. Choose **Tools | Print Services Quick Setup (Non-NDPS)**.
3. In the **Print Services Quick Setup (Non-NDPS)** dialogue, choose a name for the print server, printer and queue object. Choose 'parallel' as the printer type and Postscript as the Banner type. Click **Create**.
4. Log into the AXIS 5470e web interface and choose **admin | Network Settings | Detailed View | NetWare** and write the name of the print server you just created together with its slot number in the **NPRINTER/RPRINTER1**-field (the slot number is the number dedicated to the printer you have just created).
5. Click **OK** when done.
6. Use **RCONSOLE** or go to the file server console where you have created the object, load **PSERVER.NLM** and choose the print server you have just created.
7. From the available options, choose 'Printer Status', choose your newly created printer object and check that the status of the attached queue is 'Waiting for job'.

Notes:

- If the status reads "Not Connected", log into the print servers web interface, choose **admin** and click the **Restart** button. The print server status in RCONSOLE will then change from "Not Connected" to "Waiting for job".
- If you choose to install the AXIS 5470e on an already existing PSERVER, make sure that you choose the next available printer number (slot number).

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 5470e logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the AXIS 5470e 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

Limitations

- In bindery mode, this printing method requires a NetWare user licence for each AXIS 5470e to file server link.

Remote Printer Mode The AXIS 5470e 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 5470e 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.
- Higher network load.

NetWare Packet Signature

AXIS 5470e 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 7 Setting Up – Windows

Having connected the AXIS 5470e to your network, as described in *Connecting a printer to the Ethernet Network*, on page 16, this section describes how to install the AXIS 5470e 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	TCP/IP	Standard Windows 'Add Printer Wizard'	<i>TCP/IP printing in Windows 2000 and Windows XP</i> , on page 105
Windows 95/98 NT 4/2000	TCP/IP NetBIOS/NetBEUI	AXIS Print Monitor	<i>AXIS Print Monitor Overview</i> , on page 106
Windows NT 3.5x			
Windows 2000/XP 95/98 NT 3.5x/4.0	TCP/IP	Microsoft LPD Monitor	<i>Using the Microsoft LPD monitor</i> , on page 110

If you intend to use the AXIS 5470e in a multiprotocol environment, you should also refer to the following sections:

Section 6 Setting Up – NetWare, on page 96

Section 8 Setting Up – OS/2, on page 117

Section 9 Setting Up – Macintosh, on page 122

Section 10 Setting Up – UNIX, on page 128

Section 12 IPP (Internet Printing Protocol), on page 158

If you want to change the default name or the password of the AXIS 5470e, use the Configuration Wizard that is available from the User mode of the Web interface. Refer to *Using a Web browser*, on page 135.

TCP/IP printing in Windows 2000 and Windows XP

Follow the instructions below to use the standard Windows method for adding a printer in Windows 2000/XP:

Go to **Start | Settings | Printers** and click the **Add Printer** icon to start the **Add Printer Wizard**. Select the appropriate radio button:

- **Local printer** - If you are connecting directly to the print server (peer-to-peer printing), select **Local Printer** and click **Next**. Click the **Create a new port** radio button and select **Standard TCP/IP Port** from the list. Follow the **Add Standard TCP/IP Port Wizard** to complete the installation (You need to know the IP address of your print server and the model of the connected printer).
- **Network printer** - If your print server has already been installed by the administrator on another computer, select **Network printer** and click **Next**. Follow the instructions in the **Add Printer Wizard** to complete the installation.

Notes:

- 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.
- If you wish to print over LPR, double-click the installed printer in **Start | Settings | Printers**. Select **Properties** from the Printer menu and click the **Configure Port** button. Click the **LPR** radio button and enter the queue name. Click **OK** to finish.

AXIS Print Monitor Overview

AXIS Print Monitor is the recommended tool to use for network printing in Windows NT 3.5x environments. It allows AXIS Network Print Servers to be connected in the same simple fashion as a local printer port and once installed, 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 NetBIOS/NetBEUI and TCP/IP (LPR). 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. Peer-to-peer printing offers the following benefits:

- You can easily monitor the status of your printers, by enabling error condition pop-up messages.
- You do not have to rely on a server.

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 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.

Windows NT 3.5x

Installing TCP/IP Printers in Windows NT 3.5x

Install the AXIS Print Monitor software on your Windows NT3.5x client, if you have not already done so. AXIS Print Monitor can be downloaded from the AXIS Network Product CD or from the Axis Web site at <http://www.axis.com/>

To be able to print using LPR, you must have installed the AXIS 5470e in the TCP/IP environment as described in *Assigning an IP address*, on page 20 and the TCP/IP protocol must be enabled on your client.

1. Open the Print Manager and select **Create Printer** from the **Printer** menu.
2. Enter an appropriate name in the Printer Name field.
3. Choose an appropriate printer driver for your printer from the drop-down Driver list. If the desired printer driver already appears in the displayed Manufacturers and Printer Models list dialog, 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 Printer Models list, you are advised to use the printer driver provided with your printer. This assures you of the latest driver software.

4. Select **Other...** in the driver list. Insert the printer driver diskette/CD that was provided with your printer, select the diskette/CD drive and click **OK**.
5. Select the printer driver you want to install.
6. Select **Other...** from the "Print to" drop-down list.
7. Select **AXIS Port** from the list of available Print Monitors in the Print Destination dialog. Click **OK**.
8. Select **LPR (TCP/IP)** as your choice of network protocol and click **OK**.

9. From the Add LPR port dialog, enter the IP address or host name of your print server and define a Logical printer name. Click **OK** to return to the Create Printer dialog.
10. Select the AXIS LPR port you wish to use from the "Print to" drop-down list. The ports appear as <port name>@<IP address> or <port name>@<host name>, e.g. PR1@192.36.254.101.
11. Click the **Settings** button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS LPR Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK** to return to the Create Printer dialog.
12. Having selected and configured the chosen port, click **Next>**.
13. Select whether you want to share the printer with other network users. Click **OK**.

The printer properties are displayed in an appropriate dialog that allows you to refine your printer setup.

The Axis printer is now installed and will appear as an icon in the Print Manager.

Installing
NetBIOS/NetBEUI
Printers in
Windows NT 3.5x:

Install the AXIS Print Monitor software on your Windows NT3.5x client, if you have not already done so. AXIS Print Monitor can be downloaded from the AXIS Product CD or from <http://www.axis.com>

Follow the procedure below to install Axis printer ports from a Windows NT 3.5x workstation:

1. Open the Print Manager and select **Create Printer** from the **Printer** menu.
2. Enter an appropriate name in the Printer Name field.

3. Choose an appropriate printer driver for your printer from the Manufacturers and Printer Models list displayed and then proceed directly to step 6. Please note that 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 Manufacturer and Printer Models list, you are advised to use the printer driver provided with your printer. This assures you of the latest driver software.

4. Select **Other...** in the driver list. 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.
6. Select **Other...** in the "Print to" list box.
7. Select **Axis Port** from the list of available Print Monitors and click **OK**.
8. Select the AXIS Port you wish to add and then click **OK**. The port appear as <name>.LP1, where <name> is AX followed by the last six digits of the AXIS 5470e serial number, e.g. AX100086 (default serial no).
9. Click on **Settings**. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Click **OK**.
10. Click **OK**.

Using the Microsoft
LPD monitor

This section describes how to set up a Windows NT Server v3.5 and v3.51 for LPD printing over the TCP/IP protocol, using the built-in Microsoft LPD monitor.

Basic Setup

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPD printing. These procedures are defined in *Assigning an IP address*, on page 20 and onwards.

Install the TCP/IP
Protocol Stack

In the Control Panel, click the **Network** icon. If the TCP/IP Printing entry appears, then TCP/IP is already installed. Close the Network folder and continue with *Installing a printer* on the next page.

Follow these steps to install the TCP/IP protocol stack:

1. In the **Control Panel**, select **Network**.
2. Click **Add Software...**
3. Select "**TCP/IP Protocol and related components**" and then click **Continue**.
4. Check "**TCP/IP Network Printing Support**" and then click **Continue**.
5. Select path and then click **Continue**.
6. Click **OK** in the Network Settings dialog box.

Installing a Printer Follow the following step-by-step instructions to install a printer for LPD printing.

1. In the **Control Panel**, click the **Print Manager**.
2. In the **Printer** menu, select **Create Printer**.
3. In the Printer Name field, type a name for your printer.
4. Choose a suitable printer driver for your printer.
5. In the Print to field, select **Other...**
6. In the Print Destinations dialog, choose **LPR Port** and then click **OK**. The Add LPR Compatible Printer dialog will now appear.
7. In the Name or Address field, type the IP address or the host name of your AXIS 5470e. If you use a host name, this must be defined in the *hosts* file on your server prior to the installation. This file is normally located in */winnt35/system32/drivers/etc/hosts*.
8. In the Name of Printer on the Machine field, type the logical printer number you want to use, e.g. pr1. Click **OK**.
9. Click **OK** to complete the installation.

AXIS Print Utility for Windows Overview



AXIS Print Utility for Windows is the tool to use for network printing in Windows for Workgroups and Windows 3.1 environments.

AXIS Print Utility for Windows can be downloaded from the *software\prt_srv\utility\axpuw\latest* folder on the AXIS Network Product CD or from <http://www.axis.com/>. Install this utility now if you have not already done so.

About AXIS Print Utility for Windows

AXIS Print Utility for Windows is an application for network printing in the Windows environment. It allows you to:

- Install and maintain AXIS 5470e printer ports as Windows printer ports.
- Capture and monitor print jobs directed to the AXIS 5470e 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 5470e can be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problem condition.

For more information about AXIS Print Utility for Windows, see the on-line help.

Notes:

- Microsoft Network (NetBIOS/NetBEUI) must be running when using AXIS Print Utility for Windows.
- AXIS Print Utility for Windows must be running when printing in peer-to-peer mode.
- The AXIS Print Utility for Windows is not needed on the client platforms for client-server printing.
- If you want to change the default name of your AXIS 5470e or amend any of the default parameters, you can do so using your Web browser. Refer to *Section 11 Management and Configuration*, on page 134.

Peer-to-Peer vs. Client-Server Printing

Windows for Workgroups and Windows 3.1 users, requiring access to a network printer in peer-to-peer mode, will need to install the AXIS Print Utility for Windows software onto their workstation. Users may then add the required network printer to their systems and use the printer as if it was connected directly to their workstation. Peer-to-peer printing offers the following benefits:

- You can monitor the printer status at all times and be notified when print job are completed.
- You do not have to rely on a server.

Client-server operation requires only one user to install the AXIS Print Utility for Windows software onto their workstation. This user then adds the printer to his or her workstation (the server) and shares the printer with other users on the network. The other users (the clients) can connect to the printer through the server via the Windows Print Manager.

The client-server mode provides a way of maintaining queue ordering and job priority, but at a price. This is because:

- You cannot receive printer status or print job notification.
- The workstation, setup as the server, must be available at all times. It must also have the capacity to handle the print jobs that pass through it.

Notes:

- When using the client-server mode, other users can still install the AXIS Print Utility for Windows software, for printing directly to the network printer in peer-to-peer mode.
- When using the client-server mode, it is recommended that the server is setup only on a Windows for Workgroups workstation.

Windows 3.1 and Windows for Workgroups

Windows 3.1

In order to print to a network printer, Windows 3.1 requires the installation of network support, such as the LAN Server or LAN Manager Workstation software. When installed, proceed as described under Windows for Workgroups below.

Windows for Workgroups

Peer-to-Peer Printing

Follow the instructions below to install your AXIS 5470e for peer-to-peer printing at a Windows for Workgroups workstation:

1. Double-click the **AXIS Print Utility** icon.

2. In the **Port** menu, click **Add**.
3. In the NPS Port list, select the AXIS 5470e port. The port appears as <name>.LP1, where <name> is AX followed by the last six digits of the AXIS 5470e serial number, e.g. AX100086.
4. Accept or change the suggested Windows port name and type any required comment in the Description field. Make a note of the Windows port name as you will need this later, then click **OK** to install the Windows port.
5. In the **Port** menu, click **Connect...** to bring up the Windows Printers dialog.
6. Select a printer driver from the list of Installed Printers (or click **Add>>** to install a new driver), then click **Connect...**
7. Select the Windows port name from step 4 above (this name can be found at the bottom of the Ports list).
8. Click **OK** to close the Connect dialog, and **Close** to close Printers.

The setup is completed and you can now print through your AXIS 5470e.

Notes:

- AXIS Print Utility for Windows must be running when you print through your AXIS 5470e. It is strongly recommended that you copy the AXIS Print Utility icon into your StartUp folder.
- To enable TCP/IP printing in Windows 3.1 and Windows for Workgroups environments, you must use a shareware LPR spooler that can be downloaded from ftp://ftp.axis.com/pub/axis/software/prt_srv/utility/wlprs/.

Client-Server Printing: Server Setup Follow the instructions below to install your AXIS 5470e for client-server printing at a Windows for Workgroups server:

1. Choose a workstation that you want to use as a server for network printing. The server must be available at all times and must have sufficient hard disk space for spooling print jobs.

2. Open **Network Setup**, click **Sharing...**, check the **I want to be able to allow others to print to my printer(s)** box.
3. Install **AXIS Print Utility for Windows** on the server.
4. Set up your **AXIS 5470e** as described under *Peer-to-Peer Printing*, on page 113.
5. Open **Print Manager** and select your printer.
6. In the **Printer** menu, select **Share Printer As...**
7. Type a printer name in the **Share As** field (this is the printer name seen by the clients, see *Client Setup* below). Check the **Re-share at Startup** box, then click **OK**.

The server setup is now completed.

Note:

The **AXIS Print Utility for Windows** must be running when you print through your **AXIS 5470e**. It is strongly recommended that you copy the **AXIS Print Utility** icon into your **StartUp** folder.

**Client-Server Printing:
Client Setup**

Follow these steps to use your **AXIS 5470e** for client-server printing at a **Windows for Workgroups** client:

1. In the **Control Panel**, select **Printers**.
2. Select a printer driver from the list of **Installed Printers**, or click **Add>>** to install a new driver. Click **Connect...**
3. Select **Network...** in the **Device Name** list, select a local port (**LPT1**) to redirect to your network printer.
4. In the **Show Shared Printers on list**, select the server from **Server Setup** above.
5. In the **Shared Printers** list, select the printer you want to use.
6. Click **OK, OK** and **Close**.
7. Exit the **Control Panel**.

The client setup is completed and you can now print through your AXIS 5470e.

