# AXIS 5900
# Network Print Server

User's Manual

## Notices

This manual contains some expressions that require special attention:

**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 any of these notices until you have fully understood the implications.

**Web Browser** For best performance, use a web browser with JavaScript support and Java enabled, such as Internet Explorer 4.0 or Netscape Communicator 4.7 and higher.

**Axis' Trademarks** AXIS ThinWizard

**Other Trademark Acknowledgments** AIX, Apple, DEC, DOS, Ethernet, EtherTalk, HP, IBM, JetAdmin, Internet Explorer, LAN Manager, LAN Server, LANtastic, Macintosh, Microsoft, MVS, NDPS, Netscape, Novell NetWare, OS/2, OS/400, PostScript, SCO, UNIX, VM, VMS, VSE, Windows are registered trademarks of the respective holders

**Software Acknowledgments**



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**Radio Transmission Regulatory information** The channel must be set according to the radio frequency requirements in your country:

| Country | Frequency | Available Channels | Default Channel |
|---|---|---|---|
| Europe | 2.412-2.472 GHz | 1-13 | 11 |
| France | 2.457-2.472 GHz | 10-13 (indoor use*) | 11 |
| Japan | 2.484 GHz | 14 | 14 |
| US/Canada | 2.412-2.462 GHz | 1-11 | 11 |

Tested to comply with FCC Standards FOR HOME OR OFFICE USE.
This product must be installed and used in strict accordance with the instructions given in the user documentation. The AXIS 5900 complies with the following radio frequency and safety standards:
Europe - EU Declaration of Conformity. This device complies with the requirements of the R&TTE Directive 1999/5/EC with essential test suites as per standardsEN 60950 Safety of Information Technology equipment:

ETS 300 328 Technical requirements for radio equipment
ETS 300 826 General EMC requirements for radio equipment

USA - Federal Communications Commission FCC

This device complies with Part 15 of FCC Rules. Operation of the device is subject to the following two conditions:
(1) This device may not cause harmful interference
(2) This device must accept any interference that may cause undesired operation.

**Approvals** The AXIS 5900 is approved for use in the US, EU member states, Switzerland and Japan.

AXIS 5900 User's Manual Revision 1.0
Date: June 2002

# Preface

Thank you for purchasing the AXIS 5900 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. The AXIS 5900 can be installed either as an IEEE 802.11b wireless print server or Ethernet attached print server.

## About this manual

This manual is applicable for the AXIS 5900, with firmware version 6.30 or later, providing introductory information as well as detailed instructions on how to set up and manage the AXIS 5900 in various network environments. It is intended for everyone involved in installing and managing the AXIS 5900. To fully benefit from this manual, you should be familiar with basic networking principles.

These instructions are based on the settings in a new and unconfigured AXIS 5900. For instructions on how to reset a configured AXIS 5900, see *Factory Default Settings*, on page 131.

About Axis - Axis develops solutions for user-friendly and secure communication over wired and wireless networks. The company is a worldwide market leader in network connectivity, with products for the office, facility and industrial environments. More information about Axis can be found at www.axis.com

## Support Services

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

If you are connected to the Internet, you can:

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

Visit the Axis support web at:

www.axis.com/techsup

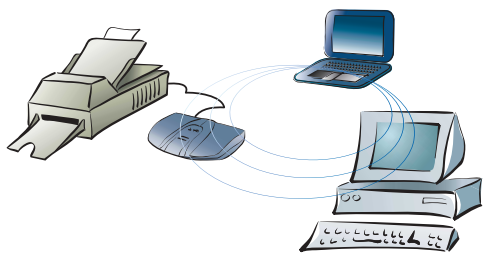
# Section 1 Introduction

The AXIS 5900 is a print server that can be used for either wireless or wired printing and can be installed either wirelessly or using an Ethernet interface.

The AXIS 5900 print server communicates either in ad-hoc mode, where the workstation/laptop communicates directly with the print server or infrastructure mode, where there is an 802.11 access point acting as a bridge between the workstation/laptop and the print server.

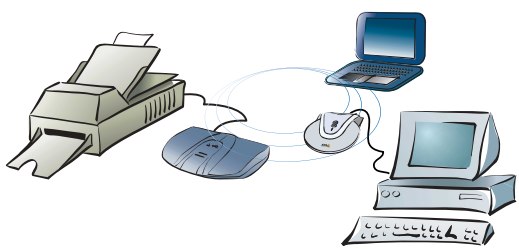
## 802.11b Operating Modes

ad hoc (default)



Allows workstations and laptops to communicate directly over the WLAN.

Infrastructure mode



Allows workstations and laptops to communicate over the WLAN and the LAN through an access point.

Note:

In Macintosh environments the ad hoc mode is refer to as computer to computer mode and the infrastructure mode is refered to as Airport network

## 802.11b Security

Unauthorized access to the WLAN can be prevented by using WEP which is a security protocol for encrypting data transmitted over the WLAN. When WEP is enabled, the workstation or laptop attempting to access the WLAN must use a WEP key to authenticate its data transmissions.

## Supported environments

Network printing

- Windows
- NetWare
- UNIX/Linux
- Macintosh
- OS/2*
- Internet/intranet via any standard web browser with JavaScript support and with Java enabled

*OS/2 is described in the Installation Guide for OS/2, Windows 3.1 and WfW, which is located on the Axis web site at www.axis.com

# Section 2 Product Overview

## Package Contents

Verify that nothing is missing from the AXIS 5900 print server package by using the check list below. Please contact your dealer if anything is missing or damaged. All packing materials are recyclable.

| Hardware | Model | Part Numbers |
|---|---|---|
| Print Server | AXIS 5900 | 0158-001-01 |

| Media | Title | Part Numbers |
|---|---|---|
| CD | AXIS Network Product CD | rev 1.1 or higher |
| Printed Material | AXIS 5900 Quick Installation Guide | 19091 |

| Power Supply | | PS-F (SA10-0515x) | PS-H (SA120A-0530x) |
|---|---|---|---|
| Model | Australia | 18428 | 19111 |
| Part Numbers<br>PS-F and PS-H are interchangeable | Europe | 18424 | 19108 |
| | UK | 18425 | 19109 |
| | USA / Japan | 18480 | 19110 |
| | Korea | | 19112 |

| Optional Accessories | Part Numbers |
|---|---|
| Parallel Printer Cable | 13360 |
| Self-adhesive velcro ribbons | 13282 & 13283 |

Caution

The AXIS 5900 external power supply must be marked with the correct voltage! Refer to the table above for details.

## AXIS Network Product CD

The AXIS Network Product CD provides an easy-to-use electronic catalog, that includes Axis software, firmware and user documentation. It also contains free Adobe Acrobat Reader software.

**Start-up procedures for Windows**

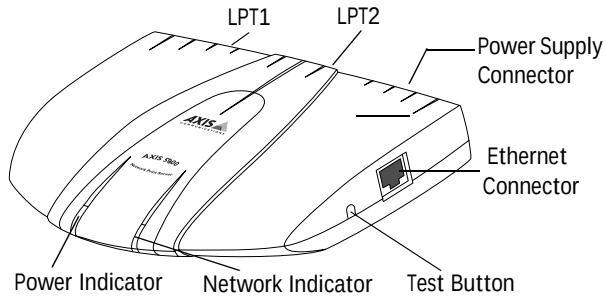
The AXIS Network Product CD starts automatically from a local CD drive on Windows 95/98, NT, Me, 2000 and XP platforms. You can also navigate to the CD root directory and click on the *index.htm* file from within the Windows file manager.

**Start-up procedures for UNIX, OS/2 and MacOS**

Using your preferred file manager application, navigate to the CD root directory and click *index.htm*

## AXIS 5900 Physical Description

Plan view of the AXIS 5900 print server




**Network Connector** The AXIS 5900 can be installed as an IEEE 802.11b wireless print server or as an Ethernet attached print server and connects to the network wirelessly or via a twisted pair category 5 cable (10baseT and 100baseTX) or better.

**Printer Ports** The AXIS 5900 print server is equipped with two high-speed IEEE 1284 compatible parallel ports (LPT1, LPT2). Any standard printer can be connected to any of the ports for network printing. Print data can be directed to any of the two ports simultaneously, which means that two different printers can be used at the same time, regardless of protocol.

**Test Button** The test button is used for printing a test page to check the connection to the printer, printing the parameter list showing the AXIS 5900 settings and resetting the AXIS 5900 parameters to the factory default settings.

**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 5900 or its power supply.

**Antenna** The AXIS 5900 is equipped with a built-in 802.11b PC-Card with an internal antenna.

## How to use the print server

### Installation and Integration

Refer to the table below to select the appropriate installation method. All Axis client software is available from the AXIS Network Product CD:

| Environment | Method/ Client Software | Description: |
|---|---|---|
| Windows | Windows standard 'Add Printer Wizard' | Used for installing network printers Windows 2000/XP |
| | AXIS IP JumpStarter | Used for setting the IP address of the print server WIndows 95/98/NT/2000 |
| | AXIS Print Monitor | Used for installing network printers Windows 95/98/NT |
| | AXIS Print System | Used for installing, configuring and monitoring network printers Windows 95/98/NT/2000 |
| UNIX/Linux | axinstall | Used for installing network printers in UNIX/Linux |
| NetWare Pure IP environments | NetWare Administrator | Used for installing network printers in NetWare |
| NetWare | AXIS Gateway Configuration Utility | Used for installing and configuring NDPS printers in Netware |
| Macintosh | Macintosh standard methods | Used for installing network printers in Macintosh |
| Windows, UNIX/Linux, Macintosh, NetWare, OS/2 | AXIS ThinWizard | Used for upgrading and managing multiple Axis products in TCP/IP networks |

### Configuration and Management

The AXIS 5900 can be configured and managed from its internal web pages, using HTTP over TCP/IP. The AXIS 5900 web pages offer you a platform-independent management tool that is suitable for all supported network environments. See *Using a Web Browser for Print Server Management*, on page 93 for details.

## Features and Benefits

**Reliability**

The AXIS 5900 print server provides high performance and reliability combined with low power consumption. The electronic circuits are based on the AXIS ETRAX LX chip, which comprises an integrated 32 bit RISC processor and associated network controllers.

**Flexibility**

The AXIS 5900 print server supports printing over the WLAN or printing over the wired network. The print server supports printing in all major computer systems and environments, including five different print methods in the TCP/IP environment. It also allows you to print on two printers simultaneously.

The AXIS 5900 works in both wired (LAN) and wireless (WLAN) networks in ad hoc (computer to computer) mode or infrastructure mode (AirPort network).

The integrated IPP (Internet Printing Protocol) function allows for printing from LAN to LAN via a WAN, such as the Internet.

**Speed**

The AXIS ETRAX LX chip has been specifically designed for LAN products and benefits users with a faster throughput than a direct PC-to-printer connection.

**Easy to Install**

Install the AXIS 5900 for wired or wireless network printing in just a few minutes. AXIS 5900 installs, operates and is managed in the same reliable and easy way as other Axis network print servers.

**Security**

You can assign passwords to restrict both login and printer access. AXIS 5900 supports data encryption and access control using WEP (Wired Equivalent Privacy).

**Monitoring**

The internal AXIS 5900 web pages and the AXIS ThinWizard software allow you to continuously monitor printer status. The web pages are used to monitor single Axis units and AXIS ThinWizard can be used to monitor multiple Axis units.

The AXIS 5900 supports SNMP for remote monitoring.

Through e-mail notification, the printer administrator can be notified by e-mail whenever an event that requires human intervention occurs in a printer. The e-mail contains a short and concise description of the event.

Future proof

The software stored in the AXIS 5900 Flash memory can be upgraded over the network. This allows you to quickly update and enhance the operational features of your AXIS 5900 when new print server software becomes available.

NetWare Packet Signature

AXIS 5900 supports NetWare Packet Signature Level 1, 2, 3, which protects servers and clients using the NetWare Core Protocol™ services. NCP packet signature prevents packet forgery by requiring the server and the client to sign each NCP packet. See your Novell NetWare documentation for detailed information.

# Section 3 Features in AXIS 5900

This section describes some special features offered by the AXIS 5900. These features are incorporated in the print server's firmware, which is an integrated part of the AXIS 5900.

## Wireless Printing

The AXIS 5900 Network Print Server connects wirelessly to the network, bringing you the freedom to place network printers anywhere. Works with any 802.11b Access Point and most printers. It's simple to manage, easy to install and supports Windows, UNIX, Macintosh and Novell.

## Auto-IP

In the absence of an IP address management mechanism such as DHCP, the print server will receive a temporary IP address automatically over Auto-IP, a method which enables the host to automatically take a link-local IPv4 address. Auto-IP is supported by Windows 98, Me, 2000, XP and Mac OS version 8.5 or higher.

## Auto-Detect Printer Type

In AppleTalk, the print server can automatically detect the type of printer you are using if you enable the 'Autodetect Printer Type'-function. See *Autodetect Printer Type*, on page 68.

## E-mail Notification

Whenever an event that needs human intervention occurs in a network printer, the concerned person can be notified by e-mail. This 'trouble-report' contains a short and concise description of the event. Five events are covered: Paper Jam, Out of Paper, Toner Low, No Toner, Printer Off-line. In order to determine who the e-mail recipients will be of these different trouble-reports, follow the instructions in *Setting the e-mail Notification Parameters*, on page 99.

## IPP (Internet Printing Protocol)

The AXIS 5900 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 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. See *IPP - Internet Printing Protocol*, on page 79 for details.

## Multi-language Support

The print server's web interface and Help pages are now available in English, Spanish, French, German and Japanese. The default language is English. See *Language Settings*, on page 99.

## Network Speed

Wireless — The AXIS 5900 supports the IEEE 802.11b wireless standard with a data rate of up to 11 Mbps over a WLAN.

Cable With the Network Speed parameter you can manually specify the speed at which you will send and receive network packages. You can change the Network Speed setting to correspond to the type of network you are using (10 or 100 Mbit). See *Network Speed*, on page 100.

## NetWare Packet Signature Level 1,2,3

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.

## Web Flash-Loading

The firmware can now easily be upgraded, since flashloading over the web is possible from the print server's internal web pages. Client software is no longer needed to upgrade the firmware. See *Upgrading from the Print Server's Internal Web Pages*, on page 127.

# Section 4 Basic Installation (Wired & Wireless)

## Connecting the Hardware

1. Make sure that your printer is switched off and that the AXIS 5900 external power supply is disconnected.
2. Locate the serial number, found on the underside label of the AXIS 5900, and write it down. You will need this number to set the IP address of the print server.
3. Connect the printer to the LPT1 or the LPT2 port on the AXIS 5900 using an appropriate printer cable.
4. Connect the AXIS 5900 to the wired network using a twisted pair category 5 cable, 10baseT and 100baseTX.

Note:

> You can install the AXIS 5900 without using a network cable, simply skip step 4 in these instructions.

5. Switch on the printer and connect the external power supply to the AXIS 5900. The power indicator will light up. When the network indicator starts to flash, the AXIS 5900 is successfully connected to the network.
6. Wait 1 minute. Press the test button on the AXIS 5900 to print a test page. The test page includes a list of the most important parameters, including the network speed, firmware version number and IP address of the print server.

Notes:

> The AXIS 5900 uses high-speed Centronics Communication. For use with older printers not supporting high speed, this function can be disabled by using a standard web browser. Please refer to *Management and Configuration*, on page 92, for more information.

## Installation Overview

Select the appropriate method to establish a connection between the workstation / laptop and the AXIS 5900. The following descriptions provide an overview of the installation procedures:

### Setting up using the Ethernet interface

- To establish communication with the network, an IP address must be assigned to your AXIS 5900, see *Assigning an IP address to the print server*, on page 21
- Set the WLAN Network Mode and enter the SSID, WLAN channel and WEP keys according to your network, see *Configuring the AXIS 5900 for wireless printing*, on page 31
- The AXIS 5900 must be restarted for the WLAN settings to take effect. On power up, the AXIS 5900 will automatically select WLAN communication if there is no Ethernet cable connected. Disconnect the network cable and disconnect and reconnect the AXIS 5900 power supply.