Windows Clients using LANtastic

From any Windows client, the AXIS 5470e can also be used for network printing in LANtastic environments.

LANtastic users can use the AXIS Utilities in exactly the same manner as described in the preceding Windows sections, using a choice of Axis utility software that is guided by the type of Windows client employed:

- Refer to *AXIS Print Utility for Windows Overview*, on page 111, if you are using a Windows for Workgroups client.
- Refer to *AXIS Print Monitor Overview*, on page 106, if you are using a Windows 95, Windows 98 or Windows NT client.

Note:

Make sure that your LANtastic client is running the desired printing protocols.

Section 8 Setting Up - OS/2

Having connected the AXIS 5470e to your network, as described in *Connecting a printer to the Ethernet Network*, on page 16, this section now describes how to set up your AXIS 5470e 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 117
NetBIOS/NetBEUI	NetBIOS/NetBEUI Printing, on page 118

If you intend to operate your AXIS 5470e in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

- Section 6 Setting Up - NetWare*, on page 96
- Section 7 Setting Up - Windows*, on page 104
- Section 9 Setting Up - Macintosh*, on page 122
- Section 10 Setting Up - UNIX*, on page 128
- Section 12 IPP (Internet Printing Protocol)*, on page 158

TCP/IP Printing

Having assigned an IP address to the AXIS 5470e, as described in *Assigning an IP address*, on page 20, you are now ready to install it for TCP/IP printing in the OS/2 environment. The AXIS 5470e supports LPR Printing using the lprportd service method.

Installing the
AXIS 5470e

Follow the instructions below to install the AXIS 5470e 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 5470e in the **LPD server** field.
4. Enter one of the AXIS 5470e logical printer names, for example **pr1**, in the **LPD printer** field.

NetBIOS/NetBEUI Printing

The AXIS Print Utility for OS/2 is the tool to use for NetBIOS/NetBEUI printing in OS/2 environments.

AXIS Print Utility for OS/2 is available from the `software\prt_srv\utility\axpu\latest` folder located on the AXIS Network Product CD. It can also be downloaded from <http://www.axis.com/>

Install this utility now if you have not already done so.

If you want to change the default name or any of the AXIS 5470e default parameters, you can do so using any standard Web browser.

Refer to *Section 11 Management and Configuration*, on page 134, 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 5470e printer ports as OS/2 printer ports.
- Capture and monitor print jobs directed to the AXIS 5470e 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 5470e 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 5470e

1. When AXIS Print Utility for OS/2 is running, click **Install** to install your AXIS 5470e. The port appear in the list as <name>.LP1, 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 5470e.

Note:

The AXIS Print Utility for OS/2 must be running in order to print through your AXIS 5470e. 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 rebooted. 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 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 5470e.

Section 9 Setting Up – Macintosh

Having connected the AXIS 5470e to your network, this section now describes how to set up your AXIS 5470e for printing in Macintosh environments.

If you intend to operate your AXIS 5470e in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 6 Setting Up – NetWare, on page 96

Section 7 Setting Up – Windows, on page 104

Section 8 Setting Up – OS/2, on page 117

Section 10 Setting Up – UNIX, on page 128

Section 12 IPP (Internet Printing Protocol), on page 158

Installation in Mac OS X

This section describes setting up your AXIS 5470e for printing in the Mac OS X.

1. Select **Print Center** from the **Applications | Utilities** folder.
2. Click **Add Printer...**
3. From the Printer List dialog, select **LPR Printers using IP**.
4. Enter the IP address or Host name of your AXIS 5470e.
5. Select **Use Default Queue on Server** or enter LPT1 in the **Queue Name** field.
6. Select an appropriate printer driver for your printer or, if is not available in the list, select **Generic**. 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 Using the Chooser Window

Basic Configuration

Basic configuration in AppleTalk is performed simply by opening the Chooser window and selecting a printer.

You can change the default name of your AXIS 5470e or any of default parameters by editing the *config* file. To access the *config* file from a Macintosh, you can use:

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

In order to use any of the methods, you must assign an IP address to the AXIS 5470e as described in *Setting Parameters*, on page 126.

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 Post-Script 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.

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 has no zones, this box does not appear.

4. Click the name of the printer you want. The default AXIS 5470e printer name shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 5470e serial number, and <port> is LPT1. For example: AXIS100086_LPT1.
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 AXIS 5470e.

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 has no zones, this box does not appear.
4. Click the name of the printer you want. The default AXIS 5470e printer name shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 5470e serial number, and <port> is LPT1. For example: AXIS100086_LPT1.
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.

Bi-directional support

The AXIS 5470e allows 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 5470e 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 5470e is now ready to use as a print server.

Note:

For information on advanced AppleTalk functions such as non-PostScript printer support, please refer to the Print Server Technical Reference on the AXIS Product CD.

ASCII, TBCP and BCP

The Binary Communication Protocol (BCP) and the Tagged Binary Communication Protocol (TBCP) are communication protocols used by the serial and parallel ports of a printer. They allow 8-bit binary data in files concurrent with the use of some control characters, for communication and print job control. TBCP is required for printing with a binary data stream on some printers, e.g. HP printers.

Note:

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 5470e. 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 AXIS 5470e, you have access to all the print server's parameters via any standard Web browser or via FTP.

Refer to *Management and Configuration*, on page 134 for more information.

The following example describes the how you set the AXIS 5470e parameters in AppleTalk.

Important!

DO NOT use the parameter values from this example when configuring your AXIS 5470e. You should select values that are appropriate for your printers and network settings.

Follow the instructions below:

1. Open the Chooser.
2. Select a network printer driver, any LaserWriter will do.
3. Select the printer port which name ends 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

Parameters that you do not want to set should be excluded from the text file.

Refer to *The Parameter List*, on page 231, 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 5470e has been powered on. If you want it to reappear, you must restart your AXIS 5470e.

Section 10 Setting Up - UNIX

Installation in the UNIX Environment

Having performed the basic TCP/IP setup procedures as defined in *Assigning an IP address*, on page 20, you are now able to print in interactive mode using LPR, FTP or Reverse Telnet protocols.

However, if you want to integrate the AXIS 5470e into your host spooler, you can use the Axis automatic installation script *axinstall*. This utility software is resident on the AXIS 5470e and can be downloaded to your host using FTP, so no disks are required. The *axinstall* script can also be downloaded from <http://www.axis.com/> and it is available on the AXIS Network Product CD.

Having completed this operation, the printer connected to the AXIS 5470e will appear as though they are directly connected to the host printer spooler.

If you intend to operate your AXIS 5470e in a multiprotocol environment, you should also proceed according to one or more of the following sections, as appropriate to your network.

Section 6 Setting Up - NetWare, on page 96

Section 7 Setting Up - Windows, on page 104

Section 8 Setting Up - OS/2, on page 117

Section 9 Setting Up - Macintosh, on page 122

Section 12 IPP (Internet Printing Protocol), on page 158

Integration into the Host Printer Spooler

To integrate the AXIS 5470e into the host printer spooler, you can use the auto installation script *axinstall*, resident in the AXIS 5470e. Follow the instructions below to install *axinstall* onto your host using FTP:

1. Login to the AXIS 5470e using the command:
ftp <host name> or ftp <IP address>
2. Enter *root* as the user id and *pass* as the password.
3. Download the script using the command:
get axinstall

Log out using the command *quit*, *bye* or *exit* depending on your FTP version.

```

> ftp npserver
connected to npserver.
220 AXIS 5470e FTP Print Server v6.30 Jun 17 1999
ready.
Name (npserver:thomas): root
331 User name ok, need password
Password: pass (not visible)
230 User logged in
ftp> get axinstall
200 PORT command successful.
150 Opening data connection for axinstall
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
local: axinstall remote: axinstall
61187 bytes received in 14 seconds (4.2 kbytes/s)
ftp> bye
221 Goodbye.
>
    
```

Typical FTP session for collecting the axinstall script

The *axinstall* script has now been downloaded to your host. Execute the script with this command:

```
sh axinstall
```

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.

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 5470e supports several different print methods in the TCP/IP environment. *axinstall* will suggest a print method suitable for your particular UNIX system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc).

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

LPD

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

Advantages: Easy to set up – install the AXIS 5470e 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 5470e 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.

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.

Note:

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

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 AXIS 5470e. Existing drivers may be slow.

Other UNIX Systems Most UNIX 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 `prosbds` (in the `bsd` directory of the AXIS 5470e) 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, `jcllex`, is available in the `mvs` directory of the AXIS 5470e. It gives an example of how to print a file from an MVS mainframe to an AXIS 5470e using FTP.

Section 11 Management and Configuration

The management and configuration tools that are supported by the AXIS 5470e 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 5470e

Configuration Overview

The method you should use to manage and configure your AXIS 5470e depends on the operating system protocols of your network. The table below displays which method to use for each supported environment.

Operating System Protocols	Configuration/Management methods
IBM Host (AS/400, IBM Mainframe)	From an IBM Host - See page 156
TCP/IP (AS/400, IBM Mainframe, UNIX, Windows 95/98/NT, Windows 3.1/WfW)	Web Browser - See page 135 AXIS ThinWizard - See page 141 FTP - See page 145 Telnet - See page 148 SNMP - See page 152 HP Web JetAdmin - See page 153
IPX/SPX (NetWare)	HP JetAdmin - See page 153 Novell Utilities - See page 154
NetBIOS/NetBEUI (Windows 95/98/NT, Windows 3.1/WfW, OS/2)	Web Browser - See page 135
AppleTalk	Web browser - See page 135 Mac-FTP - See page 145

Using a Web browser

Once you have established the AXIS 5470e in the TCP/IP environment, as described in *Assigning an IP address*, on page 20, you are free to access the AXIS 5470e Web pages from any standard Web browser.

The Web interface of the AXIS 5470e is divided into two modes of operation, User mode and Admin mode.

- User** In User mode, you have no rights to change any parameter settings. 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, enter a password in the **Root Password** field under **admin | General Settings**

Accessing the Web Pages

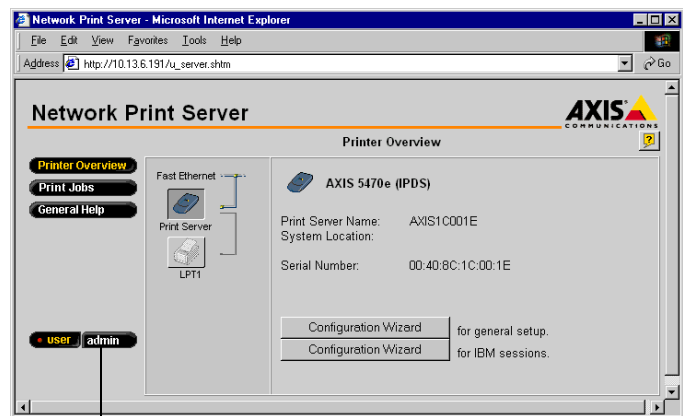
Follow the steps below to access the internal home page of the AXIS 5470e.

Follow the instructions below to access the built-in web pages of your 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 the **admin** button to access the Administration web pages.
3. You will be prompted for a password, enter the default user name **root** and the default password **pass**. Click **OK**.

Note:

It is highly recommended that the default password is changed to prevent unauthorized access to the print server's configuration pages. This is done from the **admin | General Settings | General** tab in the **Root Password** field.



admin button

root
pass



Available Services
from the User Mode

Printer Overview

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

The Printer Overview page contains a section that allows you to view the general parameter setting of the AXIS 5470e, 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 5470e 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 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 allows you to control the usage of the connected printers.

General Help

The General Help page presents you with basic information about the AXIS 5470e 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

This Print Server

The following services are available from the Admin mode. An additional link to the Axis home page is available from this mode.

The **This Print Server** page contains a section that allows you to view and modify the general parameter setting of the AXIS 5470e, 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 5470e. Management operations, like restarting the AXIS 5470e 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 allows you to control the usage of the connected printers. If you want to delete an ongoing print job, a delete button is available on this page.

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 5470e. You can enable or disable any of the supported network protocols and fine-tune the parameter settings.

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 5470e, 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 5470e as well as information about servers and services that are connected or associated with the AXIS 5470e.

Help Contents

The Help Contents page displays a comprehensive description of the configuration and management activities that can be performed from the internal Web pages of the AXIS 5470e. These activities include instructions on how to install the AXIS 5470e in various environments and how to upgrade it with new firmware. A detailed index is also available.

Note:

You can change the network speed parameters of the AXIS 5470e by clicking Admin | General Settings and set the transmission speed to either "10 MBIT", "100 MBIT" or "Auto-Sense"

Setting the e-mail Notification Parameters

In order to set the e-mail addresses of the people to whom the trouble-reports will be sent:

1. From your print server's internal web page, go to: **Admin | Network Settings | Detailed View | e-mail Notification**. The following options will appear:
 - PAPER JAM - intended for the person responsible for handling paper jams in the printer.
 - OUT OF PAPER - intended for the person responsible for filling the printer with paper.
 - TONER LOW - intended for the person responsible for filling up the toner in the printer.
 - NO TONER - intended for the person responsible for changing the toner in the printer.
 - PRINTER OFFLINE - intended for 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 e.g name@example.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**.

Using AXIS ThinWizard for Print Server Management

AXIS ThinWizard is a management tool that allows you to manage and upgrade ThinServer products. You can find, monitor and upgrade your Axis print servers remotely in any TCP/IP network using a standard web browser.

The internal web pages of Axis ThinServer products integrate directly into AXIS ThinWizard, giving you access to the services described in *Using a Web browser*, on page 135.

Once you have established the AXIS 5470e in the TCP/IP environment, as described in *Assigning an IP address to the print server*, on page 21, you are free to access the AXIS 5470e from AXIS ThinWizard.

In the 2.00 release of AXIS ThinWizard, the following new features have been included:

1. The possibility to change one or more parameters of several Axis servers simultaneously, or copy the configuration from one server to one or several servers.
2. The possibility to manage non-Axis print servers has been added. ThinWizard will find print servers from Hewlett-Packard, Intel and Lexmark and provide a link to their internal home pages for management.
3. ThinWizard will locate non-configured print servers and let you assign an IP address to the server. (Requires firmware version 6.20 and above)
4. You can now list the servers in the network in a printer-friendly view.

Installing AXIS ThinWizard

You should only install AXIS ThinWizard on a designated server on your network. When you want to use AXIS ThinWizard for management purposes, you just access the server via any standard web browser.

The AXIS ThinWizard software is available on the AXIS Network Product CD and can also be downloaded from the Axis web site at www.axis.com

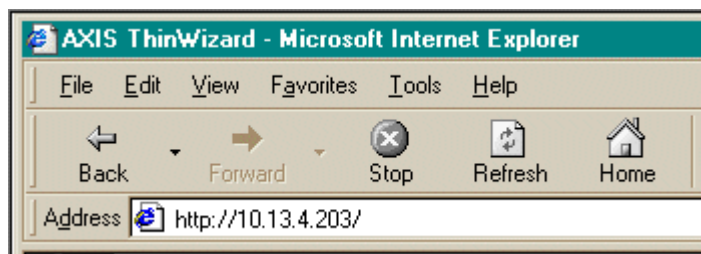
Note:

You cannot install the AXIS ThinWizard server software on a Windows 3.1 or a Windows for Workgroups server. However, you can access AXIS ThinWizard's web interface from any TCP/IP client in your network

Starting AXIS ThinWizard

Follow the instructions below to start the AXIS ThinWizard:

1. Make sure that the computer where you installed the AXIS ThinWizard is up and running on your network.
2. Start a web browser from a client in your network.
3. Enter the IP address or the host name of the server 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 appears in the web browser. Enter your user name and the password and click the Log in button.
5. The AXIS ThinWizard interface appears. Select a network group from the list. If the list is empty, you must first create a group.

Creating a Network Group

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 the **Network Groups** button in the AXIS ThinWizard main menu.
2. Click the **Create** button.
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 Servers** option.
4. Click **OK** to create the network group.

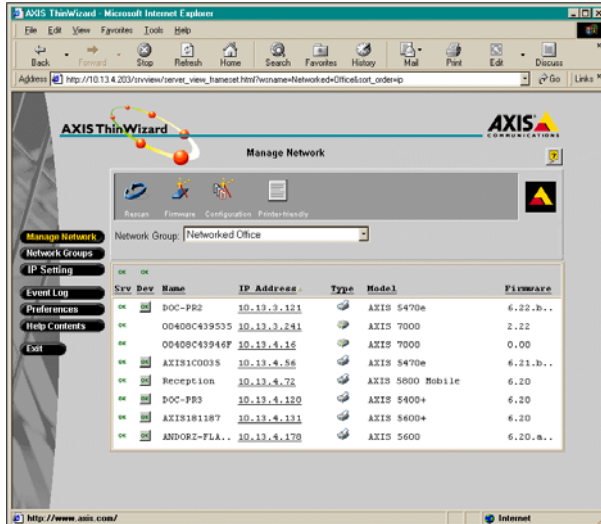
You can edit the properties of each network group from the Network Groups page. Simply select the network group from the list and use one of the **Edit**, **Copy** or **Remove** commands.

Managing the print servers

Follow the instructions below to access the AXIS 5470e using AXIS ThinWizard:

1. Click the **Manage Network** button in the main menu.
2. Select the network group, including the AXIS 5470e, from the drop-down list. All AXIS servers included in the network group appear in the window.
3. Click the link of the AXIS 5470e to access its internal web page.

4. The 'Srv' and 'Dev' columns show the status of your print servers and printers.



You are now free to manage and configure the AXIS 5470e as described in *Available Services from the User Mode*, on page 137.

Upgrading Axis Servers

Refer to *Upgrading using AXIS ThinWizard*, on page 127, for more information about upgrading Axis Servers using AXIS ThinWizard.

Additional Information

If you need more information, please refer to the AXIS ThinWizard on-line help.

Using FTP

Having assigned an IP address to your AXIS 5470e, as described in *Assigning an IP address*, on page 20, you can change the AXIS 5470e parameter settings using the File Transport Protocol (FTP).

Editing the *config* file

Follow the instructions below to edit the *config* file using FTP:

1. Log in to the AXIS 5470e 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 5470e 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 5470e 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 edit the *config* file using FTP from a DOS window.

Example:

```
> ftp npserver
connected to npserver.
220 AXIS 5470e FTP Print Server v6.30 Dec 16 2000
ready.
Name (npserver:thomas): 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
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.24 seconds (35.63 kbytes/s)
ftp> put config CONFIG
200 PORT command successful.
150 Opening data connection for CONFIG
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.45 seconds (19.04 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 5470e by typing:
`ftp <host name>` or `ftp <IP address>` in a DOS windows (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 5470e by typing:
`ftp <host name>` or `ftp <IP address>` in a DOS windows (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 5470e, as described in *Assigning an IP address*, on page 20, you can manage your AXIS 5470e 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 5470e 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 on the next page 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 5470e TELNET Print Server v6.30 Dec 16 2000

AXIS 5470e network login: root
Password: pass      (not visible)

AXIS 5470e TELNET Print Server v6.30 Dec 16 2000

Root> account
Current account file:

```

JOB	USER	PROT	LPR S	BYTES	ETIME	OTIME
1	Thomas	FTP	pr2 C	1885	2	0
2	Joe	LPT	pr1 C	23074	4	0
3	RICHARD	PSERVER	pr2 C	43044	5	0
4	MacUser	APPLE	pr1 C	6717	2	0
5	LSLM_userNetBIOS		pr2 C	36995	3	0
6	patrick	PROS	pr5 P	83208	9	0

```

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 5470e 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 5470e 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 5470e allows you to record a trace of the communication between the AXIS 5470e and the host.

The AXIS 5470e supports hexdump printing for the SNA, TN3270E, TN5250E, LPR/LPD and Raw TCP/IP printing protocols. Please refer to *Product Model Summary*, on page 7 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 5470e by typing:
`telnet <host name>` or `telnet <IP address>` in a DOS windows (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 5470e 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 `tnhexdump` 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 5470e. 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 5470e 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 5470e supports all relevant parts of MIB-II and also includes a private enterprise MIB. Refer to *The AXIS MIB*, on page 153.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the AXIS 5470e 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 5470e 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 5470e configuration from the NMS program. Refer to *The Parameter List*, on page 231.
- Printer status and unit administration objects - used for monitoring AXIS 5470e 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.

Using HP administration tools

The AXIS 5470e is fully compatible with the HP JetAdmin and the HP Web JetAdmin printer management software. You can use either tool to install and configure your printer devices, and monitor the current status of your AXIS 5470e.

Please refer to the appropriate Hewlett Packard documentation for further details about these tools.

Notes:

- You can disable the HP JetAdmin and the HP Web JetAdmin support, by setting the HP_JETADMIN parameter to NO.
- It is not possible to upgrade the AXIS 5470e Flash Memory from the HP JetAdmin.

Using Novell Utilities

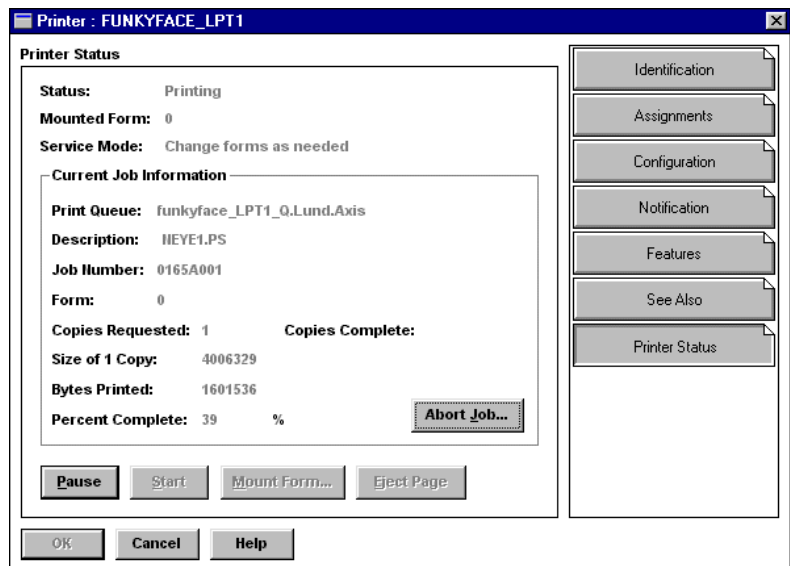
After installing the AXIS 5470e into the NetWare environment, you can manage your AXIS 5470e, using either Novell's NetWare Administrator, or PCONSOLE.

NetWare Administration

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

Printer Status

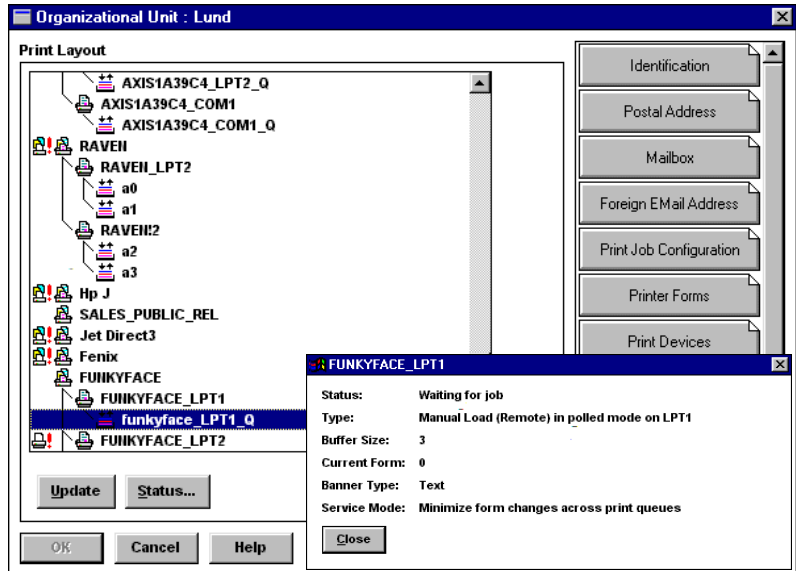
The Printer Status menu, detailed below, shows the status of an active print job serviced by an AXIS 5470e network print server. It displays detailed information concerning the active job including, Print Queue, print job description, size of print file, percentage of job completed, etc. You can also 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 5470e, 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 5470e 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 5470e 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-
```

Note:

For parameters requiring more than one value, the values should be separated using a comma.

Section 12 IPP (Internet Printing Protocol)

Overview

The AXIS 5470e print server enables printing over the Internet with 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 Internet-connected printer. 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.

In order to print to a remote printer using IPP, you need the following:

- An *IPP client* installed on your computer together with appropriate printer drivers. The IPP client is a tool that adds destination printers to your printer list. A list of available IPP clients can be viewed in *Currently available IPP clients*, on page 160.
- The printer to which you want to send your print job needs to be connected to *a server with IPP functionality*. AXIS 5470e makes it possible for your printer to receive printjobs from an IPP client. The IPP-functionality of the AXIS 5470e print server is automatically activated upon installation.

Before you print to an IPP printer you will need to know:

- the **http://** address of the print server. (The **http://** address contains the **IP address** or **host name** of the print server, the **port number** (which is **631** and only used in the **1.0 standard**) and the **printer port name**).
- the **brand and model** of the printer in order to install the appropriate printer driver.
- the **printer port name** of the print server to which the printer is connected.

Address-schemes for IPP printers

When using IPP printing, you need to know the IP address or host name of your IPP-enabled Axis print server. IPP is a client-server type protocol which comprises two industry standards:

- the **1.0 standard**, which uses a **http:** address scheme
- the **1.1 standard**, which uses an **ipp:** address scheme

The URL syntax for the destination printer contains:

1. the **print server host name** or **IP-address**
2. the **port number 631** (only used in the **1.0 standard**)
3. the **local printer port name**

Example using host name in the 1.0 standard:

If "axisps" is the host name of the AXIS 5470e 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.

IPP address using host name	Corresponding printer
http://axisps:631/LPT1	Printer attached to the LPT1 parallel port

Example using IP-address in the 1.1 standard:

If "171.16.5.218" is the IP-address of the AXIS 5470e 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 address using IP address	Corresponding printer
<code>ipp://171.16.5.218/LPT1</code>	Printer attached to the LPT1 parallel port

Currently available 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 5470e print server with integrated IPP is compatible with any 1.0 and 1.1 - compliant IPP client.

The AXIS 5470e 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 later on in this chapter. Please refer to your client documentation for more specific information.

Some examples of IPP clients on the market:

- **For Windows NT:** the Internet Printer Connection software from Hewlett Packard (can be down-loaded from the Hewlett Packard web site)
- **For Windows 2000/XP:** the Microsoft IPP Client (automatically installed with OS)
- **For Windows 95/98:** IPP clients can be downloaded from the Microsoft web site
- **For Unix/Linux:** CUPS (can be down-loaded from the Common Unix Printing System web-site: <http://www.cups.org>)

User Requirements

The IPP protocol does not require any special configuration of the AXIS 5470e print server, the IPP function is automatically activated when you install your AXIS 5470e.

IPP is platform independent.

Firewall Considerations

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

IPP printing in
Windows 95/98:

In this example the printer's http: address is
`http://171.16.5.218:631/LPT1`.

Before you print to an IPP printer you will need to know:

- **the http:// address of the print server.** The http:// address contains the IP address or host name of the print server and the printer port name.
 - **the brand of the printer** in order to install the appropriate printer driver.
 - **the printer port** of the print server to which the printer is connected.
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**)

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 in *Adding an IPP printer to your printer list in Windows '95/'98*, on page 162.

2. When you press **Print**, the print job is sent over the Internet to the AXIS 5470e print server, which then forwards the print job to the destination printer.
3. The recipient can collect the print job at the destination printer.

Adding an IPP printer to your printer list in Windows '95/'98

1. Install the IPP client for Windows 95/98 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 http: address of the destination printer:
http://171.16.5.218:631/LPT1.
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. You are now ready to print using IPP.

IPP printing in Windows NT:

Before you print to an IPP printer you will need to know:

- the **http://** address of the print server. The http:// address contains the **IP address** or **host name** of the print server and the **printer port name**.
 - the **brand of the printer** in order to install the appropriate printer driver.
 - the **printer port** of the print server to which the printer is connected.
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://...**

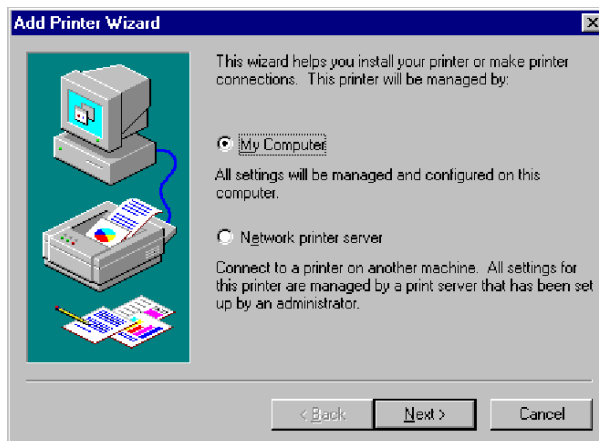
If your destination printer does not exist in your **Printer Name** list, you need to add it. Adding an IPP-printer to your printer list is described in *Adding an IPP printer to your printer list in Windows NT*, on page 163.