### Setting up over the WLAN

Before you begin, configure the WLAN settings on your workstation / laptop as described below (refer to the user documentation of your WLAN network interface for instructions):

- Select ad hoc mode
- Set the SSID to AXIS followed by the last 6 digits of the serial number which is found on the underside label of the AXIS 5900 e.g. AXIS181636. The SSID is case sensitive and must be entered exactly as stated above i.e. in upper-case letters.
- Set the WLAN channel to 11 (channel 14 in Japan)
- Disable the WEP parameter

Proceed with the following:

### Setting up the AXIS 5900 over the WLAN

- To establish communication with the network, an IP address must be assigned to your AXIS 5900, see *Assigning an IP address to the print server*, on page 21
- Once the connection has been established, set the WLAN Network Mode and enter the SSID, WLAN channel and WEP keys according to your network, see *Configuring the AXIS 5900 for wireless printing*, on page 31
- The AXIS 5900 must be restarted for the WLAN settings to take effect. Disconnect and reconnect the AXIS 5900 power supply to restart the AXIS 5900.

Note:

Once the print server's connection to the network has been established and verified, you can reset the workstation / laptop to its original settings i.e. the network mode, SSID, WLAN channel and WEP keys

## Assigning an IP address to the print server

**Before you start**

If you have a DHCP server on your network, your print server will receive an IP address automatically. The IP address will then appear on the test page you printed earlier.
If you are not working in a DHCP network, you need to set the IP-address of the print server manually.

Follow these instructions in order to assign an IP address to your AXIS 5900 print server.

**System privileges**

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

- set the IP address using RARP, BOOTP, DHCP
- add an entry to the ARP table with the command 'arp -s'

**Ethernet address**

You need to know the Ethernet address of your AXIS 5900 in order to assign an IP address to it. The Ethernet address is based upon the serial number of your AXIS 5900. This means, for example, that an AXIS 5900 with the serial number of 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**

Unless you are downloading the IP address using DHCP or Auto-IP, 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 5900. Consult your network administrator before assigning an IP address to your AXIS 5900.

## Methods for setting the IP Address

You can set the IP address of your AXIS 5900 using one of the following methods, depending on your network operating environment:

| Method | Network environments | See ... |
|---|---|---|
| AXIS IP JumpStarter | Windows 95/98/NT/Me/2000/XP | *Set the IP address using AXIS IP JumpStarter*, on page 24 |
| DHCP* | Windows NT/Me 2000/XP, UNIX, NetWare | *Setting the IP address using DHCP*, on page 25 |
| ARP | Windows 95/98/NT/Me/2000/XP | *Setting the IP address Using ARP in Windows 95/98/NT/ Me/2000/XP*, on page 28 |
| | UNIX/ Mac OS X | *Using ARP in UNIX and Mac OS X*, on page 28 |
| RARP* | UNIX | *Using RARP in UNIX*, on page 29 |
| BOOTP* | UNIX, NetWare | *Using BOOTP in UNIX*, on page 30 |
| Auto-IP* | Windows 98/ME/2000/XP | *Setting the IP address using Auto-IP*, on page 26 |

* The IP address of the print server will be set automatically using these methods.

Notes:

- The ARP and RARP methods operate on single network segments only, that is they cannot be used over routers.
- The ability to set the IP address with ARP and PING will only be enabled the first 4 minutes after rebooting the print server
- Refer to *Setting Parameters*, on page 71 for information about setting the IP address in the Macintosh environment.

## Registering and Resolving Host Names

In order to register the host name of the AXIS 5900 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 should be used if you are setting the IP address of the AXIS 5900 using DHCP.

The host name of the AXIS 5900 is specified by the PS_NAME parameter. Refer to the *Parameter List*, on page 138.

### WINS host name rules

WINS only supports 15 character long host names. If your host name is longer than 15 characters, the AXIS 5900 truncates the host name to 15 characters when registering with a WINS server. You can view the AXIS 5900 host name that is registered at a WINS server, in the print server's web interface. Refer to *Management and Configuration*, on page 92.

### DDNS host name rules

DDNS supports 47 character long host names and can only consist of the characters 'A-Z', 'a-z', '0-9' and '-'. If your host name consists of any other characters, they are converted to '-', when registering with a DDNS server. You can view the AXIS 5900 host name that is registered at a DDNS server, in the print server's web interface. Refer to *Management and Configuration*, on page 92.

If the host name matches another entry in the DDNS data base, the AXIS 5900 deletes the entry before registering.

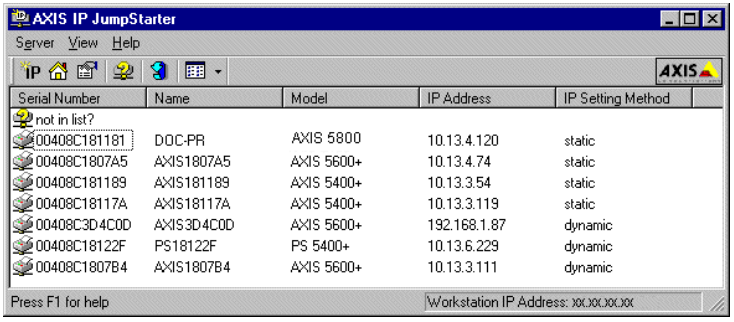
Notes:

- The default host name of the AXIS 5900 is 'AXIS' followed by the last 6 digits in the serial number. e.g. AXIS181636. The host name (Print server name) can be changed in the Print Server Name field on the admin | General Settings page.
- The host name limitations conclude that if you want to register the same host name at a WINS server and a DDNS server, the host name should be no longer than 15 characters and it should only contain the characters 'A - Z', 'a-z', '0-9' and '-'.
- Refer to your system manuals or to your network administrator for instructions on how host name resolutions are performed on your system.

## Set the IP address using AXIS IP JumpStarter

AXIS IP JumpStarter is an application that allows you to assign IP addresses to your Axis servers and find IP addresses already assigned to Axis servers.

1. Download and install AXIS IP JumpStarter. AXIS IP JumpStarter is available from the AXIS Network Product CD and from the Axis web site at: www.axis.com
2. Select a print server from the serial number list:




3. From the Server menu, select Set IP Address. The Set IP Address dialog appears.
4. Click the radio button that corresponds to your choice of IP setting method (static or dynamic using DHCP).
5. Click OK to save your settings.
6. Enter the server root password (default pass), and click OK. You have now finished the procedure of setting the IP address. Continue to *Configuring your print server*, on page 34.

### Setting the IP address using DHCP

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

1. Edit or create a scope in the DHCP manager of the DHCP daemon. The entries included in this scope should contain the following parameters:
   - range of IP addresses
   - subnet mask
   - default router IP address
   - WINS server IP address(es) or DDNS server IP address(es)
   - lease duration
2. Activate the scope. The AXIS 5900 automatically downloads the DHCP parameters. If you are using WINS or DDNS, you should include at least one WINS or DDNS server IP address in the DHCP scope. Immediately after the IP address has been received, the AXIS 5900 registers its host name and IP address on the WINS alternatively DDNS server. Refer to *Registering and Resolving Host Names*, on page 23 for more information. The AXIS 5900 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 5900 receives its IP address.
3. You have now successfully set the IP address of your AXIS 5900. Continue to *Configuring your print server*, on page 34.

Note:

| |
|---|
| You have to restart the AXIS 5900 to download the IP address |

## Setting the IP address using Auto-IP

Auto-IP sets the IP-address automatically in the absence of a DHCP server. If you have a DHCP server running on your network, the AXIS 5900 will receive an IP address immediately after you have connected it to the network. In the absence of a DHCP server, your AXIS 5900 print server will automatically be assigned an IP-address through integrated Auto-IP. The Auto-IP address structure is: 169.254.xxx.xxx.

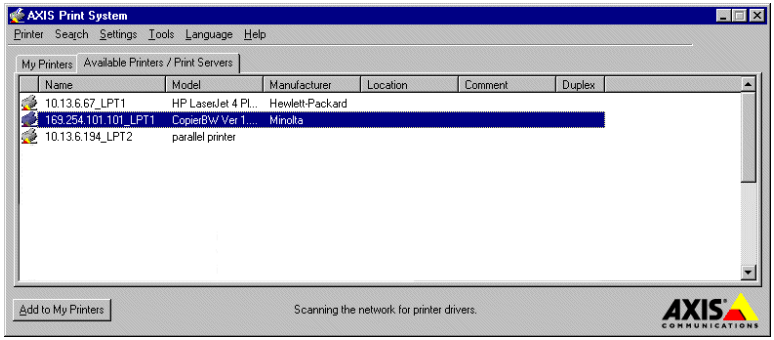
The Auto-IP function will only work when DHCP is enabled in your Axis print server. This function is enabled automatically upon installation of a brand new print server.

The easiest way to make sure DHCP and Auto-IP are enabled is to reset your print server (Factory Default). See *Test Button*, on page 130 for instruction on how to do this.

If you perform a factory default on the AXIS 5900 and you do not have a DHCP server on your network, Auto-IP will automatically set the IP address of the print server.

## Set the IP address using AXIS Print System

AXIS Print System is client software used to set the IP address of your Axis print server and to configure network printers.




AXIS Print System 'Available Printers/Print Servers' view

Follow these instructions to set the IP address of your Axis print server and configure the printer to which it is attached:

1. Install AXIS Print System on your host.

2. From the AXIS Print System **Available Printers/Print Servers** view, select the unconfigured Axis print server icon.

3. Double-click the print server icon. The AXIS Print System **Add Printer Wizard** will appear. Follow the instructions below to set a permanent IP address.

The print server will have a temporary IP address, which was assigned to it through Auto-IP*. The default Auto-IP address structure is: 169.254.xxx.xxx. This temporary IP address must be changed to a new and unused one

4. In the **IP Address** field, enter the new IP address of the print server.
5. Set the **Subnet Mask** and **Default Gateway** according to your network configuration. Click **Next>** to continue.
6. Next, you will be prompted to enter an Administrator password, the default password is **pass**. Click **OK**.
7. Next, AXIS Print System will start looking for printers attached to the print server. Click the radio-button next to the printer you want to add to **My Printers** and click **Next>**. Continue to *Configuring a network printer in AXIS Print System for Windows*, on page 38 to install an appropriate printer driver.

* Auto-IP will only work if there is no DHCP server on the network and the DHCP and Auto-IP parameters are enabled in the AXIS 5900 (DHCP and Auto-IP are enabled by default).

### Setting the IP address Using ARP in Windows 95/98/NT/ Me/2000/XP

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-10-00-86 |
| 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.

You have now set the IP address of the AXIS 5900. Continue to *Configuring your print server*, on page 34.

- When using the Windows 95 implementation of ARP, change the first line to: `arp -s <IP address> <Ethernet address> <w95host IP address>`, where `<w95host IP address>` is the IP address of your Windows 95 host.
- When you execute the ping command for the first time, you will experience a significantly longer response time than is usual.
- The ability to set the IP address with ARP and PING will only be enabled the first 4 minutes after rebooting the print server.
- By using the `arp -d` command, the static entry in the arp table is removed from the host's cache memory.

### Using ARP in UNIX and 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:10:00:86 temp |
| 2. | ping <host name> | ping psname |
| 3. | arp -d <host name> | arp -d 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.

You have now successfully set the IP address of the AXIS 5900. Continue to *Configuring your print server*, on page 34.

Notes:

- If the host name has not been mapped to an IP address, simply replace the host name entry with the IP address.
- 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`.
- When you execute the `ping` command for the first time, you may experience a significantly longer response time than is usual.
- The ability to set the IP address with ARP and PING will only be enabled the first 4 minutes after rebooting the print server