2. When you press **Print**, the print job is sent over the Internet/WAN to the AXIS 5470e print server, which then forwards the print job to the destination printer.
3. The recipient can collect the print job at the destination printer.

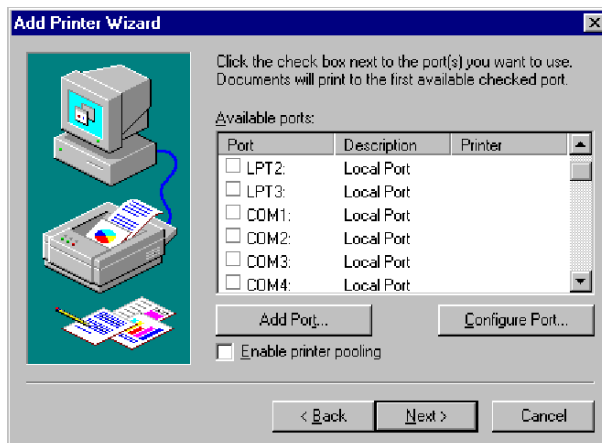
Adding an IPP printer to your printer list in Windows NT

In this example the print servers http: address is **http://171.16.5.218**, the printer is connected to the AXIS 5470e print server port LPT1 and the printer is a HP LaserJet 5Si (and the port number is 631).

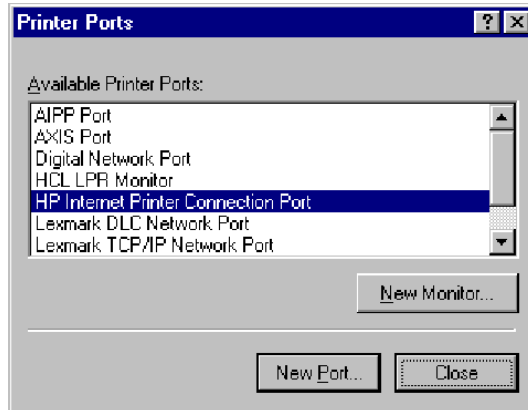
1. Install the Internet Printer Connection software from Hewlett Packard (can be down-loaded from the Hewlett Packard web site) on your computer.
2. Open **Start | Settings | Printers**.
3. Choose **Add Printer**. The Add Printer Wizard will start.
4. Next, the Wizard will ask you if you want to install on **My Computer** or on a **Network print server**. Choose **My Computer** and click **Next**:



5. In the Available Ports window, click **Add Port**:

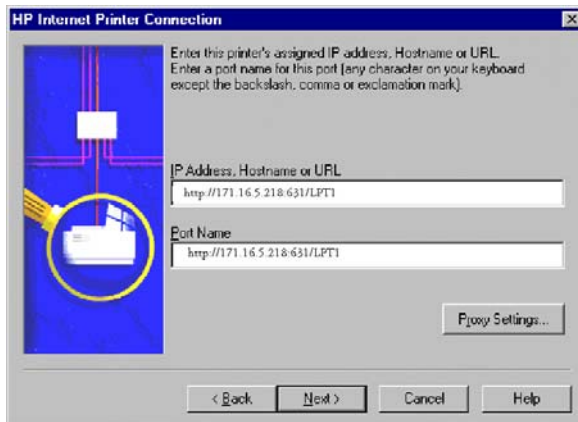


- The Printer Ports dialog will appear, showing a list of Available Printer Ports.



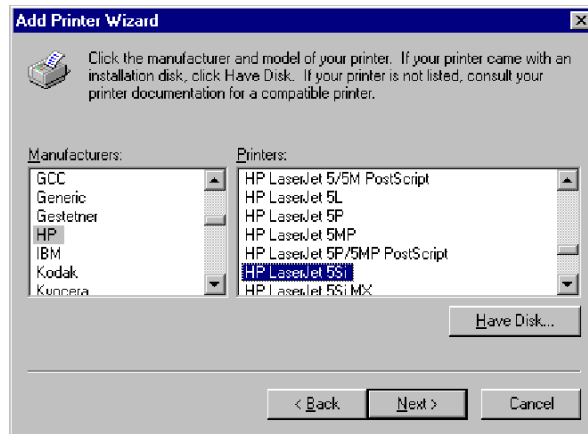
Choose The **HP Internet Printer Connection Port** and click **New Port**.

- The HP Internet Printer Connection will start. Click **Next**.
- In the **IP Address, Host Name or URL** field, type the `http://` address of the Axis print server to which the destination printer is connected. The URL will automatically appear in the **Port Name** field as well:



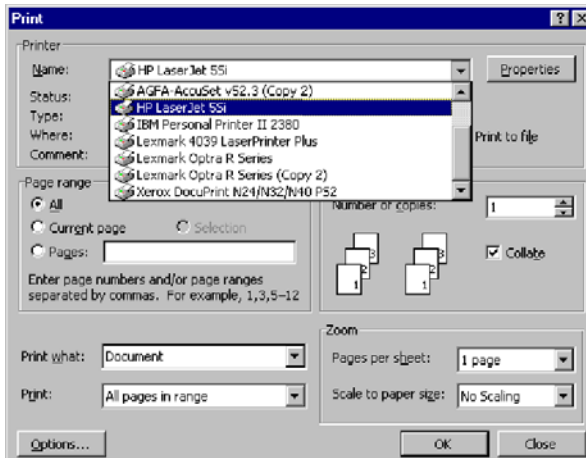
In this example the printer's `http:` address is `http://171.16.5.218:631/LPT1`. Click **Next**.

9. Next, the Wizard will confirm the information you have entered. Click **Finish** to complete the installation and go back to the **Available Ports** list.
10. The IPP printer port list is now available in the **Available Ports** list. Click **Next**.
11. Next, choose a suitable driver for the destination printer and install it. Click **Next**.



12. 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.

- The new printer will appear in your Printer window. You are now ready to start printing using IPP.



IPP printing in Windows 2000

Before you print to an IPP printer you will need to know:

- the **http://** address of the print server. The **http://** address contains the IP address or host name of the print server and the printer port name.
 - the brand of the printer in order to install the appropriate printer driver.
 - the printer port of the print server to which the printer is connected.
- 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 in *Adding an IPP printer to your printer list in Windows 2000*, on page 168.

- When you press **Print**, the print job is sent over the Internet to the AXIS 5470e print server, which then forwards the print job to the destination printer.

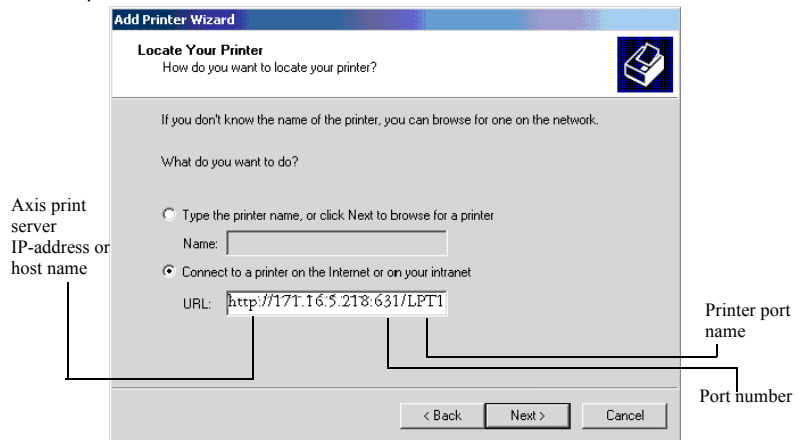
3. The recipient of the print job can collect the printjob at the destination printer.

Adding an IPP printer to your printer list in Windows 2000

In this example the print servers' http: address is `http://171.16.5.218`, the printer is connected to the AXIS 5470e printer port LPT1 and the printer is a HP DeskJet 1120C (and the port number is 631).

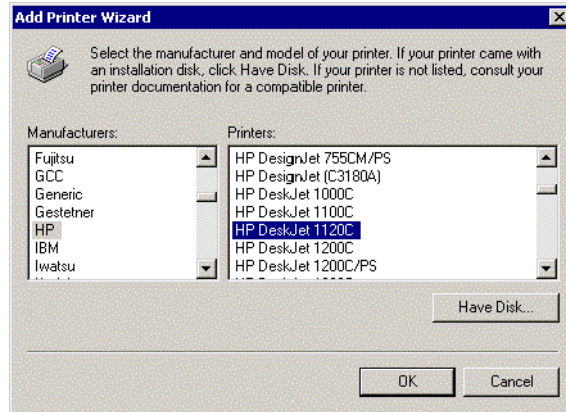
Thus, the printers http:// address is `http://171.16.5.218:631/LPT1`.

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.
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 `http:` address in the **URL** field, e.g. `http://171.16.5.218:631/LPT1` and click **Next**:

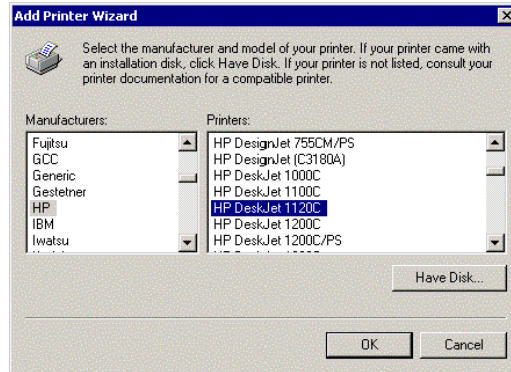


5. If you do not have a driver corresponding to the destination printer installed on your computer, the Wizard will prompt you to install one. Click **OK**.

- 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**.



- 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.
- The new printer is added to your **Select Printer** window.



- You are now ready to print using IPP. Specify your new destination printer from the printer list and click **Print**.

Section 13 Using Logical Printers

Using Logical Printers to Customize your Printing

The AXIS 5470e 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 AXIS 5470e:

- 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
- Hex Dump mode to assist with printing problems
- Digital Copier support

Logical Printer Settings 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.

Configuring The Logical Printer Each logical printer can be set up using any standard Web browser or by directly editing the *config* file. To configure the logical printers from the web interface, click **admin** and click the **Logical Printer Settings** button. Select the logical printer you wish to configure by clicking one of the tabs (PR1 - PR8). The available options will appear in these pages, depending on which print server model you have connected.

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 are suggestions on how to configure the logical printers. You should, of course, configure them according to the needs of your network.
- In *The Parameter List*, on page 231, you can find a complete list of the AXIS 5470e parameters.
- Refer to *Section 11 Management and Configuration*, on page 134, for more information about the available management tools.
- Refer to **page 7** for details on the available models

Read-back Port

The AXIS 5470e supports 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 **AUTO**. However, it is required that the printer also supports bi-directional printing.

Example: Follow the instructions below to disable the bi-directional communication for logical printer PR1:

1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR1** tab.
3. Set the **Read Back Port** parameter to **NONE**.
4. Click **OK**.

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. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR5** tab.
3. Enter the string **04** in the **String After Print Job** text field.
4. Click **OK**.

Example: You have an HP LaserJet printer with dual input bins, and want to print on pre-printed forms when using the logical printer PR4. The standard forms are taken from bin 1, and the pre-printed forms are taken from bin 2. The string before print job should contain the command to select bin 2, E_C14H (hex 1B 26 6C 34 48), and the string after print job should contain the command to select bin 1, E_C11H (hex 1B 26 6C 31 48).

Follow the instructions below to add strings before and after the print job:

1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR4** tab.
3. Enter the string **1B 26 6C 34 48** in the **String Before Print Job** text field.
4. Enter the string **1B 26 6C 31 48** in the **String After Print Job** text field.
5. Click **OK**.

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 New Line (hex 0A) with an ASCII NewLine (hex 0D 0A) for logical printer PR1.

Follow the instructions below to substitute command strings:

1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR1** tab.
3. Enter the string **01 0A 02 0D 0A** in the **String Substitutions** text field.

Hex Code	<u>Explanation</u>
01	<i>length of the string you want to replace</i>
0A	<i>the string you want to replace</i>
02	<i>length of the substitute string</i>
0D 0A	<i>the substitute string</i>

4. Click **OK**.

This is the default setting for logical printers PR5 through PR8.

Example: Assume that you want to replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A), and the printer command E_{CG1} (hex 1B 47 31) with E_{CY} (hex 1B 59) for logical printer PR2.

Follow the instructions below to substitute command strings:

1. Click **admin** and the **Logical Printer Settings** button.
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 New Line command
0A	the UNIX New Line command
02	length of the ASCII New Line command
0D 0A	the ASCII New Line command
03	length of the replaced printer command
1B 47 31	the replaced printer command
02	length of the new printer command
1B 59	the new printer command

4. Click **OK**.

Note:

Extensive use of string substitutions will decrease the throughput rate of the AXIS 5470e.

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 5470e 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. In order to direct itsprint jobs to the printer connected to the AXIS 5470e, 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:

1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR1** tab.
3. Set the parameter **Character Set Conversion** to **ISO>IBM**.
4. Click **OK**.

The ISO 8859-2 printer data that is sent to logical printer PR1 is converted to IBM PC Set 2.

The ISO 8859-2 printer data that is sent to logical printer PR1 is converted to IBM PC Set 2. The ISO 8859-2 printer data that is sent to logical printer PR1 is converted to IBM PC Set 2.

ASCII to Postscript Conversion

The AXIS 5470e logical printers can translate ASCII print data into PostScript format. This makes it possible to print with 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. Click **admin** and the **Logical Printer Settings** button.

2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.
4. Click **OK**.

Note:

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.

Debugging using the Hex Dump Mode

When hex dump mode is activated, 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 the control and print characters that are being sent to the printer, which is a useful debugging facility for the more difficult printing problems.

Example: Follow the instructions below to activate the hex dump mode for PR1:

1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR1** 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.

PostScript Settings When a logical printer is set for PostScript conversion, you must specify the following:

- page size (default A4)
- page orientation (default Portrait)
- page format (see table below)
- font (default Courier)

Note:

The PostScript font can be any font that is installed on the printer.

Page Format Parameter	Default Value	Description
Lines per page	66	
Characters per line	0	0=disable line wrap
Characters per inch	100	100=10 characters per inch
Lines per inch	60	60 = 6 lines per inch
Left margin	30	30 = 3.0 mm
Top margin	50	50 = 5.0 mm

Example: Follow the instructions below to set the PostScript parameters for logical printer PR2:

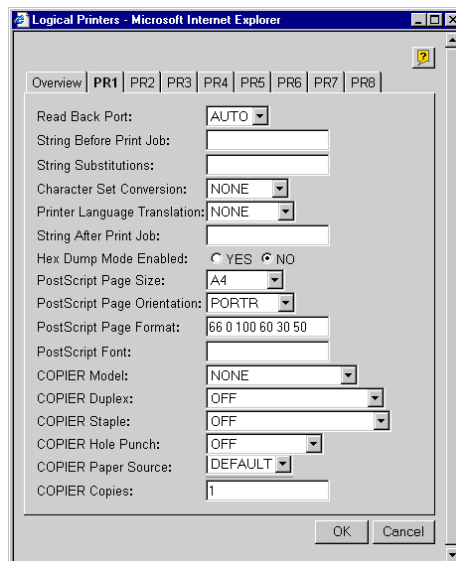
1. Click **admin** and the **Logical Printer Settings** button.
2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.
4. Set the **PostScript Page Size** parameter to **LETTER**.
5. Set the **PostScript Page Orientation** parameter to **LANDS**.
6. Enter the string **48 0 120 60 30 50** in the **PostScript Page Format** text field.

Example:

Hex code	Explanation
48	48 lines per page
0	disable line wrap
120	12 characters per inch
60	6 lines per inch
30	3 mm left margin
50	5 mm top margin

7. Enter the string **Helvetica** in the **PostScript Font** text field.
8. Click **OK**.
1. Click **admin** and the **Logical Printer Settings** button.

If you have an AXIS 5470e (Copier model), the following settings will appear in the Logical Printer Settings page:



- COPIER Model
Select your digital copier model from the drop-down list
- COPIER Duplex
Set to OFF by default
- COPIER Staple
Set to OFF by default
- COPIER Hole Punch
Set to OFF by default
- COPIER Paper Source
Select the desired input bin
- COPIER Copies
Enter the number of copies you wish to print

For more information on printing options available on digital copiers and multi-functional printers, refer to *Digital Copier Support*, on page 229.

Section 14 Upgrading the software

The following software can be upgraded free of charge:

- AXIS IP JumpStarter
- AXIS ThinWizard
- AXIS Print Monitor for Windows 95/98 and Windows NT
- AXIS Print Utility for Windows
- AXIS Print Utility for OS/2
- The AXIS 5470e print server software held in Flash Memory
- The *axinstall* script
- The AXIS MIB file

Obtaining the Updated Software

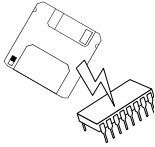
You can obtain all the print server software as well as the latest utility software from the following locations:

- AXIS Network Product CD
- Over the Internet, by accessing <http://www.axis.com>
- your local dealer

Note:

If you are upgrading your print servers using AXIS ThinWizard, you do not need to obtain the firmware file prior to the upgrading process, provided that you are connected to the Internet.

Upgrading the firmware Software



You can upgrade the AXIS 5470e Flash memory using one of the following methods:

- AXIS ThinWizard (TCP/IP)
- FTP (TCP/IP)

Note:

Updating instructions are also supplied with the software update.

Upgrading using AXIS ThinWizard

AXIS ThinWizard is a tool that enables batch upgrading of several print servers and should be used for upgrading the flash memory in TCP/IP networks.

You must assign the AXIS 5470e with an IP address, as described in **Assigning an IP address**, on page 20, before you can use this upgrading method.

Follow the instructions below to upgrade your print servers using AXIS ThinWizard:

1. Click the **Manage Network** button in the AXIS ThinWizard main menu.
2. Select a network group from the drop-down list. You can only update the servers that are included in the selected network group.
3. All AXIS servers included in the network group appear. Click the **Firmware** button to start the Upgrade Wizard.
4. Follow the instructions that are presented to you to complete the installation.

Refer to *Using AXIS ThinWizard for Print Server Management*, on page 141, for more information about AXIS ThinWizard.

Upgrading over the Network using FTP

To upgrade over the network using FTP you will need the file with the new print server software. The name of this file is in the form `product.bin`, e.g. `5470e.bin` for software release 6.30. You can use any of the previously mentioned methods to obtain the new file.

You must assign the AXIS 5470e with an IP address, as described in **Assigning an IP address**, on page 20, before you can use this upgrading method.

Follow the procedures below to upgrade the AXIS 5470e:

Notes:

- If the upgrading process fails, simply try again.
- If you lose contact with the AXIS 5470e after an upgrading failure, just restart the print server by disconnecting and reconnecting the power supply to restore contact.
- If the network diode flashes at half second intervals, the AXIS 5470e cannot process any print jobs. To leave this state you must repeat the instructions below.

1. Log in to the AXIS 5470e with the command: `ftp <host name>`, or `ftp <IP address>`
2. You will be prompted for user id and password. Use the user id `root`, which has the default password `pass`.
3. Type the command `binary` to change to binary transfer mode.
4. Type the command `put <software name> flash`, where `<software name>` is the name of the new print server software, e.g. `5470e.bin`
5. Wait for the Flash loading operation to finish. This normally takes 1 to 4 minutes. The unit automatically restarts with the new print server software.
6. Log out using the command `quit`, `bye` or `exit` depending on your FTP version.

Section 15 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.

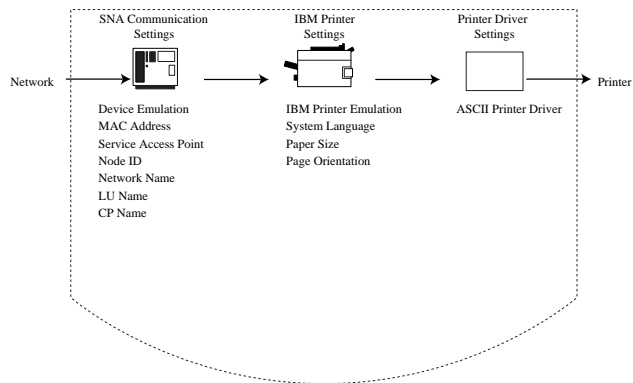
An overview of how parameters are mapped during the auto-configuration process is also provided.

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 5470e.

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
<p>The 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.</p> <p>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.</p>		
H1_ADDR	Host MAC Address	FF FF FF FF FF
<p>The H1_ADDR is the Host Ethernet 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".</p>		
AUTODIAL	Automatic Link Establishment	no
<p>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.</p> <p>When running 5494 CU mode, this parameter also controls whether Automatic Configuration should be performed.</p>		

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.
<p>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.</p>		

AS/400 Specific Parameters

Parameter	Name	Default	Emulation
NWORK_NAME	Network Name	APPN	5494 only
<p>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.</p>			
LU_NAME	LU Name	Axxxxxxx	5494 only
<p>Description - Axxxxxxx, where "xxxxxxx" is the last 7 characters of the AXIS 5470e 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</p>			
<p>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.</p>			
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 5470e. To set the parameters using a Web browser, you first need to assign an IP address to the AXIS 5470e. For instructions on how to do this, refer to *Assigning an IP address*, on page 20.

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 5470e 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 231.

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 5470e as a result of the auto-configuration process is illustrated by the figure below.

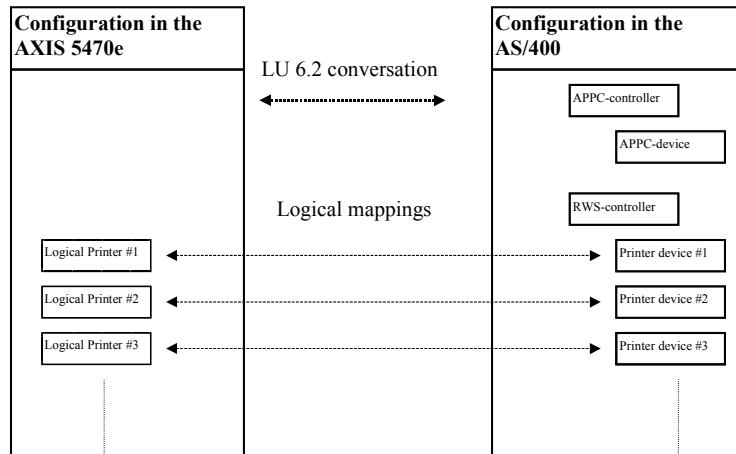


Illustration of the configuration created in the AS/400 and the mapping to the AXIS 5470e as a result of the auto-configuration

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 5470e 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 32.

Section 16 SNA Gateways

Gateway Configuration, 3174 CU mode

Some hints specific to SNA gateways are given below.

- AXIS 5470e 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 5470e 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 5470e on the host, as described in the VTAM section.

When attaching an AXIS 5470e 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 5470e is attached to this type of gateway, you can map the chosen AXIS 5470e 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 5470e.

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 'Support'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 COMMEEXEC 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: AXIS5470e
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 17 Extended IBM Printer Emulation

When printing from an IBM host, the AXIS 5470e 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 5470e from your IBM system. For more information see *SNA Parameter Overview*, on page 183.

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 5470e. 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.

Note:

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 5470e 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 5470e. 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:

<i>Value</i>	<i>Description</i>	<i>Value</i>	<i>Description</i>
CODE39	<i>Code 39</i>	CODE128	<i>Code 128</i>
UPCA	<i>UPC version A</i>	INT2OF5	<i>2 of 5 Interleaved</i>
EAN8	<i>EAN-8</i>	CODABAR	<i>Codabar matrix</i>
EAN13	<i>EAN-13</i>		

- **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 5470e 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 18 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 5470e 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.

Note:

Refer to *DBCS Support*, on page 222 for details on DBCS font types supported by the AXIS 5470e.

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 19 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	892	OCR-A
		277	Danish/Norwegian	893	OCR-B
		278	Swedish/Finnish	1140	US English (Euro)
		280	Italian	1141	Austrian German (Euro)
		281	Japanese English	1142	Danish/Norwegian (Euro)
		282	Portuguese	1143	Swedish/Finnish (Euro)
		284	Spanish	1144	Italian (Euro)
		285	UK English	1145	Spanish (Euro)
		286	Austrian/German Alternate	1146	UK English (Euro)
		2879	Danish/Norwegian Alternate	1147	French (Euro)
		288	Swedish/Finnish Alternate	1148	International Set 5 (Euro)
		289	Spanish Alternate	1149	Icelandic
		290	Japanese	USER	User defined
		293	APL		
		297	French		
		340	OCR		
		361	International Typographic		
		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 Alter-nate 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 Et 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 5470e 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 5470e. Select the correct printer type from the AXIS 5470e 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 the AXIS Product CD.

Section 20 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 5470e 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 5470e 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 183
424	Hebrew
437	Multinational
500	International, Set 5 & Swiss Bilingual
803	Hebrew Character Set A
870	Latin 2 Multilingual
871	Icelandic
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

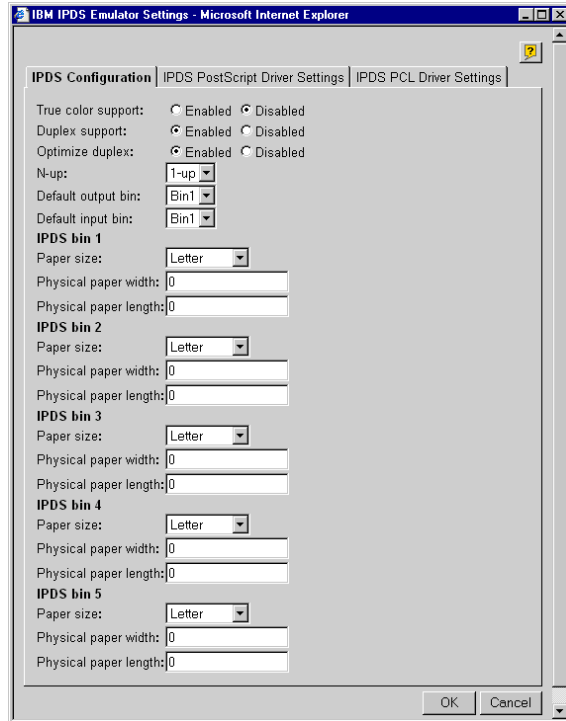
Code page	System language - Latin 1 ASCII
858	Multinational PC with Euro
860	Portuguese (Primary = 850)
861	Icelandic (Primary = 850)
863	Canadian French (Primary = 850)
865	Nordic (Primary = 850)
1004	IBM PC Desktop Publishing
819	ISO Latin 1
1252	Windows Latin 1

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.
- Note:**
- 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 5470e 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 5470e 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 5470e. 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 5470e.

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 5470e to the resolution of the attached printer.

Note:

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 5470e (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 5470e 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 5470e 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 5470e. 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 5470e 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 5470e 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 5470e 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 21 DBCS Support

The AXIS 5470e 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 5470e:

Country	Printer Emulation	Character Table
<i>Korea (KS)</i>	<i>5x27_002_TX_KS</i>	<i>KS</i>
<i>Korea (KSSM)</i>	<i>5x27_002_TX_KSSM</i>	<i>KSSM</i>
<i>Japan</i>	<i>5x27_001_TX</i>	<i>Shift - JIS</i>
<i>China</i>	<i>5x27_005_TX</i>	<i>GB</i>

AXIS 5470e Double-byte Character Tables

Important! The AXIS 5470e 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 33.

Configuring the AXIS 5470e

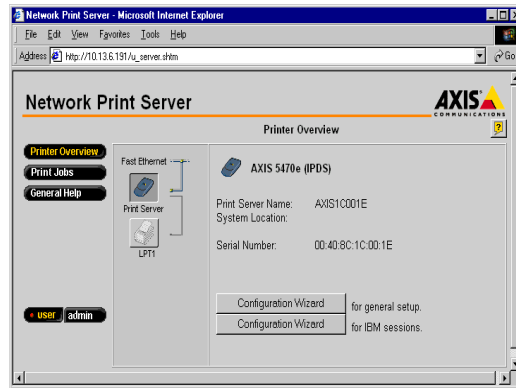
A number of printer emulations exist for DBCS printing. To set the correct system language and printer driver, refer to the tables below and enter the values in the IBM Configuration Wizard.