## 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>
```

Example:

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

2. Update, if necessary, your host table and alias name databases, as required by your system.
3. If it is not already running, start the RARP daemon. This is typically performed using the `rarpd -a` command.
4. Restart the AXIS 5900 to download the IP address.
5. You have now set the IP address of the AXIS 5900. Continue to *Configuring your print server*, on page 34.

Notes:

- If the host name has not been mapped to an IP address, simply replace the host name entry with the IP address in the example above.
- If you are using IBM AIX, you will probably not have access to a RARP daemon. If this is the case, you can use either ARP (see *Using ARP in UNIX and Mac OS X*, on page 28) or BOOTP (see *Using BOOTP in UNIX*, on page 30).
- You have to restart the AXIS 5900 to download the IP address.

## Using BOOTP in UNIX

Below is an example of how to set the IP address of the AXIS 5900 using BOOTP:

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

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

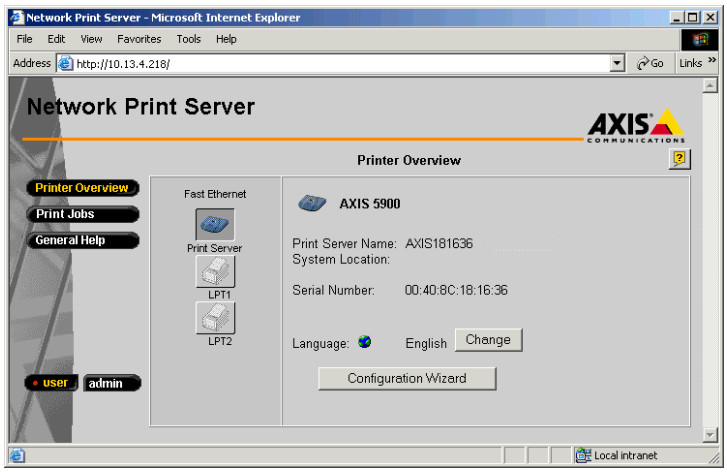
Example:

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

2. If necessary, update your host table and alias name databases, as required by your system.
3. If it is not already running, start the BOOTP daemon. This is typically performed using the bootpd command.
4. Restart the AXIS 5900 to download the IP address, default router address, and subnet mask. The AXIS 5900 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 5900 receives its IP address.
5. You have now successfully set the IP address of the AXIS 5900. Proceed to *Configuring your print server*, on page 34.

## Configuring the AXIS 5900 for wireless printing

1. Start your web browser (e.g. Netscape Communicator 4.7 or Microsoft Internet Explorer 4.0)
2. In the Location/Address field, type the host name or the IP address of your AXIS 5900.




User Mode Printer Overview page

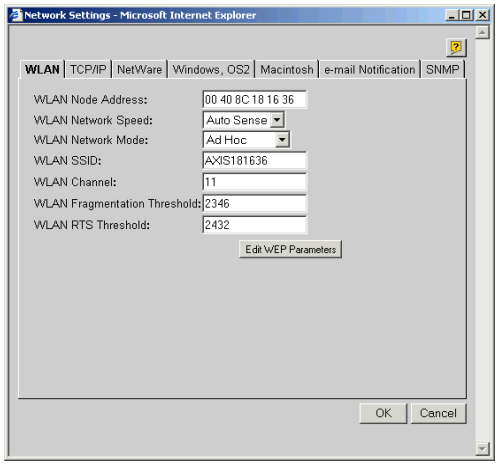
3. Click the admin button to enter the administrator's pages. Enter the default user name root and password pass.

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.

4. Click General Settings on the admin page and select Auto Sense or WLAN from the Network Mode drop down list to enable wireless communication (enabled by default).

5. To access the WLAN settings page, click Network Settings | Detailed View | WLAN




6. Refer to the table below for a description of the WLAN parameter settings used to configure the AXIS 5900 for wireless printing:

WLAN Parameters

Refer to the table below for a description of the WLAN parameter settings used to configure the AXIS 5900 for wireless printing.

| WLAN Parameters | Description |
|---|---|
| WLAN Node Address | The WLAN node address that is identical to the AXIS 5900 serial number which is found on the underside label on the print server, e.g.<br><br>Ser.No: 00:40:8C:10:00:86<br>WLAN Node Address: 00 40 8C 10 00 86 |
| WLAN Network Speed | Select the appropriate network speed according to your network environment or select Auto Sense |
| WLAN Network Mode | Select Ad Hoc mode for peer to peer printing or Infrastructure mode for wireless communication via an access point.<br><br>Note: The WLAN Network Mode must match the mode of the workstation / laptop. This is set using the computer's wireless configuration software. |

| | |
|---|---|
| WLAN SSID | The default SSID (service set identifier) in the AXIS 5900 is 'AXIS' followed by the last six digits of the serial number, e.g. AXIS100086<br>Note: the SSID must match the SSID of the WLAN network interface. This is set using the computer's wireless configuration software. |
| WLAN Channel | The default setting is channel 11 (Japan - channel 14) See *Technical Specifications*, on page 132 for more information |
| WLAN Fragmentation Threshold | These parameters are used to optimize the data transmission in accordance with the IEEE 802.11b standard. |
| WLAN RTS Threshold | |

WEP Parameters

Click the Edit WEP Parameters button. You will be prompted for the root password (default pass). Enter the WEP keys and click OK to save your settings.

| WLAN Parameters | Description |
|---|---|
| Edit WEP Parameters | Click the button to access the WEP parameter settings<br>Note: Java must be enabled in your web browser. |
| WEP Encryption Level | WEP security. The default setting is that WEP encryption is disabled. Select 64 Bit or 128 Bit security level. 128 Bit encryption level is the highest level of security but may reduce the performance level. |
| Active WEP key | Select the appropriate WEP key as specified by the network administrator |
| WEP key x | Enter the WEP keys (hexadecimal values) specified by the network administrator |
| Enforce WEP | When enabled, the print server will not allow access to clients without a WEP key |

Notes:

> Once you have clicked the OK button, the WEP parameter settings will be saved and cannot be cancelled by clicking Cancel on the WLAN page.

Once you have entered the WLAN settings to match your network, click OK to save your settings.

Proceed to *Configuring your print server*, on page 34 to set up your AXIS 5900 and the connected printers for printing.

## Configuring your print server

### Configuration Methods

Once you have set the IP address of your AXIS 5900 print server, it can be managed and configured over the LAN or WLAN using a number of different methods. The method that you choose should be dictated by your printing requirements and your supported network environments. Select the appropriate method from the table below:

| | | |
|---|---|---|
| Windows | TCP/IP | See *Setting Up - Windows*, on page 35 |
| | NetBIOS/NetBEUI | See *Setting Up - Windows*, on page 35 |
| | IPP | Proceed with *IPP - Internet Printing Protocol*, on page 79 |
| NetWare | IP/IPX in PSERVER mode | See *Installing the AXIS 5900 in an NDPS environments*, on page 59 and then *Setup using Queue-based printing over IP/IPX in PSERVER Mode*, on page 61 |
| | IP/IPX in Remote Printer mode | See *Installing the AXIS 5900 in an NDPS environments*, on page 59 and then *Setup for Queue-based printing over IPX/SPX (Remote Printer Mode)*, on page 63 |
| Macintosh | AppleTalk | See *Setting Up - Macintosh*, on page 66 |
| UNIX | TCP/IP | Proceed with *Setting Up - UNIX*, on page 73 |
| | IPP | Proceed with *IPP - Internet Printing Protocol*, on page 79 |

Note:

Installation instructions for Windows 3.1, WfW and OS/2 are found on the Axis web site at http://www.axis.com

# Section 5 Setting Up - Windows

## Overview of installation methods

This section describes how to install the AXIS 5900 in a Windows environment. 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' | *TCP/IP printing in Windows 2000 and Windows XP* on page 36 |
| Windows 95/98/Me | TCP/IP | AXIS Print Monitor | *Installing TCP/IP printers in Windows 95/98/Me using AXIS Print Monitor*, on page 44 |
| Windows NT 4 2000 | | | *Installing TCP/IP printers in Windows NT/2000*, on page 45 |
| Windows 95/98/Me | NetBIOS/NetBEUI | | *Installing NetBIOS/NetBEUI printers in Windows 95/98/Me using AXIS Print Monitor*, on page 49 |
| Windows NT 4 2000 | | | *Installing NetBIOS/NetBEUI printers in Windows NT 4.0/2000 using AXIS Print Monitor*, on page 50 |
| Windows NT 3.5x | TCP/IP | | *Installing TCP/IP Printers in Windows NT 3.5x using AXIS Print Monitor*, on page 47 |
| | NetBIOS/NetBEUI | | *Installing NetBIOS/NetBEUI Printers in Windows NT 3.5x using AXIS Print Monitor*, on page 51 |
| Windows 95,98, NT4 2000 | TCP/IP | AXIS Print System | *Configuring a network printer in AXIS Print System for Windows*, on page 38 |
| Windows 95/98 | NetBIOS/NetBEUI | | *Installing NetBIOS/NetBEUI printers in Windows 95/98 using AXIS Print System*, on page 40 |
| Windows NT 4 2000 | | | *Installing NetBIOS/NetBEUI printers in Windows NT 4.0/2000 using AXIS Print System*, on page 41 |
| Windows 2000/XP NT 4.0/3.5x | TCP/IP | Microsoft LPD Monitor | *Using the Microsoft LPD monitor with Windows* on page 52 |

If you intend to use the AXIS 5900 in a multi-protocol environment, you should also refer to the following sections:

*Section 6 Setting Up - NetWare*, on page 58
*Section 7 Setting Up - Macintosh*, on page 66
*Section 8 Setting Up - UNIX*, on page 73

Note:

Installation instructions for Windows 3.1, WfW and OS/2 are found on the Axis web site www.axis.com.

## 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.

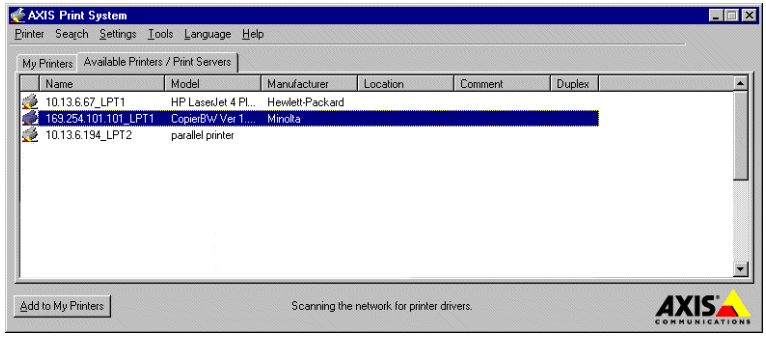
Notes:

- 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.

## TCP/IP Printing in Windows using AXIS Print System

AXIS Print System is a tool for network printing over TCP/IP in Windows 95/98, Windows NT, Windows 2000. Printers that you install from AXIS Print System are automatically added to the Printers folder in Windows. AXIS Print System has been developed for peer-to-peer printing, allowing your print jobs to be sent directly to the AXIS 5900.

Install AXIS Print System on your Windows client. This software is available from the AXIS Network Product CD or from the Axis web site at www.axis.com. To enable printing in the TCP/IP environment, you must ensure that the TCP/IP protocol is enabled on your client.




AXIS Print System's **Available Printers/Print Servers** view

### Peer-to-Peer Printing

In a Peer-to-Peer network, AXIS Print System needs to be installed on each workstation. Once installed, AXIS Print System 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
- You do not have to rely on a server.

### Client-Server Printing

AXIS Print System 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.

### Configuring a network printer in AXIS Print System for Windows

In AXIS Print System, network printers and Axis print servers that are connected to your network are displayed in the Available Printers/Print Servers window. A Wizard will guide you through the printer driver installation process to add a print server/network printer to My Printers, thus making the network printer ready for use.

The network printers that have been added to My Printers in AXIS Print System will also automatically show up in the Windows Printers folder (Start | Settings | Printers).

Only printers connected to Axis print servers with firmware versions 6.00 or higher will appear in the Available Printers/Print Servers window.

To configure a printer with AXIS Print System:

1. Select a network printer from the Available Printers/Print Servers list and double-click*. AXIS Print System will suggest which driver to use for the printer you have chosen.
2. Highlight a driver in the list and click Next>. If you wish to choose a driver from the AXIS Print System driver list, click More. To locate alternative printer drivers, click Browse to Driver Setup File and install the driver.

3. Enter a name for the printer (if you wish), follow the instructions on the screen and click Finish to complete the printer driver installation.

*If you select Add (Custom) to My Printers from the Printer menu in Step 2 instead of double-clicking, you can share the printer with other users (only for Windows NT and Windows 2000) or change any of the pre-defined settings prior to installation.

Note:

You can share the printer drivers you have installed with other AXIS Print System users on your network. In AXIS Print System, check the Enable Driver Sharing box in My Printers | Settings | Program Options | General.

## Changing Print Server Settings

If you want to change the default name or the password of the AXIS 5900, click Printer | Web Configuration from the AXIS Print System interface. This will launch a web browser, displaying the internal web pages of your Axis print server. From the user-mode, click the Configuration Wizard for assistance. Refer to *Using a Web Browser for Print Server Management*, on page 93 for detailed information.

## NetBIOS/NEtBEUI Printing in Windows using AXIS Print System

### Installing NetBIOS/NetBEUI printers in Windows 95/98 using AXIS Print System

Follow the procedures below to install Axis NetBIOS/NetBEUI printer ports on a Windows 95/98 workstation, using AXIS Print System:

1. To start the Add Printer Wizard, select Settings - Printers from the Start menu and double-click the Add Printer icon.
2. After clicking Next> in the first dialog, the Wizard asks you to select Local printer or Network printer. Select Local printer as the AXIS 5900 emulates a local printer port. Click Next>.
3. Choose the appropriate printer driver for your printer. If the desired printer driver appears in the displayed Manufacturers and Printer Models lists, highlight your selection, click Next> and proceed directly to step 6. It is only necessary to perform steps 4 - 5 if your printer does not appear in the model list.

Note:

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

4. Click the Have Disk... button. Insert the printer driver diskette/CD that was provided with your printer, select the appropriate diskette/CD drive and click OK.
5. Select the printer driver you want to install and click Next>.
6. Select the AXIS Printer Port from the Available Ports list. The port names appear as <name>.LP1 and <name>.LP2, where <name> is AX followed by the last six digits of the AXIS 5900 serial number, e.g. AX100086 (default serial no.). Click the Configure Port button.
7. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click OK>.

8. Enter an appropriate name for your printer and click Next>.
9. Choose whether you wish to produce a test page and click Finish.

## Installing NetBIOS/NetBEUI printers in Windows NT 4.0/2000 using AXIS Print System

Follow the procedure below to install Axis Printer Ports from a Windows NT 4.0 or Windows 2000 workstation:

1. To start the Add Printer Wizard, select Settings - Printers from the Start menu and double-click the Add Printer icon.
2. *Windows 2000only*: Start the installation by clicking Next>.
3. The Wizard asks you to select My Computer or Network printer server. Select My Computer, as the AXIS 5900 emulates a local printer port.
4. Click Add Port... in the Available ports dialog, select AXIS Port and click New Port...
5. Select NetBIOS/NetBEUI as your choice of network protocol and click OK.
6. Select the AXIS Port you want to add. The ports appear as <name>.LP1 and <name>.LP2, where <name> is AX followed by the last six digits of the AXIS 5900 serial number, e.g. AX100086 (default serial no.). Click OK.
7. Close the Printer Ports window.
8. Click the Configure Port... button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click OK. Continue the installation by clicking Next>.
9. Choose the appropriate printer driver for your printer. Click Next> and proceed directly to step 11. It is only necessary to perform steps 9-10 if your printer does not appear in the 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.

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

Note:

You can share the printer drivers you have installed with other AXIS Print System users on your network. In AXIS Print System, check the Enable Driver Sharing box in My Printers | Settings | Program Options | General.

## TCP/IP and NetBIOS/NetBEUI Printing from AXIS Print Monitor

### AXIS Print Monitor Overview

AXIS Print Monitor is the recommended tool to use for network printing in Windows 95, 98, NT 3.5x, NT4.0 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.

## Installing TCP/IP printers in Windows 95/98/Me using AXIS Print Monitor

1. To start the Add Printer Wizard, select Settings - Printers from the Start Menu and double-click the Add Printer icon.
2. After clicking Next> in the first dialog, the Wizard asks you to select between Local Printer and Network Printer. You must select Local Printer as the AXIS 5900 emulates a local printer port. Click Next>.
3. Choose the appropriate print driver for your printer. If the desired print driver already appears within the displayed manufacturer and model lists dialog, highlight your selection, click Next> and proceed directly to step 6. It is only necessary to perform steps 4 - 5 if your printer does not feature in the model list.
4. Click the Have Disk... button. Insert the printer driver diskette into the floppy disk drive of your computer. If the floppy disk drive is A:/ then click OK, otherwise type the letter of your disk drive and then click OK.
5. Select the desired printer you want to install from the diskette and click Next>.
6. Select an AXIS Port you wish to use and then click OK. Available AXIS ports appear as <internet address>_<port number> or <host name>_<port number>, e.g. 192.36.254.101_9900. Click the Configure Port button. If you wish to install a new TCP/IP port, select the Printers@TCP/IP Port and perform all procedures defined in steps 10-17.
7. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click OK. Click Next>.
   Note: The dummy port cannot be used for printing and consequently cannot be configured.
8. Enter an appropriate name for your printer and click Next>.
9. Choose whether you wish to produce a Test Page and click Finish.

You should continue with the following steps only if you wish to install a printer to a new TCP/IP port and have chosen Printers@TCP/IP Port previously in step 6.

10. The printer you have defined will now be displayed in the Printers Folder. Right-click the printer object and select Properties from the Context menu.
11. Click the details tab within the Properties page and then click Add Port to display the available monitors.
12. Click the radio button "other". Select AXIS Port and then click OK.
13. Select RAW (TCP/IP) as your choice of network protocol and click OK.
14. Enter the IP address or the host name of your print server and assign an appropriate port number. Click OK.
15. The TCP/IP port will then be added automatically to the list of available ports. Click OK.
16. You may now configure the port, as described in step 7.
17. Click the Apply button.

The Axis Printer Port is now installed.

Note:

Even if the desired printer is available from the manufacturer and model lists, you are advised to use the print driver provided with the printer. This assures you of the latest driver software.

### Installing TCP/IP printers in Windows NT/2000

1. To start the Add Printer Wizard, select Settings - Printers from the Start menu and double-click the Add Printer icon.
2. *Windows 2000 only*: Start the installation by clicking Next>.
3. The Wizard asks you to select My Computer or Network printer server. Select My Computer, as the AXIS 5900 emulates a local printer port.

4. Click Add Port... in the Available ports dialog, select AXIS Port and click New Port...
5. Select Raw (TCP/IP) as your choice of network protocol and click OK.
6. Enter the host name or IP address of the print server and the port number (9900 for LPT and 9902 for LPT2) Click OK.
7. Close the Printer Ports window.
8. Click the Configure Port... button. Choose if error condition pop-up messages are to be displayed and define the frequency at which the error messages should be displayed after retry. Click OK. Continue the installation by clicking Next>.
9. Choose the appropriate printer driver for your printer. Click Next> and proceed directly to step 11. It is only necessary to perform steps 9-10 if your printer does not appear in the 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.

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

Note:

You can share the printer drivers you have installed with other AXIS Print System users on your network. In AXIS Print System, check the Enable Driver Sharing box in My Printers | Settings | Program Options | General.

## Installing TCP/IP Printers in Windows NT 3.5x using AXIS Print Monitor

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 www.axis.com

To be able to print using LPR, you must have installed the AXIS 5900 in the TCP/IP environment as described in *Assigning an IP address to the print server*, on page 21 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.

Note:

> You can share the printer drivers you have installed with other AXIS Print System users on your network. In AXIS Print System, check the Enable Driver Sharing box in My Printers | Settings | Program Options | General.

## Installing NetBIOS/NetBEUI printers in Windows 95/98/Me using AXIS Print Monitor

Follow the procedures below to install Axis NetBIOS/NetBEUI printer ports on a Windows 95/98 workstation, using AXIS Print Monitor:

1. To start the Add Printer Wizard, select Settings - Printers from the Start menu and double-click the Add Printer icon.
2. After clicking Next> in the first dialog, the Wizard asks you to select Local printer or Network printer. Select Local printer as the AXIS 5900 emulates a local printer port. Click Next>.
3. Choose the appropriate printer driver for your printer. If the desired printer driver appears in the displayed Manufacturers and Printer Models lists, highlight your selection, click Next> and proceed directly to step 6. It is only necessary to perform steps 4 - 5 if your printer does not appear in the model list.

Note:

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

4. Click the Have Disk... button. Insert the printer driver diskette/CD that was provided with your printer, select the appropriate diskette/CD drive and click OK.
5. Select the printer driver you want to install and click Next>.
6. Select the AXIS Printer Port from the Available Ports list. The port names appear as <name>.LP1 and <name>.LP2, where <name> is AX followed by the last six digits of the AXIS 5900 serial number, e.g. AX100086 (default serial no.). Click the Configure Port button.
7. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click OK>.
8. Enter an appropriate name for your printer and click Next>.

9. Choose whether you wish to produce a test page and click Finish.

## Installing NetBIOS/NetBEUI printers in Windows NT 4.0/2000 using AXIS Print Monitor

Follow the procedure below to install Axis Printer Ports from a Windows NT 4.0 or Windows 2000 workstation:

1. To start the Add Printer Wizard, select Settings - Printers from the Start menu and double-click the Add Printer icon.
2. *Windows 2000 only*: Start the installation by clicking Next>.
3. The Wizard asks you to select My Computer or Network printer server. Select My Computer, as the AXIS 5900 emulates a local printer port.
4. Click Add Port... in the Available ports dialog, select AXIS Port and click New Port...
5. Select NetBIOS/NetBEUI as your choice of network protocol and click OK.
6. Select the AXIS Port you want to add. The ports appear as <name>.LP1 and <name>.LP2, where <name> is AX followed by the last six digits of the AXIS 5900 serial number, e.g. AX100086 (default serial no.). Click OK.
7. Close the Printer Ports window.
8. Click the Configure Port... button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click OK. Continue the installation by clicking Next>.
9. Choose the appropriate printer driver for your printer. Click Next> and proceed directly to step 11. It is only necessary to perform steps 9-10 if your printer does not appear in the 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 the printer. This assures you of the latest driver software.

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

Note:

You can share the printer drivers you have installed with other AXIS Print System users on your network. In AXIS Print System, check the Enable Driver Sharing box in My Printers | Settings | Program Options | General.

## Installing NetBIOS/NetBEUI Printers in Windows NT 3.5x using AXIS Print Monitor

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 and Axis Communications web site 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 Manufacturers and Printer Models list, you are advised to use the printer driver provided with the 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 ports appear as <name>.LP1 and <name>.LP2, where <name> is AX followed by the last six digits of the AXIS 5900 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.

## Using the Microsoft LPD monitor with Windows

### Using the Microsoft LPD monitor with Windows 2000/XP

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

Note:

See *Alternative Method for LPR Printing*, on page 54 for instructions on how to set up printing over LPR without installing Print Services for Unix.

### Basic Setup

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

### Preparing for LPR/LPD printing

Follow the following steps to prepare for LPR/LPD printing:

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

### Installing an LPD printer

Follow the instructions below to use the standard Windows method for installing an LPD 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 LPR Port from the list. Follow the wizard to complete the installation (You need to know the IP address of your print server and the port you are printing to i.e. PR1 or PR2).
- 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.

### Alternative Method for LPR Printing

If you wish to print over LPR but do not wish to install Print Services for Unix you can do this by changing the printing protocol after having installed the printer using the Standard TCP/IP method, see *TCP/IP printing in Windows 2000 and Windows XP*, on page 36 for instructions.

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

1. Double-click the installed printer in Start | Settings | Printers.
2. Select Properties from the Printer menu.
3. Click the Configure Port button.
4. Click the LPR radio button and enter the queue name (pr1 or pr2).
5. Click OK to finish.

### Using the Microsoft LPD monitor with Windows NT 4.0

This section describes how to set up a Windows NT Server v4.0 for LPR 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.

### Preparing for LPR/LPD printing

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 skip to *Installing an LPD printer*, on page 53.

Follow the following steps to prepare for LPR/LPD printing:

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

### Installing a LPD printer

Follow the instructions below to install a printer for LPD printing:

1. Open the Control Panel and open the 'Printers' folder.
2. Click Add Printer, select My Computer and then go to Next.
3. Select Add Port. In Printer Ports, choose LPR Port and then click New Port.
4. In Add LPR compatible printer, enter the host name or IP address of the AXIS 5900 as the print server to provide LPD.
5. Enter 'pr1', 'pr2', ... 'pr8' as the name of printer or print queue on that server.
6. Choose a suitable printer driver for your printer and go to Next.
7. Enter a printer name and go to Next.
8. Enter a share name.
9. Click Next and then Finish.

## Using the Microsoft LPD monitor with Window NT 3.5x

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 to the print server*, on page 21 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 5900. 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 and then OK to complete the installation.

# Section 6 Setting Up - NetWare

This section describes how to continue the installation of the AXIS 5900 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<br>IPX/SPX | See *Setup using NDPS*, on page 59<br>Proceed with *Installing the AXIS 5900 in an NDPS environments*, on page 59. |

| Printer Configuration method | Transport protocol | Action |
|---|---|---|
| PSERVER mode | IP/IPX | See *Setup using Queue-based printing over IP/IPX in PSERVER Mode*, on page 61 and then<br>*Queue-based Printing Methods*, on page 64 |
| Remote Printer mode | IPX/SPX | See *Setup for Queue-based printing over IPX/SPX (Remote Printer Mode)*, on page 63 and then<br>*Queue-based Printing Methods*, on page 64 |

If you intend to operate your AXIS 5900 in a multi-protocol, mixed environment, you should also proceed to the other relevant sections in this manual, namely:

*Section 5 Setting Up - Windows*, on page 35
*Section 7 Setting Up - Macintosh*, on page 66
*Section 8 Setting Up - UNIX*, on page 73

Note:

Installation instructions for Windows 3.1, WfW and OS/2 are found on www.axis.com and the AXIS Network Product CD.

## Setup using NDPS

The AXIS 5900 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 5900 can be installed, make sure that NDPS is installed and a Broker is loaded on your NetWare file server.

AXIS 5900 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 5900 in an NDPS environments

Having assigned an IP address to the AXIS 5900 as described in *Assigning an IP address to the print server*, on page 21, you are now ready to install the AXIS 5900 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 5900 using NDPS:

Notes:

- The HP-JETADMIN parameter of the AXIS 5900 must be set to YES in order for the communication between the AXIS 5900 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 5900 to the network.
2. Connect the AXIS 5900 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 5900 in IP/IPX

Follow the instructions below:

1. From the AXIS 5900 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 for Print Server Management*, on page 93.

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 5900 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 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 5900 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 5900 logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the AXIS 5900 emulates a NetWare print server, which is a workstation running PSERVER. It provides high printing speed with low network load and is the recommended mode for medium to large sized networks. Each print server in PSERVER mode takes one NetWare user license.

Advantages

- High performance: up to 1 Mbyte/s.

Limitations

- In bindery mode, this printing method requires a NetWare user licence for each AXIS 5900 to file server link.

### Remote Printer Mode

The AXIS 5900 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 5900 emulates a workstation running the NetWare remote printer software RPRINTER, or NPRINTER. This mode is only recommended for small networks where the number of NetWare user licences is a major issue.

Advantages

- NetWare user licences are not required.

Limitations

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

## NetWare Packet Signature

AXIS 5900 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 - Macintosh

Having connected the AXIS 5900 to your network, this section now describes how to set up your AXIS 5900 for printing in Mac OS X and Macintosh environments using AppleTalk.

Note:

In Macintosh environments the ad hoc mode is called computer to computer mode and the infrastructure mode is called Airport network

If you intend to operate your AXIS 5900 in a multiprotocol environment, you should also proceed to the other relevant sections in this manual:

*Section 6 Setting Up - NetWare*, on page 58
*Section 5 Setting Up - Windows*, on page 35
*Section 8 Setting Up - UNIX*, on page 73

Note:

Installation instructions for Windows 3.1, WfW and OS/2 are found on www.axis.com.

## Installation in Mac OS X

This section describes setting up your AXIS 5900 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 5900.
5. Select Use Default Queue on Server or enter LPT1 or LPT2 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 5900 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 5900 as described in *Setting Parameters*, on page 71.

## Choosing a Printer

### Selecting a Printer

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

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

### Autodetect Printer Type

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

To enable the 'Autodetect Printer Type'-function:

1. Log in to your print server's web interface and choose: Admin | Network Settings | Detailed View | Macintosh | AutoDetectPrinterType | YES.

See the print server's web interface Help pages for details.

### LaserWriter 7.0 Printer Driver

Follow the instructions below to choose a printer:

1. Select Chooser from the Apple menu.
2. Click the LaserWriter icon.
3. If your network has more than one zone, click on the zone you want. If your network has no zones, this box does not appear.
4. Click the name of the printer you want. The default AXIS 5900 printer names are shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 5900 serial number, and <port> is LPT1 and LPT2. 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 5900.

### 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 5900 printer names are shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 5900 serial number, and <port> is LPT1 and LPT2 respectively. 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.

Repeat this procedure for each Macintosh computer on the network using the AXIS 5900.

### Bi-directional support

The AXIS 5900 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 5900 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 5900 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 Axis NPS Print Server Technical Reference on the Axis web site at www.axis.com

### ASCII, TBCP and BCP

ASCII (American Standard Code for Information Interchange). ASCII is the most common format for text files in computers and on the Internet. In an ASCII file, each alphabetic, numeric, or special character is represented with a 7-binary digit binary number (a string of seven 0s or 1s). 128 possible characters are defined.