Country	Printer Emulation	System Language
<i>Korea (KS)</i>	<i>5x27_002_TX_KS</i>	<i>833</i>
<i>Korea (KSSM)</i>	<i>5x27_002_TX_KSSM</i>	<i>833</i>
<i>Japan</i>	<i>5x27_001_TX</i>	<i>290</i>
<i>China</i>	<i>5x27_005_TX</i>	<i>836</i>

Printer Emulation and System Language for Country options

Country	PCL Printer Driver	Matrix Printer Driver
<i>Korea (KS)</i>	<i>PCL5</i>	<i>Epson LQ KS</i>
<i>Korea (KSSM)</i>		<i>None</i>
<i>Japan</i>		<i>None</i>
<i>China</i>		<i>Epson LQ 1600K</i>
<i>Taiwan</i>		<i>Epson LQ 1600K</i>

1. Start a Web browser, e.g. Internet Explorer or Netscape Navigator.
2. Enter the IP address or the host name of the AXIS 5470e in the location field and press the **Enter** key on your keyboard. The internal Web pages of the AXIS 5470e 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.

Note:

Default fonts will be changed when switching printer emulations.

Verifying the Communications Link

Having configured the AS/400 host AXIS 5470e 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 42.

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
<i>Korea</i>	<i>2424K1</i>	<i>D3FE</i>
<i>Japan</i>	<i>2424J1</i>	<i>68FE</i>
<i>China</i>	<i>2424S1</i>	<i>6FFE</i>

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 5470e (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 22 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 *Using Logical Printers to Customize your Printing*, on page 170.

The added functionality includes the following options:

<u>Copier Model</u>	From the drop-down list of supported copiers, select the digital copier that you have connected the AXIS 5470e to.
<u>Copier Duplex</u>	<p>The AXIS 5470e supports duplex printing i.e. printing on both sides of the paper. The options in the drop-down list are:</p> <ul style="list-style-type: none"> • Off i.e. the duplex printing option is not activated (default). • Simplex i.e. printing on one side only. • Long-edge binding i.e. printing on both sides, long-edge first. • Short-edge binding i.e. printing on both sides, short-edge first.
<u>Copier Staple</u>	<p>The AXIS 5470e supports stapling with the following options:</p> <ul style="list-style-type: none"> • Off i.e. the stapling option is not activated (default). • Top left slant i.e. one staple in a slanted position in the top left corner of the document. • Top left horizontal i.e. one staple placed horizontally in the top left corner of the document. • Top left vertical i.e. one staple placed vertically in the top left corner of the document. • Top 2 i.e. two staples at the top of the document.

- **Left 2** i.e. two staples on the left hand side of the document.
- **Center 2** i.e. 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 5470e supports hole punching with the following options:

- **Off** i.e. the hole punching option is not activated (default).
- **Long-edge** i.e. the left hand side of the document.
- **Short-edge** i.e. the top of the document.

Copier Paper Source

Enter the desired input bin i.e. paper tray on your digital copier

Copier Copies

Enter how many collated (sorted) copies you wish to print in the **Copies** field.

Note:

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.

Section 23 The Parameter List

This appendix provides an overview of the AXIS 5470e parameters. Please refer to the AXIS Network Print Server Technical Reference for a complete description of the parameters. The Technical Reference is available on the AXIS Network Product CD. Alternatively, you can access the Axis web site <http://www.axis.com/> where you can download the latest technical information.

The Config File

The left-hand column shows the parameters and their default values as they appear in the *config* file and the right-hand column shows the name of the parameters as they appear in the internal Web pages.

After you have changed them, most parameters take effect for the next print job. If *Requires Restart* appears in a parameter description, you must restart the AXIS 5470e, before the new setting for that parameter takes effect.

Please refer to *Section 11 Management and Configuration*, on page 134, for more information about how to change the parameters.

---	GENERAL MENU	Description
NODE_ADDR.	: 00 40 8c 10 00 86	Node Address
NETWORK_SPEED.	: AUTO_SENSE (AUTO_SENSE, 10_HALF_DX, 10_FULL_DX, 100_HALF_DX, 100_FULL_DX)	Autosense, 100 MBIT
PS_NAME.	: AXIS1C0028	Name on the label of the print server
ROOT_PWD.	: pass	Root Password
USERS.	:	User and Printer Access List
BASE_URL.	: www.axis.com	Base URL
AXIS Print System.:	YES	AXIS Print System Support
HP_JETADMIN.	: NO (YES, NO)	HP JetAdmin Support
DEF_OUT.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Internal Printout Destination
SYS_LOC.	:	System Location
SYS_CONT.	:	System Contact

---	SNA MENU	Description
SNA_ENB.	: YES	SNA Protocol Enabled
DEVICE_EMUL.	: 3174 (3174, 5494)	Control Unit Device Emulation
SNA_FR_TYPE.	: FR_802_2 (FR_AUTO, FR_802_2, FR_DIX)	SNA Ethernet Frame Type
NODE_ID.	: E0 7x xx xx	Node Identifier (IDBLK/IDNUM value), where x xx xx are the five last digits of the print server's serial number.
NODE_SAP.	: \$4	Node Service Access Point
NWORK_NAME.	: APPN	Node network Name
LU_NAME.	: A xxx xxx	Node Logical Unit Name, where xxx xxx are the last six digits of the print server's serial number in reverse order.
H1_SAP.	: \$4	Host Service Access point
H1_ADDR.	: FF FF FF FF FF FF	Host MAC Address
H1_NW_NAME.	: APPN	Host Network Name
H1_MOD_NAME.	: QRMTWSC	Host Mode Name
H1_LU_NAME.	: DEFAULT	Host Logical Unit Name
SNA_LU1.	: NONE, 1	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU2.	: NONE, 2	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU3.	: NONE, 3	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU4.	: NONE, 4	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU5.	: NONE, 5	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU6.	: NONE, 6	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU7.	: NONE, 7	AS/400 Logical Unit 1 Data stream, IBM emulator number
SNA_LU8.	: NONE, 8	AS/400 Logical Unit 1 Data stream, IBM emulator number
AUTO_DIAL.	: NO	Automatic Link Establishment
DIAL_TIME.	: 20	Link Establishment Retry Time
JOB_TIME.	: 10	Job Separation Time-out
IR_TIME.	: 0	Intervention Required Time-out
SNA_HEXDUMP.	: NONE (NONE, PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)	SNA Hexdump Destination

---	TN3270E MENU	Description
TN3270E_IR.	: 0	Intervention Required Time-out
TN3270E_COMP	: NO	Compatible Function Set for TN3270
TN3270E_1.	: OFF, 0 0 0 0, 23, PR1, 1, AXPR1	TN3270E Session #1 Setup
TN3270E_2.	: OFF, 0 0 0 0, 23, PR1, 2, AXPR2	TN3270E Session #2 Setup
TN3270E_3.	: OFF, 0 0 0 0, 23, PR1, 3, AXPR3	TN3270E Session #3 Setup
TN3270E_4.	: OFF, 0 0 0 0, 23, PR1, 4, AXPR4	TN3270E Session #4 Setup
TN3270E_5.	: OFF, 0 0 0 0, 23, PR1, 5, AXPR5	TN3270E Session #5 Setup
TN3270E_6.	: OFF, 0 0 0 0, 23, PR1, 6, AXPR6	TN3270E Session #6 Setup
TN3270E_7.	: OFF, 0 0 0 0, 23, PR1, 7, AXPR7	TN3270E Session #7 Setup
TN3270E_8.	: OFF, 0 0 0 0, 23, PR1, 8, AXPR8	TN3270E Session #8 Setup

--- TN5250E MENU

TN5250E_KA. : YES	TN5250E Keep Alive
TN5250E_1. : OFF, 0 0 0 0, 23, PR1, 1, AXPR1, QSYSOPR, QSYS	TN5250E Session #1 Setup
TN5250E_2. : OFF, 0 0 0 0, 23, PR1, 2, AXPR2, QSYSOPR, QSYS	TN5250E Session #2 Setup
TN5250E_3. : OFF, 0 0 0 0, 23, PR1, 3, AXPR3, QSYSOPR, QSYS	TN5250E Session #3 Setup
TN5250E_4. : OFF, 0 0 0 0, 23, PR1, 4, AXPR4, QSYSOPR, QSYS	TN5250E Session #4 Setup
TN5250E_5. : OFF, 0 0 0 0, 23, PR1, 5, AXPR5, QSYSOPR, QSYS	TN5250E Session #5 Setup
TN5250E_6. : OFF, 0 0 0 0, 23, PR1, 6, AXPR6, QSYSOPR, QSYS	TN5250E Session #6 Setup
TN5250E_7. : OFF, 0 0 0 0, 23, PR1, 7, AXPR7, QSYSOPR, QSYS	TN5250E Session #7 Setup
TN5250E_8. : OFF, 0 0 0 0, 23, PR1, 8, AXPR8, QSYSOPR, QSYS	TN5250E Session #8 Setup

--- TCP/IP MENU

TCP_ENB.	: YES	TCP/IP Enabled
INT_ADDR.	: 0 0 0 0	Internet Address
DEF_ROUT.	: 0 0 0 0	Default Router Address (0.0.0.0 for no router)
NET_MASK.	: 0 0 0 0	Net Mask (e.g. 255.255.255.0 for class C, 0.0.0.0 for auto-sense)
PROS_PWD.	: netprinter	PROS Password
PROS_PRT.	: 35	PROS TCP Port Number
LPD_BANN.	: OFF (OFF, AUTO, LAST)	LPD Banner Page Mode
DHCP_ENB.	: YES	DHCP Enabled
BOOTP_ENB.	: YES	BOOTP Enabled
RARP_ENB.	: YES	RARP Enabled
WINS_ENB.	: YES	WINS Enabled
WINS_ADDR1.	: 0 0 0 0	Primary WINS server Address
WINS_ADDR2.	: 0 0 0 0	Secondary WINS server Address
NBT_SCOPE ID.	:	NBT Scope ID (Defines the NetBIOS scope to be used with WINS name registration)
DNS_ENB.:	YES	Domain Name Server enabled
DNS_ADDR1.	: 0 0 0 0	The IP address of the primary DNS server. Used e.g. for setting up destinations with names instead of IP addresses.
DNS_ADDR1.	: 0 0 0 0	The IP address of the secondary DNS server, if the primary is unavailable or disconnected.
DOMAIN_NAME		Specifies the name of the domain to which the print server belongs
SLP_SCOPE_LIST.:	Default	Defines the SLP scope to which the AXIS 5470e belongs.
SMTP_SERVER :		Mail Server that uses Simple Mail Transfer Protocol.
RTN_OPT.	: NO	Reverse Telnet Options Enabled
PPR_PRSTAT.	: NO	Generates printer status report if enabled
RTN_PR1.	: 5001, IPDS, 1 (IPDS option only)	PR1 Reverse Telnet Port Number, data stream and emulator
RTN_PR2.	: 0, ASCII, 2 (Non-IPDS option only)	PR2 Reverse Telnet Port Number, data stream and emulator
RTN_PR3.	: 0, ASCII, 3 (Non-IPDS option only)	PR3 Reverse Telnet Port Number, data stream and emulator
RTN_PR4.	: 5011, SCS, 4	PR4 Reverse Telnet Port Number, data stream and emulator
RTN_PR5.	: 5012, SCS, 5	PR5 Reverse Telnet Port Number, data stream and emulator
RTN_PR6.	: 5013, SCS, 6	PR6 Reverse Telnet Port Number, data stream and emulator
RTN_PR7.	: 0, ASCII, 7	PR7 Reverse Telnet Port Number, data stream and emulator
RTN_PR8.	: 0, ASCII, 8	PR8 Reverse Telnet Port Number, data stream and emulator

--- SNMP MENU

READ_COM.	: public	Read Community
WRT_COM.	: pass	Read/Write Community
TRAPADDR.	: 0 0 0 0	Trap Address
TRAP_COM.	: public	Trap Community
SYS_NAME.	:	System Name
SNMP_AUT.	: DISABLE (DISABLE, ENABLE)	Authentication Failure Trap
TRAP_PRT.	: DISABLE (DISABLE, ENABLE)	Printer Failure Trap

--- NETWARE MENU

NETW_ENB.	: YES	NetWare Enabled
NETW_TRANSPORT_PROTOCOL.		DUAL_STACK (IPX_ONLY, IP_ONLY, DUAL_STACK)
JOB_CHECK_DELAY.	: 5	Job Check Delay (Print Server queue polling interval)
CONF_CHECK_DELAY.	: 300	Configuration Check Delay (Interval between automatic configuration checks)
FR_802_3.	: YES	IEEE 802.3 Frame Type Enabled
FR_ETH_2.	: YES	Ethernet II Frame Type Enabled
FR_802_2.	: YES	IEEE 802.2 Frame Type Enabled
FR_SNAP.	: YES	SNAP Frame Type Enabled
NCP_BURST_MODE.	: YES	NCP Burst Mode Enabled <i>(Requires Restart)</i>
PSEVER_NDS_TREE :		The PSEVER_NDS parameters specify which NDS tree or file server the AXIS 5470e will login to. It also specifies the path to the print server object in the tree.
PSEVER_NDS_FILESERVER:		
PSEVER_NDS_DISTINGUISHED_NAME:		
PSEVER_BINDERY1.	:	PSEVER Bindery 1 (Bindery file server name)
PSEVER_BINDERY2.	:	PSEVER Bindery 2 (Bindery file server name)
PSEVER_BINDERY3.	:	PSEVER Bindery 3 (Bindery file server name)
PSEVER_BINDERY4.	:	PSEVER Bindery 4 (Bindery file server name)
PSEVER_BINDERY5.	:	PSEVER Bindery 5 (Bindery file server name)
PSEVER_BINDERY6.	:	PSEVER Bindery 6 (Bindery file server name)
PSEVER_BINDERY7.	:	PSEVER Bindery 7 (Bindery file server name)
PSEVER_BINDERY8.	:	PSEVER Bindery 8 (Bindery file server name)
PSEVER_BINDERY9.	:	PSEVER Bindery 9 (Bindery file server name)
PSEVER_BINDERY10.	:	PSEVER Bindery 10 (Bindery file server name)
PSEVER_BINDERY11.	:	PSEVER Bindery 11 (Bindery file server name)
PSEVER_BINDERY12.	:	PSEVER Bindery 12 (Bindery file server name)
PSEVER_BINDERY13.	:	PSEVER Bindery 13 (Bindery file server name)
PSEVER_BINDERY14.	:	PSEVER Bindery 14 (Bindery file server name)
PSEVER_BINDERY15.	:	PSEVER Bindery 15 (Bindery file server name)
PSEVER_BINDERY16.	:	PSEVER Bindery 16 (Bindery file server name)
NPRINTER1.	:	NPRINTER/RPRINTER 1 (Print Server name and slot number)
NPRINTER2.	:	NPRINTER/RPRINTER 2 (Print Server name and slot number)
NPRINTER3.	:	NPRINTER/RPRINTER 3 (Print Server name and slot number)
NPRINTER4.	:	NPRINTER/RPRINTER 4 (Print Server name and slot number)
NPRINTER5.	:	NPRINTER/RPRINTER 5 (Print Server name and slot number)
NPRINTER6.	:	NPRINTER/RPRINTER 6 (Print Server name and slot number)
NPRINTER7.	:	NPRINTER/RPRINTER 7 (Print Server name and slot number)
NPRINTER8.	:	NPRINTER/RPRINTER 8 (Print Server name and slot number)

--- NetBIOS/NetBEUI MENU

LSLM_ENB.	: YES	NetBIOS/NetBEUI Enabled
NB_FR_TYPE.	: FR AUTO (FR_AUTO, FR_802_2, FR_DIX)	NetBIOS Frame Type <i>(Requires Restart)</i>
LPRINT_1.	: AX100086.LPT1	Name Printer 1 <i>(100086 are the last six characters of the serial number)</i>
LLOGIC_1.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 1
LPRINT_2.	:	Name Printer 2
LLOGIC_2.	: PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 2
LPRINT_3.	:	Name Printer 3
LLOGIC_3.	: PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 3
LPRINT_4.	:	Name Printer 4 Name
LLOGIC_4.	: PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 4
LPRINT_5.	:	Name Printer 5
LLOGIC_5.	: PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 5
LPRINT_6.	:	Name Printer 6
LLOGIC_6.	: PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 6
LPRINT_7.	:	Name Printer 7
LLOGIC_7.	: PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 7
LPRINT_8.	:	Name Printer 8
LLOGIC_8.	: PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 8

--- APPLE TALK MENU

ATLK_ENB.	: YES	AppleTalk Enabled
ATK_ZONE.	:	AppleTalk Zone
ZONER_EN.	: YES	HP Zoner Enabled
ATK_FONT.	: DEFAULT (DEFAULT, 35N, ALL)	Font (PostScript Font Set)
AUTO-DT_PRIN		Autodetect Printer Type
APRINT_1.	: AXIS100086_LPT1	Name Printer 1 <i>(100086 are the last six digits of the serial number)</i>
ATYPE_1.	: LaserWriter	Type Printer 1
ALOGIC_1.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer
BINARY_TYPE_1.	: TBCP (TBCP, BCP, NONE)	Binary Protocol (Type of Binary Communication Protocol used)
APRINT_2.	: AXIS100086_2	Name Printer 2
ATYPE_2.	:	Type Printer 2
ALOGIC_2.	: PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Logical Printer for Printer 2
BINARY_TYPE_2.	: TBCP (TBCP, BCP)	Binary Protocol (Type of Binary Communication Protocol used)

--- PRINTERxMENU (x = printers 1 to 8)

Description

PRX_NAME		
PRx_IN.	: AUTO (AUTO, NONE,)	PRx Read Back Port (Read-Back of information)
PRx_BEF.	:	PRx String Before Print Job
PRx_STR.	:	PRx String Substitution
PRx_TSEQ.	:	PRx Transparency leadin sequence
PRx_TDRP.	:	PRxTransparency end characters
PRx_TRN.	:	PRx Transparency enabled
PRx_CSET.	: NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM)	PRx Character Set Conversion
PRx_FILT.	: NONE (NONE, POSTSCR, AUTO_PS)	PRx Printer Language Translation
PRx_AFT.	:	PRx String After Print Job
PRx_DUMP.	: NO	PRx Hex Dump Mode Enabled
PRx_SIZE.	: A4 (A4, LETTER, LEGAL, EXECUT)	PRx PostScript Page Size
PRx_ORNT.	: PORTR (PORTR, LANDS, R_PORTR, R_LANDS)	PRx PostScript Page Orientation
PRx_FORM.	: 66 0 100 60 30 50	PRx PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PRx_FONT.	:	PRx PostScript Font (Courier when not specified)
PRx_DC_MOD.	: NONE (NONE, Canon_GP335, Canon_GP605, Canon_IR3300, Gestetner_323)	PRx Digital copier model (Digital Copier model only)
PRx_DC_DUP.	: OFF (OFF, SIMPLEX, LONG_EDGE_BINDING, SHORT_EDGE_BINDING)	PRx Digital copier duplex printing (Digital Copier model only)
PRx_DC_STAP.	: OFF (OFF, TOP_LEFT_SLANT, TOP_LEFT_HORIZONTAL, TOP_LEFT_VERTICAL)	PRx Digital copier stapling (Digital Copier model only)
PRx_DC_HOLE.	: OFF (OFF, LONG_EDGE, SHORT_EDGE)	PRx Digital copier hole punching (Digital Copier model only)
PRx_DC_TRAY.	: DEFAULT (DEFAULT, 1,2,3,4,5)	PRx Digital copier input bin (Digital Copier model only)
PRx_DC_COP.	: 1	PRx Digital copier. Number of collated copies (Digital Copier model only)

--- OUTPUT MENU

L1_CENTR.	: HISPEED (IBM_PC, STNDRD, FAST, HISPEED, HINOACK)	Centronics Interface Timing LPT1
L1_BSYTM.	: 60	Busy Status Time-Out LPT1 (All status reporting disabled if set to 0)
L1_MGM_INFO.	: AUTO (DISABLE, AUTO)	Printer Management Information LPT1
L1_COMMENT.		Optional user comment describing the printer at LPT1
L1_BIDIR.	: AUTO (DISABLE, AUTO)	Bi-directional mode
L1_READT.	: 3	LPT1 Read Time-out

--- IBM IPDS Configuration (IPDS option only)

IPDS_COLSUP. : Disabled	IPDS True Color Support
IPDS_DUPSUP. : Enabled	IPDS Start of Job Sequence
IPDS_OPTDUP. : Enabled	IPDS End of Job Sequence
IPDS_NUP. : 1-UP (1-UP, 2-UP, 4-UP)	Sets printing option of 1,2 or 4 pages on each printed page
IPDS_OVLXOFF. : 0	IPDS horizontal positioning of overlay offset
IPDS_OVLYOFF. : 0	IPDS vertical positioning of overlay offset
IPDS_RPTXOFF: 0	IPDS horizontal margins on page reported from print server
IPDS_RPTYOFF: 0	IPDS vertical margins on page reported from print server
IPDS_DOB. Bin1 (Bin1, Bin2, Bin3, Bin4, Bin5, Bin6)	Default Output bin
IPDS_DIB. Bin1 (Bin1, Bin2, Bin3, Bin4, Bin5)	Default Input bin
IPDS_BIN1.	IPDS Bin 1 Settings
PS_IPLINK : Off (Off, Sheet, Bin)	Paper Cassette Linking
IPDS_BIN2.	IPDS Bin 2 Settings
IPDS_BIN3.	IPDS Bin 3 Settings
IPDS_BIN4.	IPDS Bin 4 Settings
IPDS_BIN5.	IPDS Bin 5 Settings

--- IBM IPDS PostScript Driver (IPDS option only)

PS_LFSM. : Enabled	Load Font Smoothing
PS_ERRH. : Disabled	Post Script Error Handler
PS_OPTOVL. : Enabled	Optimize Overlay Handling
PS_G4SUP :	Printers use of G4 decoder enabled/disabled.
PS_VM. : 2000	Virtual Memory (KBytes)
PS_BIN1. : Default, Letter, 0, 0, 0, 0, 0, 0	PostScript Bin 1 Settings (Bin number, paper size, width, length, horizontal scale factor, vertical scale factor, horizontal offset, vertical offset)
PS_BIN2. : Default, Letter, 0, 0, 0, 0, 0, 0	PostScript Bin 2 Settings (Bin number, paper size, width, length, horizontal scale factor, vertical scale factor, horizontal offset, vertical offset)
PS_BIN3. : Default, Letter, 0, 0, 0, 0, 0, 0	PostScript Bin 3 Settings (Bin number, paper size, width, length, horizontal scale factor, vertical scale factor, horizontal offset, vertical offset)
PS_BIN4. : Default, Letter, 0, 0, 0, 0, 0, 0	PostScript Bin 4 Settings (Bin number, paper size, width, length, horizontal scale factor, vertical scale factor, horizontal offset, vertical offset)
PS_BIN5. : Default, Letter, 0, 0, 0, 0, 0, 0	PostScript Bin 5 Settings (Bin number, paper size, width, length, horizontal scale factor, vertical scale factor, horizontal offset, vertical offset)
PS_DEST. : 0 0 0 0	Map the IPDS bin numbers to the bin numbers of the connected PostScript printer.

--- IBM IPDS PCL Driver Settings

PCL_VER.	: PCL5 (PCL3, PCL4, PCL5)	PCL version
PCL_SBSET.	: AUTOMATIC	PCL subset
PCL_OCR_ENB:		Download of OCR-A/OCR-B enabled/disabled.
PCL_OPTOVL:		Overlays stored in printer.
PCL_BIN1.	: 8, 0, 0	Define the positioning by setting the parameters.
PCL_BIN2.	: 1, 0, 0	Define the positioning by setting the parameters.
PCL_BIN3.	: 4, 0, 0	Define the positioning by setting the parameters.
PCL_BIN4.	: 5, 0, 0	Define the positioning by setting the parameters.
PCL_BIN5.	: 0, 0, 0	Define the positioning by setting the parameters.
PCL_DEST.	: 0, 0, 0, 0, 0, 0	Map the IPDS bin numbers to the bin numbers of the connected PCL printer.

--- IBM EMULATOR x (x=1,2,3,4,5,6,7,8)

		Description
IPDS_PREMULx.	: IPDS_4332 (IPDS_4224_C2, IPDS_4224_E3, IPDS_3812_2, IPDS_3812_2)	IPDS Printer Emulation
IPDS_PRES1:	: 0	IPDS Printer Resolution Emulation
IPDS_SYSLx.	: 37 (37, 256, 259, 260, 273, 274, 275, 277, 278, 280, 281, 282, 28)	System language
IPDS_PDX.	: PostScript (Postscript, PCL)	IPDS Printer Driver
IPDS_SOJSx.		IPDS Start of Job Sequence
IPDS_EOJSx.		IPDS End of Job Sequence
PREMULx.	: 3816_CX (3287_CX, 3268_CX, 3562_CX, 4214_CX, 4224_CX, 4230_CX, 38)	SCS Printer Emulation
SYSLx.	: 37 (37, 256, 260, 273, 274, 275, 277, 278, 280, 281, 282, 284, 28)	SCS System Language
PASSTRx.	: NO	SCS Pass through
MPLx.	: 66, ENA	SCS Maximum page length
MPPx.	: 132, ENA	SCS Maximum print position
LPIx.	: 6	SCS Lines per inch
CPIx.	: 10	SCS Characters per inch
DCPIx.	: 5.0	SCS Double byte characters per inch
AUTORIx.	: YES	SCS Automatic Orientation
LMx.	: 0, 0, 48	SCS Left margin
TMx.	: 26, 26, 74	SCS Top margin
LDSEFx.	: 100, 100, 70	SCS Line density scale factor
DEFBINx.	: BIN1 (BIN1, BIN2, BIN3, BIN4, BIN5, BIN6, MANUAL, ENVELOPE)	SCS Default Input Bin
PRDRIVERx.	: PCL5 (USER, GENERIC; PCL4, PCL5, IBM PRO, EPSON FX, EPSON FX 15CP)	Printer Driver

--- IBM SCS Page Format

PCORI.	: NO	PC Orientation in Landscape
DWSISO.	: NO	Double width Shift in/shift out
BIN1.	: COR; LETTER, 0, 0	BIN1 Orientation and paper size
BIN2.	: COR; LETTER, 0, 0	BIN2 Orientation and paper size
BIN3.	: COR; LETTER, 0, 0	BIN3 Orientation and paper size
BIN4.	: COR; LETTER, 0, 0	BIN4 Orientation and paper size
BIN5.	: COR; LETTER, 0, 0	BIN5 Orientation and paper size
BIN6.	: COR; LETTER, 0, 0	BIN6 Orientation and paper size
MANUAL.	: COR; LETTER, 0, 0	Manual feed orientation and paper size
ENVELOPE.	: COR; LETTER, 0, 0	Envelope orientation and paper size
CONTINUOUS.	: COR; LETTER, 0, 0	Continuous feed orientation and paper size
SIMBF.	: YES	Simulated boldface

--- IBM SCS CPI MAPPING

FGID_DEFAULT:	11	FGID definition
FGID_CPI5.	: 244, 11	5 CPI FGID and 5 CPI COR FGID definition
FGID_CPI10.	: 11 204	10 CPI FGID and 10 CPI COR FGID definition
FGID_CPI12.	: 86, 230	12 CPI FGID and 12 CPI COR FGID definition
FGID_CPI15.	: 230, 281	15 CPI FGID and 15 CPI COR FGID definition
FGID_CPI17.	: 252, 281	17 CPI FGID and 17 CPI COR FGID definition
FGID_CPI8COR.	: 86	8 CPI COR FGID definition
FGID_CPI20COR.	: 281	20 CPI COR FGID definition
FGID_CPI25COR.	: 289	25 CPI COR FGID definition
FGID_CPI27COR.	: 290	27 CPI COR FGID definition
PROPOCOR.	: 230	Proportional COR FGID
TYPOCOR.	: 230	Typographical COR FGID

--- IBM SCS JOB CONTROL

REINIT.	: YES	Re-send Current Settings
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--- IBM 3270 OPTIONS

CASE.	: DUAL (DUAL, MONO)	Case
BASCOL.	: BLACK, ENA	Base Color
XSTRN.	: 0	Extended SCS Transparency
AUTNL.	: 1	Automatic New Line at MPP+1
ADDNL.	: 1	Additional New Line at MPP+1
FFWPB.	: 0	Form Feed within Print Buffer
FFEOPB.	: 1	Form Feed at End of Print Buffer
NULSUP.	: 0	Null Suppression
FFCPOS.	: 0	Form Feed Command position
AFFEOPB.	: 0	Auto Func after End of Print Buffer.