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 5900. 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 5900, you have access to all of print server's parameters via any standard web browser or via FTP. Refer to *Section 10 Management and Configuration*, on page 92 for more information.

Example: The following example describes how you set the AXIS 5900 parameters in AppleTalk.

Important:

> DO NOT use the parameter values from this example when configuring your AXIS 5900. You should select values that are appropriate for your printers and network settings.

Follow the instructions below:

1. Open the Chooser from the Apple menu.
2. Select a network printer driver, any LaserWriter will do.
3. Select the printer port ending with "_CFG".
4. Close the Chooser.
5. Open a text editor, e.g. SimpleText.
6. Write a text file containing the parameters you want to set:

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

Note:

Parameters that you do not want to set should be excluded from the text file. Refer to the *Parameter List*, on page 138, 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 5900 has been powered on. If you want it to reappear, you must restart your AXIS 5900.

# Section 8 Setting Up - UNIX

## Installation in a UNIX Environment

Having performed the basic TCP/IP setup procedures as defined in *Assigning an IP address to the print server*, on page 21 and onwards, you are now able to print in interactive mode using PROS, LPR, FTP or Reverse Telnet protocols.

However, if you want to integrate the AXIS 5900 with your host spooler, you can use the Axis automatic installation script *axinstall.* This utility software is resident on the AXIS 5900 and can be downloaded to your host using FTP, so no disks are required. The *axinstall* script is also available from the Axis web site at www.axis.com and the AXIS Network Product CD.

Having completed this operation, the printer connected to the AXIS 5900 will appear as though it is directly connected to the host printer spooler.

If you intend to operate your AXIS 5900 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 58
*Section 5 Setting Up - Windows*, on page 35
*Section 7 Setting Up - Macintosh*, on page 66

## Integration with the Host Printer Spooler

To integrate the AXIS 5900 with the host printer spooler, you can use the auto installation script *axinstall*, resident in the AXIS 5900. Follow the instructions below to install *axinstall* onto your host using FTP:

1. Login to the AXIS 5900 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 5900 FTP Print Server v6.30 March 23 2002
ready.
Name (npsserver: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 5900 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 diagram 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.

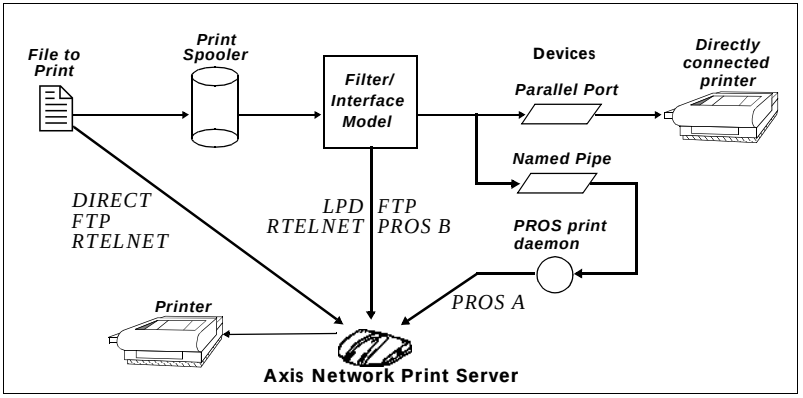



Illustration of different UNIX print methods

### 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 5900 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

PROS A - Advantages:

The AXIS 5900 appears as a device to the system. This makes all filter and model options available. It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

PROS A - Limitations:

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

Note:

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

PROS B

PROS B - Advantages:

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

PROS B - Limitations:

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

## Reverse Telnet

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

Advantages:

Easy to set up with previously installed Reverse Telnet drivers.

Limitations:

No status logging. Drivers are not supplied with the AXIS 5900. 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 `prosbsd` (in the `bsd` directory of the AXIS 5900) can be used as a starting point. It receives print data from `stdin`, and writes a log file to `stderr`. Nothing is written to `stdout`.

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

## IBM MVS Systems

A sample JCL script, `jclex`, is available in the `mvs` directory of the AXIS 5900. It gives an example of how to print a file from an MVS mainframe to an AXIS 5900 using FTP.

# Section 9 IPP - Internet Printing Protocol

The AXIS 5900 print server enables printing over the Internet with IPP (Internet Printing Protocol), an industry standard that allows users to print to remote printers across the Internet.

With IPP, a user with an Internet connection can send a document to any 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 *IPP clients*, on page 82.
- The printer to which you want to send your print job needs to be connected to *a print server with IPP functionality*. AXIS 5900 makes it possible for your printer to receive print jobs from an IPP client. The IPP-functionality of the AXIS 5900 print server is automatically activated upon installation.

### IPP Printing Requirements

Before you print to an IPP printer you 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 5900 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 5900 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 |
|---|---|
| ipp://171.16.5.218/LPT1 | Printer attached to the LPT1 parallel port |

## 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 5900 print server with integrated IPP is compatible with any 1.0 and 1.1 - compliant IPP client.

The AXIS 5900 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.

Currently available IPP clients on the market:

- For Windows NT/2000: the Internet Printer Connection software from Hewlett Packard (can be downloaded from the Hewlett Packard web site).
- For Windows 2000/XP: the Microsoft IPP Client (automatically installed with OS).
- For Windows 95/98, NT 4.0: 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 5900 print server, the IPP function is automatically activated when you install your AXIS 5900.

IPP is platform independent and functional in Windows (NT, 95, 98,Me and 2000/XP), Macintosh, OS/2, NetWare and UNIX.

### 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.

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 84.

1. Select the IPP printer to which you want to send your document. Choose the destination printer from the Printer name field (In File | Print).
2. When you press Print, the print job is sent over the Internet to the AXIS 5900 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 '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://...

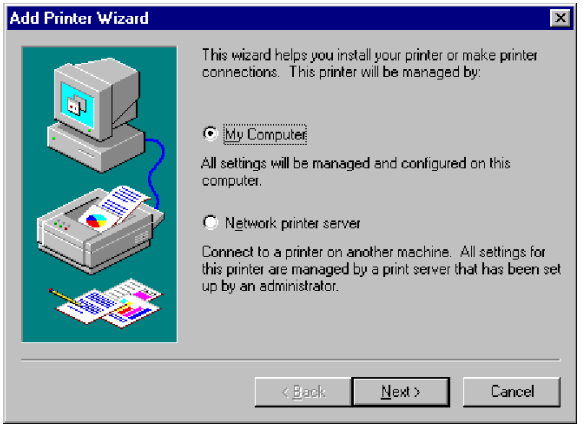
If your destination printer does not exist in your Printer Name list, you need to add it. Adding an IPP-printer to your printer list is described in *Adding an IPP printer to your printer list in Windows NT*, on page 85.

2. When you press Print, the print job is sent over the Internet/WAN to the AXIS 5900 print server, which then forwards the print job to the destination printer.
3. The recipient of the print job can collect the print job at the destination printer.

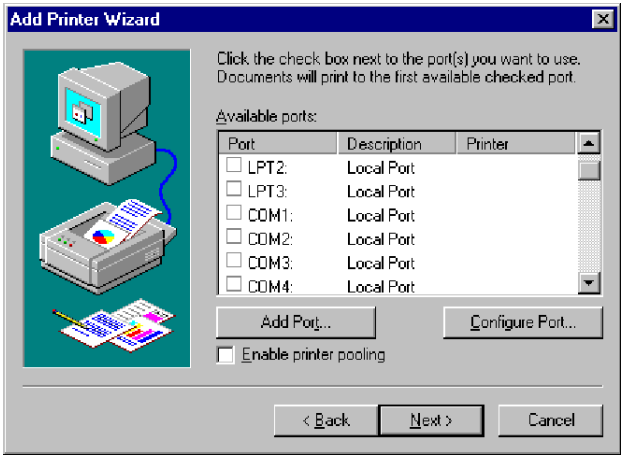
### Adding an IPP printer to your printer list in Windows NT

In this example the print servers http: address is http://171.16.5.218, the printer is connected to the AXIS 5900 print server port LPT1 and the printer is a HP LaserJet 5Si (and the port number is 631).

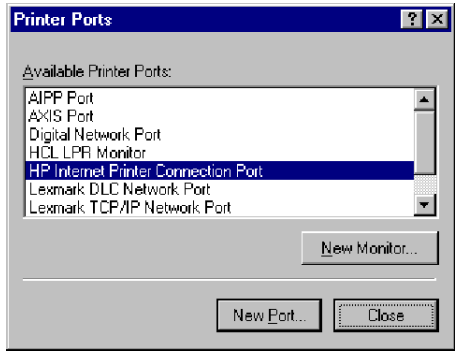
1. Install the Internet Printer Connection software from Hewlett Packard (can be down-loaded from the Hewlett Packard web site) on your computer.
2. Open Start | Settings | Printers.
3. Choose Add Printer. The Add Printer Wizard will start.
4. Next, the Wizard will ask you if you want to install on My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




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



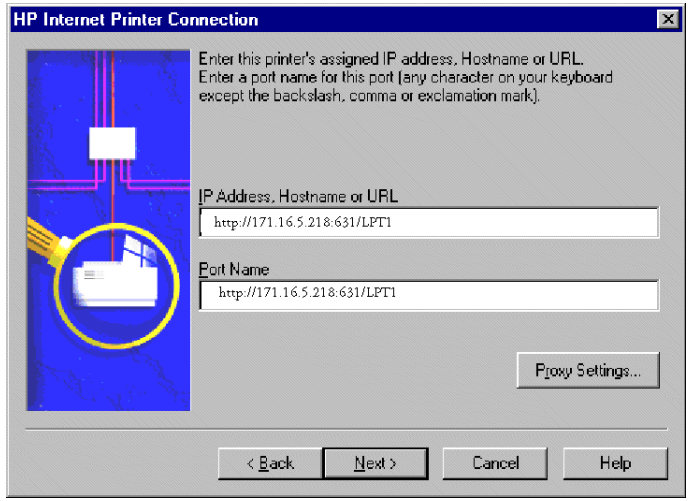
6. The Printer Ports dialog will appear, showing a list of Available Printer Ports.




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

7. The HP Internet Printer Connection will start. Click Next.

8. 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:

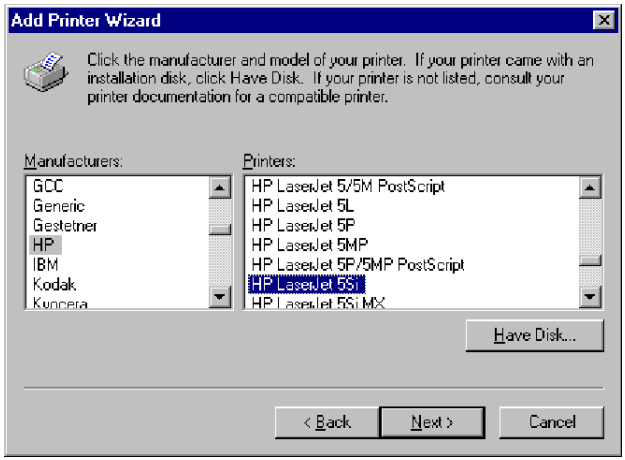



In this example the printer's http: address is http://171.16.5.218:631/LPT1. Click Next.

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.

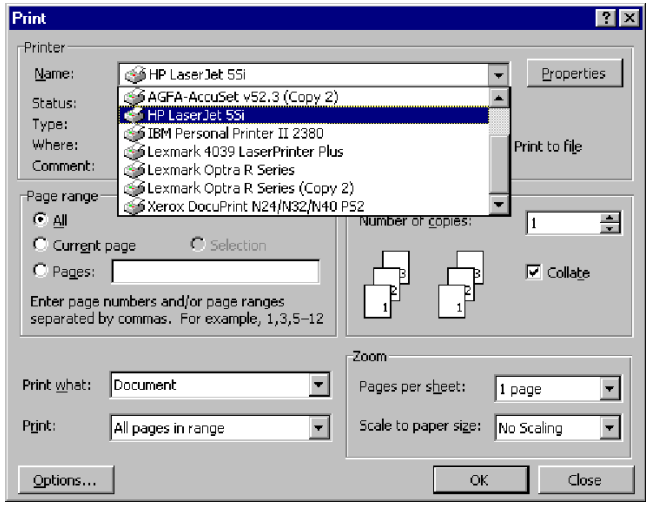
10. The IPP printer port list is now available in the Available Ports list. Click Next.

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.

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




IPP printing in Windows 2000/XP

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 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/XP*, on page 90.

2. When you press Print, the print job is sent over the Internet to the AXIS 5900 print server, which then forwards the print job to the destination printer.

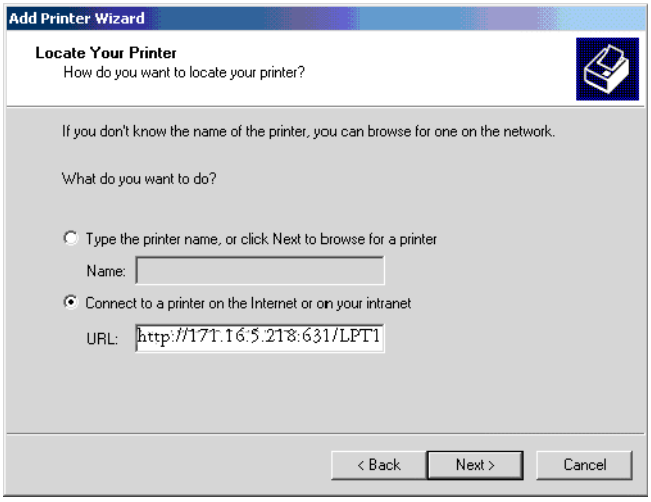
3. The recipient of the print job can collect the printjob at the destination printer.

### Adding an IPP printer to your printer list in Windows 2000/XP

In this example the print servers' http: address is http://171.16.5.218, the printer is connected to the AXIS 5900 printer port LPT1 and the printer is a HP DeskJet 1120C (and the port number is 631).

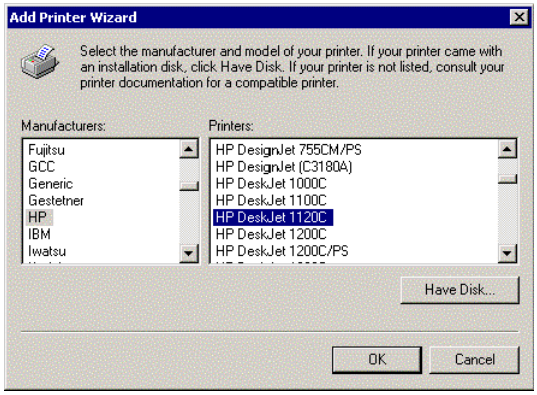
Thus, the printers http:// address is http://171.16.5.218:631/LPT1.

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:



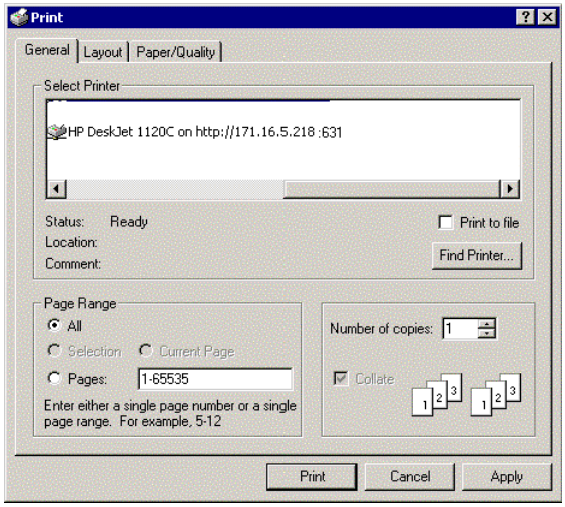

5. If you do not have a driver corresponding to the destination printer installed on your computer, the Wizard will prompt you to install one. Click OK:

6. The Installation Wizard will ask you to select a printer driver corresponding to the destination printer. Select the printer driver from the list and click OK:




7. The Wizard will ask you if you want the printer to be your default destination printer. Make your choice and click Next to complete the Add Printer Wizard installation.

8. The new printer is added to your Select Printer window:




9. You are now ready to print using IPP: specify your new destination printer from the printer list and click Print.

# Section 10 Management and Configuration

The management and configuration tools that are supported by the AXIS 5900 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 5900 to factory default
- Upgrade the AXIS 5900 firmware (Refer to *Section Upgrades*, on page 127)

## Configuration Overview

The method you should use to manage and configure your AXIS 5900 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 |
|---|---|
| WLAN, TCP/IP<br>(UNIX, Windows, NetWare Pure IP, OS/2) | Web Browser - See page 93<br>AXIS ThinWizard - See page 112<br>FTP - See page 115<br>telnet - See page 119<br>SNMP - See page 122<br>HP Web JetAdmin - See page 124 |
| IPX/SPX<br>(NetWare) | HP JetAdmin - See page 124<br>Novell Utilities - See page 125 |
| AppleTalk over TCP/IP | Web browser - See page 93 |

Note:

BOOTP and TFTP are powerful tools for configuring the AXIS 5900. Refer to the documentation for the BOOTP/TFTP server on your system for specific information.

## Using a Web Browser for Print Server Management

Once you have established the AXIS 5900 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 5900 web pages from any Java enabled web browser.

The web interface of the AXIS 5900 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. 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 is password protected to prevent unauthorized changing of the print server parameters.

Note:

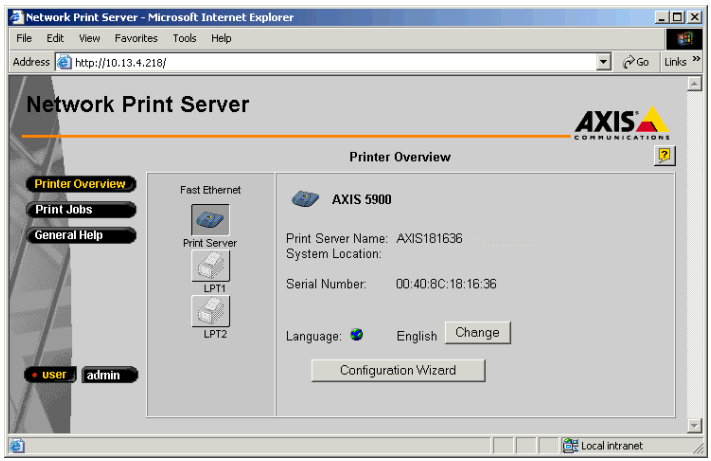
> If the ROOT_PWD parameter is set to *pass*, which is the default value, you have access to the User mode as well as the Admin mode.

### Accessing the Web Pages

Follow the steps below to access the internal home page of the AXIS 5900.

1. Start your web browser.
2. In the Location/Address field, type the host name or the IP address of your AXIS 5900:

3. The User Mode Printer Overview page of your AXIS 5900 will appear in the browser window.




The AXIS 5900 User Home Page

4. Click the admin button to enter the Admin mode. If the management password is set to anything but pass, you must enter root as the user. The password pass is the default password of the AXIS 5900.

## Available Services from the User Mode

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

Printer Overview

The Printer Overview page contains a section that allows you to view the general parameter setting of the AXIS 5900, 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 to perform basic configuration of the AXIS 5900.

By clicking on the printer icons, a printer page opens, allowing you to view the status and the supported capabilities of each 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 selected printer.


From the Print Jobs page you can view the status of the current print jobs, including the number of printed bytes and the origin of the print job. You can also view a log of the 20 latest print jobs that includes the user, the printing protocol and the file size. A log that displays the accumulated usage of the connected printers allows you to control the usage of the connected printers.


The General Help page presents you with basic information about the AXIS 5900 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.

Configuration Wizard

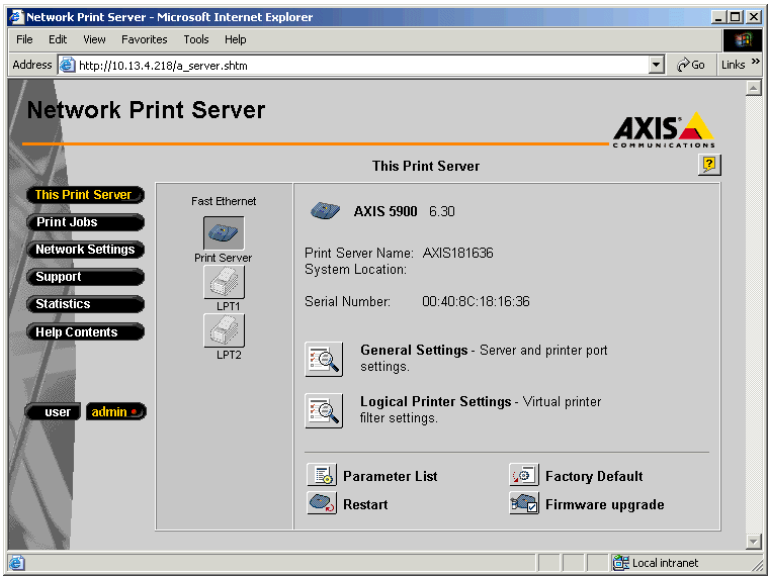
The Configuration Wizard will guide you through the procedure of verifying some default settings and configure a few parameters. When you are finished, the print server is correctly configured for all printers and network environments.

Language Settings

You can change the language of the print server's web interface from the User mode. Available language options are English (default), French, German, Japanese and Spanish.

## Available Services from the Admin Mode

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




The AXIS 5900 admin Home Page

**This Print Server**

The This Print Server page contains a section that allows you to view and modify the general parameter setting of the AXIS 5900, including the print server name, the node address, the password and the base URL. You can also configure any of the eight available logical printers of the AXIS 5900. Management operations, like restarting the AXIS 5900 and resetting its parameters to the factory default settings, are also available.

By clicking on the printer icons, a printer page opens, allowing you to view the status and the supported capabilities of each 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 selected printer.


From the Print Jobs page you can view the status of the current print jobs, including the number of printed bytes and the origin of the print job. You can also view a log of the 20 latest print jobs that includes the user, the printing protocol and the file size. A log that displays the accumulated usage of the connected printers allows you to control the usage of the connected printers. If you want to delete an ongoing print job, a delete button is available on this page.


From the Network Settings page you can set all parameters that control the network traffic to and from the AXIS 5900. You can enable or disable any of the supported network protocols and fine-tune the parameter settings.

Caution

Any network configuration should involve the Network Administrator.


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 5900, 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.


The Statistics page displays information about the network traffic to and from the AXIS 5900 as well as information about servers and services that are connected or associated with the AXIS 5900.


Help Contents displays a comprehensive description of the configuration and management activities that can be performed from the internal web pages of the AXIS 5900. Theses activities include instructions on how to install the AXIS 5900 in various environments and how to upgrade it with new firmware. A detailed index is also available.

Parameter List Button — Shows all the current parameter settings of the print server.

Restart Button — Restarts the print server.

Factory Default Button — A Factory Default is done to reset the internal settings of the print server to default. All parameters except Node Address (NODE_ADDR), Internet Address (IP_ADDR) and DHCP enabled or disabled (DHCP_ENABLE.) are reset.

Firmware Upgrade Button — Upgrades the print server's internal software.

## Print Server Settings

Some useful settings that can be changed in the print server are described here. See the print server's Help pages for detailed information on all print server settings. For