--- IBM SCS EXTENDED EMULATION

XEMUL.	: YES	Extended Emulation Status
WARN.	: NO	Warning Switch
SSUBST.	: YES	Extended Emulation String Substitution
SBTS.	:	Single Byte Transparency Sequence
TLIS.	: 025 03C	Transparency Lead-in Sequence
TTRS.	: 03E 025	Transparency Trailer Sequence
FLIS.	: 025 02F	Function Mode Lead-in Sequence
EECS.	: 025 041 058 049 053	Extended Emulation Mode Control Sequence
COBXEM.	: SETALL (OFF, SETESC, SETALL)	Cobra Extended Emulation Mode
CCLIS.	: 025 050	Cobra Config Lead-in Sequence

--- UDS

-----	User Defined String Definitions
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--- BAR NUMBER TYPE WIDTH HEIGHT TEXT-MODE
CHECK-MODE

-----	Bar Code Definitions
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--- SSTR

-----	Substitution String Definitions
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--- MSTR

-----	Match String Definitions
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--- IBM PRINTER DRIVER

PRDRIVERBASE. : PCL5 (GENERIC, PCL4, PCL5, IBM_PRO, EPSON_FX, EPSON_FX_15CPI)	Printer Driver Selection: (EPSON_FX_15CPI, EPSON_LQ_1600K, EPSON_LQ_KS, GENERIC, PCL4, PCL5, IBM_PRO, EPSON_FX, EPSON_LQ)
SOJS.	Start of Job Sequence
EOJS.	End of Job Sequence
BACKSPS. : 08	Backspace Sequence
CRS. : 0D	Carriage Return Sequence
LFS. : 0A	Line Feed Sequence
NLS. : 0D 0A	New Line Sequence
FFS. : 0C	Form Feed Sequence
SOS. :	Shift Out Sequence
SIS. :	Shift In Sequence
BLKS. :	Black Color Sequence
GRNS. :	Green Color Sequence
BLUS. :	Blue Color Sequence
REDS. :	Red Color Sequence
MAGS. :	Magenta Color Sequence
CYNS. :	Cyan Color Sequence
YELS. :	Yellow Color Sequence
BIN1S. : 1B 26 6C 31 48	Bin 1 Select Sequence
BIN2S. : 1B 26 6C 34 48	Bin 2 Select Sequence
BIN3S. : 1B 26 6C 35 48	Bin 3 Select Sequence
BIN4S. : 1B 26 6C 32 30 48	Bin 4 Select Sequence
BIN5S. : 1B 26 6C 32 31 48	Bin 5 Select Sequence
BIN6S. : 1B 26 6C 32 32 48	Bin 6 Select Sequence
MANUALS. : 1B 26 6C 32 48	Manual Bin Select Sequence
ENVELOPES. : 1B 26 6C 36 48	Envelope bin Select Sequence
CONTINUOUSS. : 1B 26 6C 31 48	Continuous Select Sequence
CSIZS. :	Custom Size Sequence
LAC. : HP_PCL (DISABLE, HP_PCL)	LAC Driver
GRD. : HP_PCL (DISABLE, HP_PCL)	Gridline Driver
JOGS. : 1B 26 6C 31 54	Jog Sequence
SSUS. :	Symbol Set User String
SBSET. : PC850 (ECMA94, LATIN9, PC437, PC850, PC852, PC858, PC874, PC891, ROMAN8, USASCII, PC942, C903, PC904, USER)	Symbol Set

---	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		
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,	ITALIC,	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,	ITALIC,	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,	ITALIC,	MEDIUM,	4099		
FONT.	: 266,	98,	DEFAULT,	FIXED,	100,	0,	UPRIGHT,	BOLD ,	4099		
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,	ITALIC,	MEDIUM,	4102		

---	FONT	FGID	CSSF	SBSET	SPACING	PITCH	HEIGHT	STYLE	STROKE	TYPEFACE	STRING
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
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	
FONT.	:	17079,	100,	DEFAULT,	PROP,	0,	0,	ITALIC,	MEDIUM,	4101	
FONT.	:	17099,	100,	DEFAULT,	PROP,	0,	0,	ITALIC,	BOLD,	4101	

---	FONT	FGID	CSSF	SBSET	SPACING	PITCH	HEIGHT	STYLE	STROKE	TYPEFACE	STRING
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 4B 1B 26 74 33 38 50
FONT.	:	50031	, 100,	PC891,	PROP,	0,	144,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50032	, 100,	PC891,	PROP,	0,	120,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50033	, 100,	PC891,	PROP,	0,	108,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50034	, 100,	PC891,	PROP,	0,	96,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50035	, 100,	PC891,	PROP,	0,	96,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50036	, 100,	PC891,	PROP,	0,	80,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50037	, 100,	PC891,	PROP,	0,	101,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50038	, 100,	PC891,	PROP,	0,	101,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50039	, 100,	PC891,	PROP,	0,	84,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50040	, 100,	PC891,	PROP,	0,	76,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50041	, 100,	PC891,	PROP,	0,	67,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50042	, 100,	PC891,	PROP,	0,	67,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50
FONT.	:	50043	, 100,	PC891,	PROP,	0,	56,	UPRIGHT,	MEDIUM,	43088	1B 28 31 39 4B 1B 26 74 33 38 50

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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	
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,	UPRIGHT,	MEDIUM,	0		
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	
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	FGID	CSSF	SBSET	SPACING	PITCH	HEIGHT	STYLE	STROKE	TYPEFACE	STRING
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

--- e-mail Menu

EMAIL_NOTIFICATION: YES	e-mail Notification
REPLY_ADDRESS:	e-mail address of Network Administrator
PAPER_JAM_ADDRESS:	e-mail address of paper-jam Administrator
OUT_OF_PAPER_ADDRESS:	e-mail address of Out-Of-Paper Administrator
TONER_LOW_ADDRESS:	e-mail address of Toner-Low Administrator
NO_TONER_ADDRESS:	e-mail address of No-Toner Administrator
PRINTER_OFFLINE_ADDRESS:	e-mail address of Printer-Offline Administrator

Section 24 Test Button

The test button is located on the front right hand side of the AXIS 5470e and is used for:

- Printing a test page, checking the connection to the printer.
- Printing a parameter list, showing the AXIS 5470e current settings.
- Resetting the AXIS 5470e parameters to the factory default settings.

The Test Page

Press the test button once to print a test page. If the test page prints, the parallel interface is functioning correctly. The printed Test Page contains basic information about the AXIS 5470e. It is recommended that you print a test page every time you have connected the AXIS 5470e to a printer.

The Parameter List

Press the test button twice to print a parameter list showing the current AXIS 5470e settings. This list provides comprehensive details of all the parameters and their current status. Refer to *The Parameter List*, on page 231.

If you want to change any of the parameters, use one of the methods that are described in *Management and Configuration*, on page 134.

Factory Default Settings

Follow the instructions below to reset the AXIS 5470e to the factory default settings:

1. Remove the external power supply to switch off the AXIS 5470e.
2. Press and hold down the test button, while you plug the external power supply back in. Continue to hold down the test button, until the network indicator begins to flash at one second intervals. This should take at least 5 seconds.
3. Release the test button and wait until the network indicator flashes at least five times.

4. Press and hold the test button again until the network indicator remains constantly lit.
5. Restart the AXIS 5470e by switching it off and on.

The AXIS 5470e is now reset to factory default settings.

Note:

All parameters except Node Address (NODE_ADDR) and Internet Address (IP_ADDR) are reset. If you want to change these parameters use any standard Web browser. Please refer to *Management and Configuration*, on page 134.

Section 25 Technical Specifications

Supported Systems

IBM Mainframe and AS/400:	IBM S/370, S/390, IBM 30xx, 43xx, 47xx, 937x, IBM 81xx and AS/400
Novell NetWare:	<p>Versions 3.11, 3.12, 4.10 and above, supporting both NDS and Bindery Emulation. A maximum of 16 bindery file servers and 96 print queues can be served.</p> <p>NDPS supported by versions 4.11 and above.</p> <p>User messages are also supported.</p> <p>Print Methods: RPRINTER/NPRINTER, PSERVER</p>
Microsoft LAN Manager:	LAN Manager 2.0c and above, running under OS/2 ver 1.3 and above.
IBM LAN Server:	LAN Server 1.3 and above, running under OS/2 ver 1.3 and above including OS/2 Warp, OS/2 Warp Connect.
Microsoft Windows:	Windows NT ver. 3.5 and above, Windows for Workgroups, Windows 95, Windows 98, Windows 2000, Windows XP
LANtastic:	<p>LANtastic 7.0, from any of the supported Windows clients, defined above.</p> <p>All Operating Systems supporting the TCP/IP suite of protocols, including:</p>
BSD Systems	BSD 4.2, 4.3, 4.4, SunOS4 (Solaris 1.x), DEC Ultrix etc.
System V Systems	R3, R4, AT&T, Inter-active, SCO, SunOS5 (Solaris 2.x), HP-UX, IBM AIX, Silicon Graphics IRIX, DEC Alpha OSF/1, BULL (BOS, AIX).
Other Systems	IBM (MVS, VM, VSE, OS/400), DEC VMS, guidelines for other systems.

Print Methods SNA, TN3270E, TN5250E, PPR/PPD, LPR/LPD, FTP, PROS (named pipe & filtered, Reverse Telnet.

Apple EtherTalk: Print Method: AppleTalk Phase 2

WWW: Netscape Navigator 3.0 and MS Internet Explorer 3.0 or compatible browsers.

Supported Protocols

IBM: SNA PU type 2.0 (3174 establishment controller SNA), LU type 1 (SCS/IPDS), LU type 3 (3270DS/IPDS), SNA PU type 2.1 (5494 remote control unit SNA), LU type 6.2, LU type 4 (SCS, IPDS), TCP/IP TN3270E transport of SCS, 3270DS and IPDS, TCP/IP TN5250E transport of SCS, TCP/IP PPR/PPD transport of IPDS, Raw TCP/IP transport of SCS, TCP/IP LPR/LPD transport of SCS.

NetWare: IPX, SAP, RIP, SPX, SNMP and NCP (extended with NDS), NLSP, DIAG.

Windows and OS/2: NetBIOS/NetBEUI and TCP/IP, WINS.

LANtastic NetBIOS/NetBEUI

TCP/IP: LPD, FTP, Telnet, Reverse Telnet, PROS, BOOTP, ARP, RARP, DHCP, Auto-IP, ICMP, IP, IPP, TCP, UDP, HTTP, SNMP, TFTP, SLP.

Apple EtherTalk: AARP, ATP, DDP, NBP, PAP, RTMP, ZIP.

Network Management SNMP-MIB II compliant (over UDP/IP and IPX), private enterprise MIB included. LAN Network Manager for OS/2, Print server status in NWAdmin/PCONSOLE.

Hardware 32 bit 100 MHz RISC CPU, 2 Mbyte Flash memory. 8MB RAM memory

<u>Front Panel</u>	2 LED indicators: Power and Network. Test button for information printouts.
<u>Logical Connection</u>	
<u>Attachments</u>	RJ-45 connector, shielded CAT Twisted pair cable for 100baseTX Fast Ethernet.
<u>Security</u>	
UNIX:	Root password, User access list and printer access.
NetWare:	Encrypted passwords.
<u>Logical Printers</u>	Eight virtual printers can be programmed to perform auto ASCII to PostScript conversion, string before and after job, string substitution, alternative output and character set conversion.
<u>Parallel Printer</u>	One IEEE 1284 compliant, high-speed parallel port with 36-pin Centronics connector. Sustained throughput over 1 Mbyte/s using NetWare. Bi-directional support for Apple, Reverse Telnet and PROS. ECP support.
<u>IBM Printer Emulation</u>	<p>IPDS printers: 3812 model 2, 3816, 4028 models 1 & 2, 4332</p> <p>IBM 3270 non-IPDS printers: 3262 models 3 & 13, 3268 model 2C, 3287 model 2C, 3812 model 2, 3816 models 01A and 01D, 4214 model 1, 4224 model 2 and 4230 model 201.</p> <p>AS/400 non-IPDS printers: 3812 models 1 & 2, 3816 models 01S & 01D with 5219 diskette, 4214 model 2, 4230 model 101, 5224 models 1 & 2, 5225 models 1 - 4 and 5256 models 1 - 3, 5227-00x and 5327-00x models.</p>

ASCII printer languages: PostScript level 2, PCL 4/5, IBM Proprinter, Epson (FX, LQ) and Generic printer.

Power Consumption

Dimensions 0.9 x 2.4 x 4.8 inches (2.4 x 6.1 x 12.1 cm)

Weight 0.22 lb. (0.1 kg)

Environmental Temperature: 40° - 105° F (5° - 40° C).
Humidity: 10 - 95% non-condensing.

Approvals



EMC: EMC: EN 55022/1998 Class B, EN 55024/1998, FCC Class A subpart B of part 15

Safety: EN 60950. Approved power supplies for all countries

Section 26 Glossary

- 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.
- 3270DS** 3270 Data Stream is a control language used for the 3270 family of terminals and controllers. Also used for printing.
- 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.
- 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.
- 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.
- config file** This is a file that resides in the print server's memory and contains all the parameters that determine the AXIS 5470e functionality. By editing the config file (changing the parameter settings), you can configure the AXIS 5470e to meet the printing needs of your network.
- CPGID** Code Page Global ID
- DHCP** Dynamic Host Configuration Protocol. DHCP is available in Windows NT, NetWare 5 and UNIX systems, and allows for the automatic but temporary assignment of IP addresses from a central pool. DHCP causes the selected host to automatically allocate and download an unused IP address to the requesting print server. It also provides validation data that defines how long the IP addresses will remain valid.
- To fully benefit from this method, the AXIS 5470e also supports the WINS host name resolution protocol, which is available in Windows NT networks.
- DNS** Domain Name Service. Reflects the server names and addresses within a network.
- 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.

- Flash Memory** The print server software is stored in Flash Memory. This memory is provided by a silicon chip that like any other ROM device, retains data content even after power is removed. However, Flash Memory is unique because it allows its data to be erased and re-written. This means that you can install software updates for your server as soon as they become available, without having to replace any parts. The new software is simply loaded into the server over the network.
- 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.
- IBM** International Business Machines Corp.
- IP** Internet Protocol. The TCP/IP session-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.
- LED** Light Emitting Diode.

- 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** Line Printer Daemon protocol. A print server protocol widely used on the Internet.
- 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 Adressable 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.
- 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 through a host node's SSCP services. RARP
Reverse Address Resolution Protocol. A TCP/IP protocol used for downloading IP addresses in UNIX 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. A TCP/IP protocol for managing and monitoring nodes on 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.
- TCP Transmission Control Protocol. The connection-oriented, transport-level protocol used in the TCP/IP suite of protocols.
- TFTP Trivial File Transport Protocol. A simpler version of the FTP protocol that is used by the print server for the automatic downloading of config files.
- 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.
- 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.
- 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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