### Changing the Network Printer's 'Name'

From the print server's web interface you can assign a user-friendly name to a network printer. This name will then show up under the 'Name' column in AXIS Print System and AXIS Wireless Printing Utility.

1. Log into the AXIS 5900 internal web pages and choose |admin | This Print Server | General | Print Server Name.
2. Enter the new name of the print server and click OK.

### Changing the Network Printer's 'Location'

If you want to inform users about the physical location of a network printer, you can assign a descriptive location name to it. This name will then show up under the 'Location' column in AXIS Print System and AXIS Wireless Printing Utility.

1. Log into the AXIS 5900 internal web pages and select admin | This Print Server | General | System Location.
2. Enter the location of the print server and click OK.

## Language Settings

You can change the language of the print server's web interface from the User mode:

1. Click the Change button next to "Language".
2. Choose your preferred language from the drop-down list and press F5 to refresh the view.

AXIS Print System version 1.20 also offers multi-language support for Spanish, French, German, Japanese and English.

## 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:

| Options | E-mail recipient |
|---|---|
| PAPER JAM | The person responsible for handling paper jams in the printer |
| OUT OF PAPER | The person responsible for filling the printer with paper |
| TONER LOW | The person responsible for filling up the toner in the printer |
| NO TONER | The person responsible for changing the toner in the printer |
| PRINTER OFFLINE | The person responsible for the overall maintenance of printer |

2. Enter the respective e-mail addresses of the trouble-report recipients in the blank fields as follows: name@company.com
3. Click OK and exit when done.

Important:

> Check that the SMTP Server and Domain Name parameters in the print server's internal web pages are correct.
>
> This is done in: admin | Network Settings | Detailed view | TCP/IP

## Network Speed

With the Network Speed parameter you can manually specify the speed at which you will send and receive network packages.

### Ethernet Network

To change the Network Speed, log in to the print server's internal web pages and click admin | General Settings | General. From here you have the option of setting the network speed to:

| Network Speed | |
|---|---|
| AUTO_SENSE (default value) | The print server detects which speed is optimal for each network package you transfer. |
| 10_HALF__DX | 10 Half Duplex |
| 10_FULL_DX | 10 Full Duplex |
| 100_HALF_DX | 100 Half Duplex |
| 100_FULL_DX | 100 Full Duplex |

### WLAN

To change the Network Speed, log in to the print server's internal web page and click admin | Network Settings |Detailed View | WLAN. From here you have the option of setting the network speed to:

| Network Speed | |
|---|---|
| AUTO_SENSE (default value) | The print server detects which speed is optimal for each network package you transfer. |
| 1 Mbps | |
| 2 Mbps | |
| 5.5 Mbps | |
| 11 Mbps | |

Note:

The default Network Speed value is AUTO_SENSE. This option is the correct option for the majority of users. If you choose the incorrect network speed option for your network, you may lose contact with the print server. In order to reset the Network Speed parameter to AUTO_SENSE, you will have to perform a factory default on the print server.

### Wireless Printing Check-list

Check the following before printing wirelessly. Click admin | Network Settings | Detailed View | WLAN to check the print server settings.

- The Network Mode parameter must be set to Auto Sense or WLAN. This parameter is set on the admin | General Settings page.
- Your web browser must have Java (JVM) enabled (for the WEP security functionality)
- Check that the WLAN network interface is properly configured in the workstation/laptop trying to access the AXIS 5900 print server.
- All communicating clients must be in the same operating mode, i.e. ad hoc or infrastructure mode.

Note:

In Macintosh environments, the ad hoc mode is referred to as computer to computer mode and the infrastructure mode is referred to as Airport network.

- Check that the SSID and the WEP keys are set according to your WLAN network settings. See *WLAN Parameters*, on page 32 for more information.
- Check that the radio frequency channel setting is the same on all communicating clients and that the channel is set according to the requirements in your country.

Frequency bands and channels:

| Country | Frequency | Available Channels | Default Channel |
|---|---|---|---|
| Europe | 2.412-2.472 GHz | 1-13 | 11 |
| France | 2.457-2.472 GHz | 10-13 (indoor use*) | 11 |
| Japan | 2.484 GHz | 14 | 14 |
| US/Canada | 2.412-2.462 GHz | 1-11 | 11 |

* (France) outdoor use permitted on private property with prior authorization

## Using Logical Printers to Customize your Printing

The AXIS 5900 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 5900:

- The character set can be changed to suit the printer
- Strings can be added before and after the print data
- Strings within the print data can be substituted
- ASCII to PostScript conversion
- Redirection of print data to another printer if the printer is busy
- Hex Dump mode to assist with printing problems

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.

The default logical printers settings are such that PR1-PR4 cause no change to the flow of print data, while PR5-PR8 add CR to LF control characters:

| Logical Printer | **Changes to data** |
|---|---|
| *PR1* | *no change* |
| *PR2* | *no change* |
| *PR3* | *no change* |
| *PR4* | *no change* |
| *PR5* | *add CR to LF* |
| *PR6* | *add CR to LF* |
| *PR7* | *add CR to LF* |
| *PR8* | *add CR to LF* |

Each logical printer can be set via the print servers' internal web pages: Open a web browser, enter the IP address of the print server in the Location/Address field and choose admin | Logical Printer Settings.

The logical printers can also be set up by editing the *config* file.

Notes:

- The examples in this section describe how you can configure the available logical printers using a standard web browser. If you want to set them directly by editing the *config* file, just enter the values for the corresponding parameters.
- The examples should only be viewed as suggestions how to configure the logical printers. You should, off course, configure them according to the needs of your network.
- In the *Parameter List*, on page 138, you can find a complete list of the AXIS 5900 parameters.
- Refer to *Section 10 Management and Configuration*, on page 92, for more information about the available management tools.

## 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 5900 solution to this problem is to assign a character set conversion filter to a logical printer, and then link that logical printer to the host causing the problem.

You select your desired conversion filter by setting the Character Set Conversion (PRx_CSET) parameter. The output from the conversion filter is always IBM PC Set 2 (Code Page 437), and this is the character set the printer must be set up for.

Example:

Your network contains a host using the character set ISO 8859-2 and a host using the character set DEC. In order to direct their print jobs to the printer connected to the AXIS 5900, you should assign each host to a separate logical printer, and install a character set conversion filter.

Follow the instructions below to change the conversion filter:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the PR1 tab.

3. Set the parameter Physical Port to LPT1.
4. Set the parameter Character Set Conversion to ISO>IBM.
5. Click the OK button.
6. Select the Printer2 tab.
7. Set the parameter Physical Port to LPT1.
8. Set the parameter Character Set Conversion to DEC>IBM.
9. Click the OK button.

The ISO 8859-2 printer data that is sent to logical printer PR1 converts to IBM PC Set 2 and is printed on LPT1. Similarly, the DEC printer data that is sent to logical printer PR2 converts to IBM PC Set 2 and is printed on LPT1.

## Adding Strings Before and After Print Jobs

These string functions provide a way to send printer control commands before and after each print job. They may be specified individually for each logical printer.

All strings are entered as hexadecimal byte values.

Example:

> Assume that the logical printer PR5 is configured as a PostScript printer and that you want to append the PostScript End of File character (hex 04) after each print job.

Follow the instructions below to add a string after the print job:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer5 tab.
3. Enter the string 04 in the String After Print Job text field.
4. Click the OK button.

Example:

You have an HP LaserJet printer with dual 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, $^{E}_{C}$l4H (hex 1B 26 6C 34 48), and the string after print job should contain the command to select bin 1, $^{E}_{C}$l1H
(hex 1B 26 6C 31 48).

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

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer4 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 the OK button.

## String Substitutions

The string substitution function performs search and replace operations on the print data. The primary application is to replace printer control commands. Up to twenty string substitutions may be specified individually for each logical printer.

All strings must be entered as hexadecimal byte values, and each match and substitute string must be preceded by a count byte.

You substitute command strings by editing the String Substitutions (PRx_STR) parameter.

Example:

Assume that you want to replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A) for logical printer PR1.

Follow the instructions below to substitute command strings:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the PR1 webeb page.
3. Enter the string 01 0A 02 0D 0A in the String Substitutions text field.

| Hex Code | **Explanation** |
|---|---|
| *01* | *length of the string you want to replace* |
| *0A* | *the string you want to replace* |
| *02* | *length of the substitute string* |
| *0D 0A* | *the substitute string* |

4. Click the OK button.

This 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 $^{E}_{C}$G1 (hex 1B 47 31) with $^{E}_{C}$Y (hex 1B 59) for logical printer PR2.

Follow the instructions below to substitute command strings:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer2 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 the OK button.

Note:

Extensive use of string substitutions will naturally decrease the throughput rate of the AXIS 5900.

### ASCII to Postscript Conversion

The AXIS 5900 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 Printing Language Translation (PRx_FILT) parameter.

Example: Follow the instructions below to convert ASCII print data to PostScript for logical printer PR2:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer2 tab.
3. Set the Printer Language Translation parameter to POSTSCR.
4. Click the OK button.

If you select the parameter value AUTO_PS, the print data for every print job is searched and if any ASCII data is found, it is translated into PostScript. This setting is recommended if you are not sure if the print data is ASCII or PostScript.

### PostScript Settings

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

- page size
- page orientation
- page formats
- which font is to be used

The default page size is A4 and the default page orientation is Portrait, while the page format parameters are as follows:

| Page Format Parameter | Default Value | |
|---|---|---|
| *Lines per page* | *66* | |
| *Characters per line* | *0* | *0=disable line wrap* |
| *Characters per inch* | *10.0* | |
| *Lines per inch* | *60* | *60 = 60 lines per inch* |
| *Left margin* | *30* | *30 = 3.0 mm* |
| *Top margin* | *50* | *50 = 5.0 mm* |

The PostScript font can be any font that is installed in the printer; if no font is specified, Courier will be used.

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

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer2 tab.
3. Set the Printer Language Translation parameter to POSTSCR.
4. Set the PostScript Page Size parameter to LETTER.
5. Set the PostScript Page Orientation parameter to LANDS.
6. Enter the string 48 0 120 60 30 50 in the PostScript Page Format text field.

| Hex code | **Explanation** |
|---|---|
| *48* | *48 lines per page* |
| *0* | *disable line wrap* |
| *120* | *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 the OK button.

## Redirecting Print Jobs when a printer is busy

If print data is received for a printer that is already busy, the host must wait. However, it is possible to use a logical printer to redirect the print data to another logical printer when the target printer is busy. If the second printer is also busy, the host must wait until the target printer is ready.

Example: Follow the instructions below to redirect PR1 print jobs to PR3, when the printer assigned to PR1 is busy:

1. From the print server's internal web page, select admin | Logical Printer Settings.
2. Select the Printer1 tab.
3. Set the Physical Port parameter to LPT1.
4. Set the Secondary Printer parameter to PR3.
5. Set the Wait On Busy parameter to NO.
6. Click the OK button.
7. Select the Printer3 Web page.
8. Set the Physical Port parameter to LPT2.
9. Click the OK button.

Notes:

- The two printers must use the same printer driver.
- Logical Printer redirection cannot be nested. If PR3 is redirected to another logical printer, the print job will not be redirected if PR3 is busy.
- If both printers are busy, the print job will be printed on the printer that first finishes its active print job.

### Read-back of information

The AXIS 5900 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 of AUTO. However, it is required that the printer also supports bi-directional printing.

Please refer to your printer documentation for further details regarding bi-directional printing support.

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

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the PR1 tab.
3. Set the Read Back Port parameter to NONE.
4. Click the OK button.

### Debugging using the Hex Dump Mode

When hex dump mode is 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 what control and print characters 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 PR3:

1. From the print server's internal web page, select Admin | Logical Printer Settings.
2. Select the Printer3 tab.
3. Set the Hex Dump Mode Enabled radio button to YES.
4. Click the OK button.

Note: The page length for hex dump printouts is determined by the lines per page value of the PostScript page format parameter.

## 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 (WLAN or LAN) 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 for Print Server Management*, on page 93.

Once you have established the AXIS 5900 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 5900 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

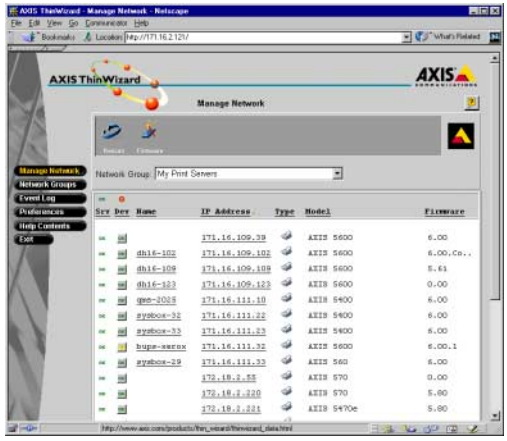
Note:

> 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.

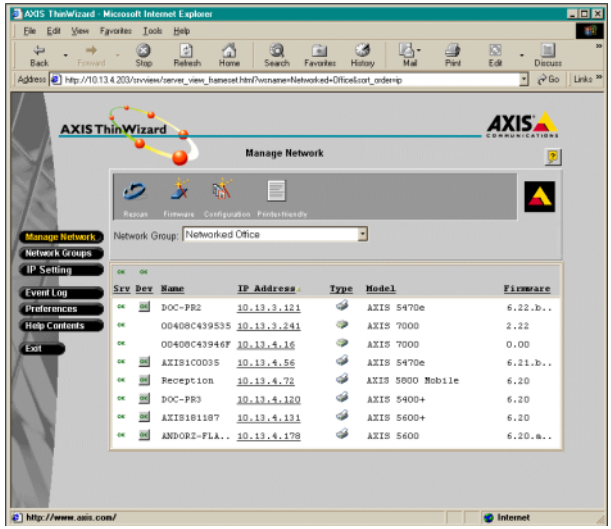
You can edit the properties of each network group from the Network Groups page. Simply select the network group from the list and use one of the **Edit**, **Copy** or **Remove** commands.

## Managing the print servers

Follow the instructions below to access the AXIS 5900 using AXIS ThinWizard:

1. Click the **Manage Network** button in the main menu.
2. Select the network group, including the AXIS 5900, from the drop-down list. All AXIS servers included in the network group appear in the window.
3. Click the link of the AXIS 5900 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 5900 as described in *Available Services from the User Mode*, on page 94.

**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 for Print Server Management

Having assigned an IP address to your AXIS 5900, as described in *Assigning an IP address to the print server*, on page 21, you can change the AXIS 5900 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 5900 by typing:
   `ftp <host name>`
   - or -
   `ftp <IP address>`
   in a Command window (Windows and OS/2) or in a UNIX shell window.
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 5900 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 5900 has been powered down.
- 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 shows how to edit the *config* file using FTP from a Command window.

Example:

```
> ftp npserver
connected to npserver.
220 AXIS 5900 FTP Print Server v6.30 June 10 2002
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 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 5900 by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell window.
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.

### Viewing the Account File

The *account* file contains data concerning the 20 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 5900 by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS windows (Windows and OS/2) or in a UNIX shell window.
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.

### 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 for Print Server Management

Having assigned an IP address to your AXIS 5900, as described in *Assigning an IP address to the print server*, on page 21, you can manage your AXIS 5900 using the telnet protocol.

### Viewing the *Account* File

The *account* file contains data concerning the last 20 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 or Printing), number of bytes printed and elapsed time.

Follow the instructions below to view the *account* file using telnet:

1. Log in to the AXIS 5900 by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell window.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. View the *account* file by typing:
   `account`

The following example shows how to view the *account* file using Telnet from a UNIX window.

Example:

```
> telnet npserver
Trying 192.36.253.96...
Connected to npserver.
Escape character is '^]'.

AXIS 5900 TELNET Print Server v6.30 June 10 2002

AXIS 5900 network login: root
Password: pass      (not visible)

AXIS 5900 TELNET Print Server v6.20 Jan. 01 2001

Root> account
Current account file:
JOB         USER     PROT      LPR S BYTES  ETIME

 1          Thomas   FTP       pr2 C 1885   2
 2          Lisa     LPT       pr1 C 23074  4
 3          RICHARD  PSERVER   pr2 C 43044  5
 4          MacUser  APPLE     pr1 C 6717   2
 5          LSLM_userNetBIOS   pr2 C 36995  3
 6          patrick  PROS      pr5 P 83208  9
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 5900 by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS windows (Windows and OS/2) or in a UNIX shell window.
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 factory default settings.

Follow the instructions below to perform a soft reset using telnet:

1. Log in to the AXIS 5900 by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS windows (Windows and OS/2) or in a UNIX shell window.
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.

### 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 for Print Server Management

You can use SNMP (Simple Network Management Protocol) for remotely monitoring and configuring of the AXIS 5900. 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 5900 SNMP implementation runs in TCP/IP and NetWare (IPX) networks.

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 5900 supports all relevant parts of MIB-II and of the host resources MIB. The AXIS 5900 also includes a private enterprise MIB, the AXIS MIB.

## The AXIS MIB

In order to make full use of the AXIS 5900 SNMP support, you are required to use NMS software that allows you to install private enterprise MIBs, like 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 5900 configuration from the NMS program. Refer to *Parameter List*, on page 138.
- Printer status and unit administration objects - used for monitoring AXIS 5900 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.

The AXIS MIB is resident on the AXIS 5900 and can be downloaded directly from the print server to your NMS software using FTP.

Follow these steps to add the AXIS MIB to your NMS software:

1. Log in to the AXIS 5900 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.

## Using HP Administration Tools for Print Server Management

The AXIS 5900 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 to monitor the current status of your AXIS 5900 and the connected printers.

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

Notes:

- To enable support for the HP JetAdmin and the HP Web JetAdmin management software, you must set the HP_JETADMIN parameter to YES.
- It is not possible to upgrade the AXIS 5900 Flash Memory from the HP JetAdmin.

## Using Novell Utilities for Print Server Management

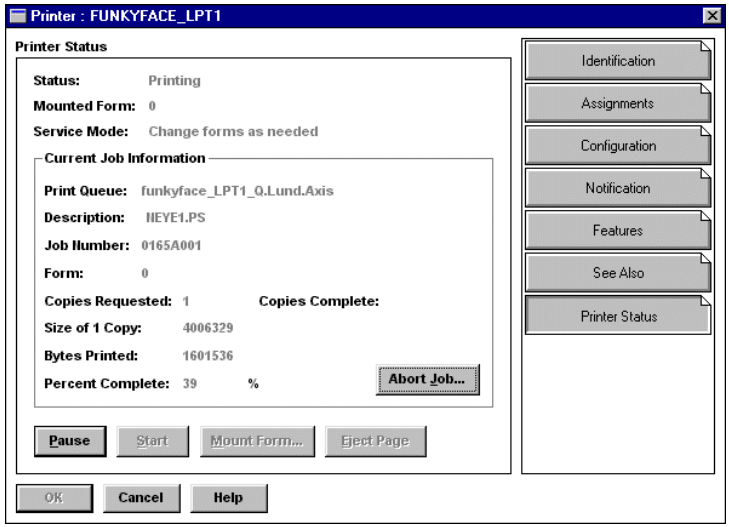
After installing the AXIS 5900 into the NetWare environment, you can manage your AXIS 5900, using either Novell's NetWare Administrator, or PCONSOLE (Not available in NetWare version 5.x or higher).

### 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 5900 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.



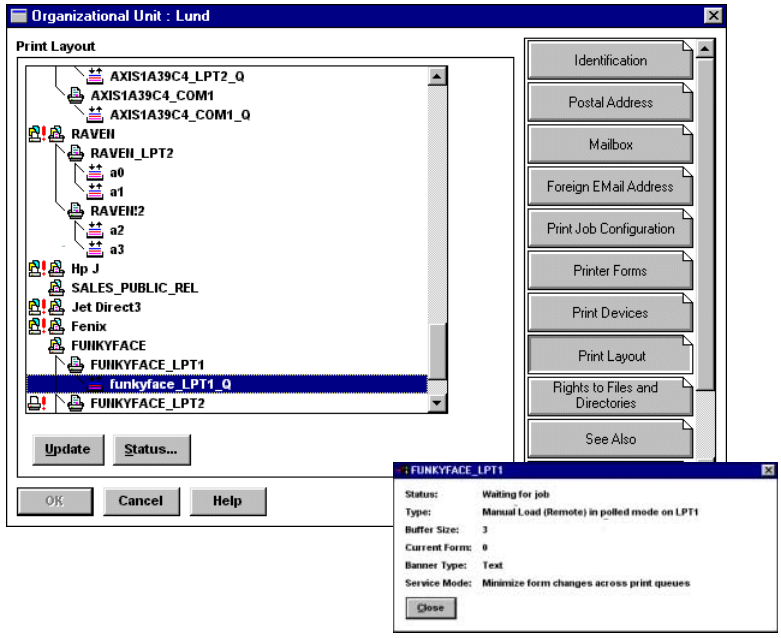

NetWare Administrator Printer Status Menu

Notification

You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the AXIS 5900, 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

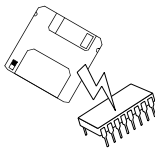
You can view installed AXIS 5900 Network Print Servers and their relative print queues for any NetWare Organizational Unit. You can also display summary information by right-clicking on the printer object you want to examine.




NetWare Print Layout with corresponding information summary

# Appendix a Upgrades

## Upgrading the Firmware



You can upgrade the AXIS 5900 Flash memory using one of the following methods:

- From the print server's internal web pages
- AXIS ThinWizard (TCP/IP)
- FTP (TCP/IP)

Note:

Updating instructions are supplied with the software update.

### Upgrading from the Print Server's Internal Web Pages

Follow these instructions to upgrade the firmware of your print server from its internal web pages (Web Flash-loading):

1. Open your web browser, enter the IP address of your print server and press Enter. (See *Management and Configuration*, on page 92 for detailed instructions on accessing your Axis print server on the web).
2. From the admin-mode, click the 'Firmware Upgrade' button. From here you can download the latest available firmware to your computer and upgrade your print server with it.

### 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 5900 with an IP address, as described in *Assigning an IP address to the print server*, on page 21, 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 112, 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_version.bin`, e.g. `5900_630.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 5900 with an IP address, as described in *Assigning an IP address to the print server*, on page 21, before you can use this upgrading method.

Follow the procedures below to upgrade the AXIS 5900:

**Caution**

> Be careful not to interrupt the file transfer. If the transfer is interrupted the AXIS 5900 may have to be re-initialized by your dealer.

1. Log in to the AXIS 5900 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. `5900_630.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.

## Obtaining the Software

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

- http://www.axis.com
- AXIS Network Product CD
- 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.

# Appendix b Test Button

The test button is located on the front right hand side of the AXIS 5900 and is used for:

- Printing a test page in order to check the connection to the printer.
- Printing a parameter list in order to show the AXIS 5900 current settings.
- Resetting the AXIS 5900 parameters to the factory default settings.

## The Test Page

Press the test button once to print a test page. The printed test page contains basic information about the AXIS 5900. It is recommended that you print a test page every time you have connected the AXIS 5900 to a printer.

Note:

> The test page is printed on LPT1 by default. If you want to print the test page on LPT2, you should set the Internal Printout Destination parameter to LPT2 from the internal web pages under admin | General Settings | General.

## The Parameter List

Press the test button twice to print a parameter list showing the current AXIS 5900 settings. This list provides comprehensive details of all the parameters and their current status. Refer to - *Parameter List*, on page 138.

If you want to change any of the parameters, use one of the methods that are described in *Section 10 Management and Configuration*, on page 92.

## Factory Default Settings

Follow the instructions below to reset the AXIS 5900 to the factory default settings:

1. Remove the external power supply to switch off the AXIS 5900.
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 5900 by disconnecting and reconnecting the external power supply.

The AXIS 5900 is now reset to factory default settings.

Note:

All parameters except Node Address (NODE_ADDR), Internet Address (IP_ADDR) and DHCP enabled or disabled (DHCP_ENABLE.) are reset. If you want to change the these parameters, use any standard Web browser. Please refer to *Section 10 Management and Configuration*, on page 92.

# Appendix c Technical Specifications

**Supported Printers**

Parallel printers from e.g.Canon, Epson, HP, Ricoh, Minolta, Lexmark and Xerox.

**Supported Systems**

Microsoft Windows: Windows NT ver.3.5 and above, Windows for Workgroups, Windows 95, Windows 98,Windows 2000, Windows XP
Print Methods: NetBEUI,LPR,Raw TCP

Novell NetWare: NetWare 3.11,3.12,4.10,4.11,5 and above. Supports bindery emulation and NDS.Up to 16 bindery file servers and 96 print queues are served. Supports user messages. NDPS supported by versions 4.11 and above.
Print Methods: NDPS, RPRINTER/NPRINTER, PSERVER

Microsoft LAN Manager: LAN Manager 2.0c and above, running under OS/2 ver.1.3 and above
Print Method: NetBEUI

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
Print Method: NetBEUI

LANtastic: LANtastic 7.0,from any of the supported Windows clients defined above
Print Method: NetBEUI

Additional Systems: All computers supporting the TCP/IP suite of protocols including: BSD systems:BSD 4.2,4.3,4.4, SunOS4 (SOLARIS 1.x), DEC Ultrix etc.

| | |
|---|---|
| System V systems: | R3,R4,AT&T.Interactive, SCO,SUNOS5 (Solaris 2.x),HP-UX,Silicon Graphics IRIX,DEC Alpha OSF/1,IBM AIX, BULL (BOS,AIX),Linux |
| Other systems: | IBM (MVS,VM,VSE,OS/400), DEC VMS,guidelines for other systems.<br>Print Methods: LPD, FTP, PROS (named pipe & filtered), Reverse Telnet |
| Apple EtherTalk: | Print Method:AppleTalk Phase 2 |
| WWW: | Netscape Communicator 4.7 or higher and MS Internet Explorer 4.0 or higher |

## Supported Protocols

| | |
|---|---|
| Windows and OS/2: | NetBIOS/NetBEUI or TCP/IP, WINS |
| NetWare: | IPX, IP, SAP, RIP, SPX and NCP (extended with NDS), NDPS, NLSP, DIAG, LIP |
| LAN Manager / LAN Server: | NetBIOS/NetBEUI |
| LANtastic: | NetBIOS/NetBEUI |
| TCP/IP: | LPD, FTP, Telnet, Reverse Telnet, PROS, BOOTP, ARP, RARP, DHCP, ICMP, IGMP, IP, TCP, UDP, HTTP, SNMP, TFTP, SLP, Raw TCP, IPP, Auto-IP, DDNS |
| Apple EtherTalk: | AAPR, ATP, DDP, NBP, PAP, RTMP, ZIP |

| | |
|---|---|
| RF Specifications | Unlicenced 2.4 GHz frequency band, RX sensitivity - 70 dBm, TX power 0 dBm (class 2) |
| Frequency bands and channels | Europe: 2.412-2.472 GHz, channels 1-13<br>France: 2.457-2.472 GHz, channels 10-13 (indoor use only)<br>Japan: 2.484 GHz, channel 14<br>US/Canada: 2.412-2.462 GHz, channels 1-11 |
| Security | |
| NetWare: | Encrypted passwords, NetWare Packet Signature Level 1,2,3 |
| UNIX/Linux: | Root password, user access list and printer access |
| Wireless: | 64 or 128 bit WEP encryption |
| Network Management | SNMP-MIB II compliant (over UDP/IP and IPX), private enterprise MIB included<br>Print server/job/printer status presentation and management via NWAdmin/PCONSOLE<br>AXIS ThinWizard for monitoring, configuration and firmware upgrading |
| Supported Languages | English, French, German, Japanese and Spanish |
| Logical Connection | |
| Ethernet: | Use of IEEE 802.2, IEEE 802.3, SNAP and Ethernet II frame types simultaneously |

| | |
|---|---|
| Fast Ethernet: | Supports NWay that provides auto-detection of network speed. Use of IEEE 802.2, IEEE 802.3, SNAP and Ethernet II frame types simultaneously, full duplex |
| WLAN | SNAP/802.2/802.3 for 802.11b |

**Wired Network Attachments**

| | |
|---|---|
| Ethernet: | RJ-45 connector (Category 5 twisted pair cable) for 10baseT Ethernet or 100base TX Fast Ethernet |
| **Wireless interface** | IEEE 802.11b compliant with data rates up to 11 megabits per second<br>Output Power 15 dBm<br>Sensitivity 11Mbps 10-5 BER @ -81 dBm, minimum |
| **Logical Printers** | Logical printer ports can be programmed to perform auto ASCII to PostScript conversion, string before and after job, string substitution, alternative output and character set conversion |
| **Parallel Ports** | Two 25-pin DSUB parallel ports, high-speed IEEE 1284 compliant<br>Sustained throughput over 1 MB/sec using NetWare.Bi-directional support for Apple EtherTalk,Reverse Telnet,PROS.ECP support |
| **Power Consumption** | Maximum 7,2 W<br>Power provided by external supply Power Supply type:<br>PS-F,5V DC 1500 mA<br>PS-H, 5.1V DC 2000 mA |

## Dimensions

| | |
|---|---|
| Height | 1.2 in/2.9 cm |
| Width | 6.3 in/16.0 cm |
| Depth | 5.1 in/12.9 cm |
| Weight | 0.60 lb/0.27 kg |

## Environmental

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

## Approvals

| | |
|---|---|
| EMC: | EN 55 022:1998 (CISPR 22:1997), Class B<br>EN 55 024:1998<br>EN61000-3-2:1995+A1+A2+Corrig.+A14<br>EN 61000-3-3:1995+A1<br>ETS 300 826<br>FCC 47 CFR part 15 |
| Other: | ETS 300 328<br>ARIB T-66 |

| | |
|---|---|
| Safety | EN 60950:2000, approved power supplies for all countries |
| Hardware | 32-bit 100 MHz AXIS ETRAX 100LX RISC Controller, 2 MB Flash memory, 8 MB RAM |
| Front Panel | 2 LED indicators for Power and Network<br>Test button for information printouts |

All specifications are subject to change without prior notice

# Appendix d Parameter List

This appendix provides an overview of the AXIS 5900 parameters. Please refer to the AXIS Network Print Server Technical Reference for a complete description of the parameters. Alternatively, you can access 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 a short description of each parameter.

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 5900, before the new setting for that parameter takes effect.

The password parameters, ROOT_PWD and PROS_PWD only appear when you are logged in to the AXIS 5900 using *root.* The password parameters will not be printed when you are printing the parameter list using the test button.

| --- GENERAL MENU | | |
|---|---|---|
| NODE_ADDR. | : | The default Node Address matches the serial number located on the underside lable on the print server |
| NETWORK_MODE | : AUTO_SENSE (AUTO_SENSE, WLAN, ETHERNET) | Network mode |
| NETWORK SPEED | : AUTO_SENSE (AUTO_SENSE, 10_HALF_DX, 10_FULL_DX, 100_HALF_DX, 100_FULL_DX) | Network Speed |
| PS_NAME. | : AXISxxxxxx (x's match the 6 last digits in the print server serial number) | Print Server Name |
| ROOT_PWD. | : pass | Root Password |
| USERS. | : | User and Printer Access List |
| BASE_URL. | : www.axis.com | Base URL |
| CHARSET: ISO-8859-1(UTF-8 Japan) (ISO-8859-1, UTF-8, SHIFT-JIS) | | Character Settings |
| LANG.: English (Japanese) (English, German, French, Spanish, Japanese) | | Language Menu |
| AXIS_PRINT_SYSTEM.: YES | | Enable compatibility with AXIS Print System |
| HP_JETADMIN. | : NO (YES, NO) | HP JetAdmin Support |
| DEF_OUT. | : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, LPT2) | Internal Printout Destination |
| SYS_LOC. | : | System Location |
| SYS_CONT. | : | System Contact |

| TCP/IP MENU | | |
|---|---|---|
| TCP_ENB. | : YES | TCP/IP Enabled |
| INT_ADDR. | : 192.168.0.90 | 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 |
| AUTOIP_ENB. | : YES | Auto-IP 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<br>(Defines the NetBIOS scope to be used with WINS name registration) |
| DNS_ENB. | : YES | DNS Enabled |
| DNS_ADDR1. | : 0 0 0 0 | Primary DNS Server Address |
| DNS_ADDR2. | : 0 0 0 0 | Secondary DNS Server Address |
| DOMAIN_NAME. | : | Domain Name (Defines the domain to which the AXIS 5900 belongs) |
| SMTP SERVER: | | Mail Server that uses Simple Mail Transfer Protocol. |
| SLP_SCOPE_LIST.: DEFAULT | | Defines the SLP scope to which the AXIS 5900 belongs. |
| RTN_OPT. | : NO | Reverse Telnet Options Enabled |
| RTEL_PR1. | : 0 | PR1 Reverse Telnet Port Number |
| RTEL_PR2. | : 0 | PR2 Reverse Telnet Port Number |
| RTEL_PR3. | : 0 | PR3 Reverse Telnet Port Number |
| RTEL_PR4. | : 0 | PR4 Reverse Telnet Port Number |
| RTEL_PR5. | : 0 | PR5 Reverse Telnet Port Number |
| RTEL_PR6. | : 0 | PR6 Reverse Telnet Port Number |
| RTEL_PR7. | : 0 | PR7 Reverse Telnet Port Number |
| RTEL_PR8. | : 0 | PR8 Reverse Telnet Port Number |

| --- 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) | NetWare Transport protocols Enabled |
| JOB_CHECK_DELAY. | : 5 | Job Check Delay<br>(Print Server queue polling interval) |
| CONF_CHECK_DELAY. | : 300 | Configuration Check Delay<br>(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 *(Requires Restart)* |
| PSERVER_NDS_ TREE<br>PSERVER_NDS_FILESERVER:<br>PSERVER_NDS_DISTINGUISHED _NAME: | : | The PSERVER_NDS parameters specify which NDS tree or file server the AXIS 5900 will login to. It also specifies the path to the print server object in the tree. |
| PSERVER_BINDERY1. | : | PSERVER Bindery 1 (Bindery file server name) |
| PSERVER_BINDERY2. | : | PSERVER Bindery 2 (Bindery file server name) |
| PSERVER_BINDERY3. | : | PSERVER Bindery 3 (Bindery file server name) |
| PSERVER_BINDERY4. | : | PSERVER Bindery 4 (Bindery file server name) |
| PSERVER_BINDERY5. | : | PSERVER Bindery 5 (Bindery file server name) |
| PSERVER_BINDERY6. | : | PSERVER Bindery 6 (Bindery file server name) |
| PSERVER_BINDERY7. | : | PSERVER Bindery 7 (Bindery file server name) |
| PSERVER_BINDERY8. | : | PSERVER Bindery 8 (Bindery file server name) |
| PSERVER_BINDERY9. | : | PSERVER Bindery 9 (Bindery file server name) |
| PSERVER_BINDERY10. | : | PSERVER Bindery 10 (Bindery file server name) |
| PSERVER_BINDERY11. | : | PSERVER Bindery 11 (Bindery file server name) |
| PSERVER_BINDERY12. | : | PSERVER Bindery 12 (Bindery file server name) |
| PSERVER_BINDERY13. | : | PSERVER Bindery 13 (Bindery file server name) |
| PSERVER_BINDERY14. | : | PSERVER Bindery 14 (Bindery file server name) |
| PSERVER_BINDERY15. | : | PSERVER Bindery 15 (Bindery file server name) |
| PSERVER_BINDERY16. | : | PSERVER 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 *(Requires Restart)* |
| LPRINT_1. | : AX100000.LP1 | Name Printer 1 |
| LLOGIC_1. | : PR1 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 1 |
| LPRINT_2. | : AX000000.LP2AX100086.LP2 | Name Printer 2 |
| LLOGIC_2. | : PR2 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 2 |
| LPRINT_3. | : AX100086.CM1 | Name Printer 3 |
| LLOGIC_3. | : PR3 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 3 |
| LPRINT_4. | : | Name Printer 4 Name |
| LLOGIC_4. | : PR4 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 4 |
| LPRINT_5. | : | Name Printer 5 |
| LLOGIC_5. | : PR5 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 5 |
| LPRINT_6. | : | Name Printer 6 |
| LLOGIC_6. | : PR6 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 6 |
| LPRINT_7. | : | Name Printer 7 |
| LLOGIC_7. | : PR7 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 7 |
| LPRINT_8. | : | Name Printer 8 |
| LLOGIC_8. | : PR8 (PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 8 |

| --- APPLETALK 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 | : DEFAULT: ENABLED | Auto-Detect Printer Type |
| APRINT_1. | : AXIS100000_LPT1 | Name Printer 1 *(100000 are the last six digits of the serial number)* |
| ATYPE_1. | : LaserWriter | Type Printer 1 |
| ALOGIC_1. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 1 |
| BINARY_TYPE_1. | : TBCP (TBCP, BCP, NONE) | Binary Protocol for APRINT_1 |
| APRINT_2. | : AXIS100086_LPT2 | Name Printer 2 *(100000 are the last six digits of the serial number)* |
| ATYPE_2. | : LaserWriter | Type Printer 2 |
| ALOGIC_2. | : PR2 (PR1,PR2,PR3,PR4,PR5,PR6,PR7, PR8,LPT1,LPT2) | Logical Printer for Printer 2 |
| BINARY_TYPE_2. | : TBCP (TBCP, BCP, NONE) | Binary Protocol for APRINT_2 |

| --- PRINTER1 MENU | | |
|---|---|---|
| PR1_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR1_NAME. | : | |
| PR1_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR1_WAIT. | : YES | Wait on Busy |
| PR1_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR1_BEF. | : | String Before Print Job |
| PR1_STR. | : | String Substitutions |
| PR1_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR1_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR1_AFT. | : | String After Print Job |
| PR1_DUMP. | : NO | Hex Dump Mode Enabled |
| PR1_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR1_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR1_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR1_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER2 MENU | | |
|---|---|---|
| PR2_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR2_NAME. | : | |
| PR2_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR2_WAIT. | : YES | Wait on Busy |
| PR2_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR2_BEF. | : | String Before Print Job |
| PR2_STR. | : | String Substitutions |
| PR2_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR2_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR2_AFT. | : | String After Print Job |
| PR2_DUMP. | : NO | Hex Dump Mode Enabled |
| PR2_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR2_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR2_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR2_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER3 MENU | | |
|---|---|---|
| PR3_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR3_NAME. | : | |
| PR3_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR3_WAIT. | : YES | Wait on Busy |
| PR3_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR3_BEF. | : | String Before Print Job |
| PR3_STR. | : | String Substitutions |
| PR3_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR3_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR3_AFT. | : | String After Print Job |
| PR3_DUMP. | : NO | Hex Dump Mode Enabled |
| PR3_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR3_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR3_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR3_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER4 MENU | | |
|---|---|---|
| PR4_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR4_NAME. | : | |
| PR4_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR4_WAIT. | : YES | Wait on Busy |
| PR4_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR4_BEF. | : | String Before Print Job |
| PR4_STR. | : | String Substitutions |
| PR4_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR4_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR4_AFT. | : | String After Print Job |
| PR4_DUMP. | : NO | Hex Dump Mode Enabled |
| PR4_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR4_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR4_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR4_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER5 MENU | | |
|---|---|---|
| PR5_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR5_NAME. | : | |
| PR5_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR5_WAIT. | : YES | Wait on Busy |
| PR5_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR5_BEF. | : | String Before Print Job |
| PR5_STR. | : | String Substitutions |
| PR5_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR5_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR5_AFT. | : | String After Print Job |
| PR5_DUMP. | : NO | Hex Dump Mode Enabled |
| PR5_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR5_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR5_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR5_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER6 MENU | | |
|---|---|---|
| PR6_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR6_NAME. | : | |
| PR6_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR6_WAIT. | : YES | Wait on Busy |
| PR6_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR6_BEF. | : | String Before Print Job |
| PR6_STR. | : | String Substitutions |
| PR6_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR6_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR6_AFT. | : | String After Print Job |
| PR6_DUMP. | : NO | Hex Dump Mode Enabled |
| PR6_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR6_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR6_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR6_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER7 MENU | | |
|---|---|---|
| PR7_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR7_NAME. | : | |
| PR7_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR7_WAIT. | : YES | Wait on Busy |
| PR7_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR7_BEF. | : | String Before Print Job |
| PR7_STR. | : | String Substitutions |
| PR7_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR7_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR7_AFT. | : | String After Print Job |
| PR7_DUMP. | : NO | Hex Dump Mode Enabled |
| PR7_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR7_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR7_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR7_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- PRINTER8 MENU | | |
|---|---|---|
| PR8_OUT. | : LPT1(None, LPT1, LPT2) | Physical Port |
| PR8_NAME. | : | |
| PR8_SCND. | : PR1 (PR1,PR2,PR3,PR4,PR5,PR6,PR7,PR8, LPT1,LPT2) | Secondary Printer |
| PR8_WAIT. | : YES | Wait on Busy |
| PR8_IN. | : AUTO (AUTO, NONE) | Read Back Port (Read-Back of information) |
| PR8_BEF. | : | String Before Print Job |
| PR8_STR. | : | String Substitutions |
| PR8_CSET. | : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM) | Character Set Conversion |
| PR8_FILT. | : NONE (NONE, POSTSCR, AUTO_PS) | Printer Language Translation |
| PR8_AFT. | : | String After Print Job |
| PR8_DUMP. | : NO | Hex Dump Mode Enabled |
| PR8_SIZE. | : A4 (A4, LETTER, LEGAL, EXECUT) | PostScript Page Size |
| PR8_ORNT. | : PORTR (PORTR, LANDS, R_PORTR, R_LANDS) | PostScript Page Orientation |
| PR8_FORM. | : 66 0 100 60 30 50 | PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)* |
| PR8_FONT. | : | PostScript Font *(Courier when not specified)* |

| --- LPT1 Menu | | |
|---|---|---|
| L1_CENTR. | : HISPEED (IBM_PC, STNDRD, FAST, HISPEED, HINOACK) | Centronics Interface Timing LPT1 |
| L1_BSYTM. | : 60 | Busy Status Time-Out LPT1<br>(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) | LPT1 Bi-directional printing |
| L1_READT. | : 3 | Set time (in seconds) before reverse data time-out after completed print job |

| --- LPT2 Menu | | |
|---|---|---|
| L2_CENTR. | : HISPEED (IBM_PC, STNDRD, FAST HISPEED, HINOACK) | Centronics Interface Timing LPT2 |
| L2_BSYTM. | : 60 | Busy Status Time-Out LPT2<br>(All status reporting disabled if set to 0) |
| L2_MGM_INFO. | : AUTO (DISABLE, AUTO) | Printer Management Information LPT2 |
| L2_COMMENT. | : | Optional user comment describing the printer at LPT2 |
| L2_BIDIR. | : AUTO (DISABLE, AUTO) | LPT2 Bi-directional Printing |
| L1_READT. | : 3 | Set time (in seconds) before reverse data time-out after completed print job |

| --- e-mail Menu | | |
|---|---|---|
| EMAIL_NOTIFICATION. | : YES | e-mail Notification enabled |
| REPLY_ADDRESS. | : | Network Administrator e-mail address |
| 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 |

| --- WLAN MENU | | |
|---|---|---|
| WLAN_NODE_ADDR. | : | WLAN Node address is identical to the serial number of the AXIS 5900 print server *(Requires Restart)* |
| WLAN_NETWORK_SPEED. | : AUTO_SENSE (1_MBPS, 2_MBPS, 5.5_MBPS, 11_MBPS, AUTO_SENSE) | Network speed over WLAN *(Requires Restart)* |
| WLAN_NETWORK_MODE. | : AD_HOC (INFRASTRUCTURE, AD_HOC) | Selects which operating mode the print server is set to. *(Requires Restart)* |
| WLAN_SSID. | : AXISxxxxxx (x's match the 6 last digits in the print server serial number) | Sets the SSID of the AXIS 5900 to match the other clients in the WLAN *(Requires Restart)* |
| WLAN_CHANNEL. | : 11/14 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14) | Sets the radio frequency chanel for the WLAN *(Requires Restart)*<br>default: channel 14 in Japan, channel 11 in all other countries |
| WEP_ENCRYPTION_LEVEL. | : DISABLED (64_BIT, 128_BIT, DISABLED) | Sets the level of data encryption *(Requires Restart)* |
| ENFORCE_WEP. | : YES (YES, NO) | Defines whether the AXIS 5900 may allow clients without a WEP key to communicate with it. *(Requires Restart)* |
| ACTIVE_WEP_KEY. | : WEP_KEY_1 (WEP_KEY_1, WEP_KEY_2, WEP_KEY_3, WEP_KEY_4) | Sets which WEP key is activated. Can only be set using from the web interface. *(Requires Restart)* |
| WLAN_FRAG_THRESHOLD. | : 2346 | This parameter is used to optimize the performance of the print server in accordance with the 802.11b standard. *(Requires Restart)* |
| WLAN_RTS_THRESHOLD. | : 2432 | This parameter is used to optimize the performance of the print server in accordance with the 802.11b standard. *(Requires Restart)* |

# Appendix e Glossary

**802.11b** A standard for wireless LAN communications operating within the 2.4 GHz ISM band.

**Access Point** A network attached device that acts as a bridge between the wireless LAN and the wired LAN and interconnects wireless clients.

**AIX** Advanced Interactive eXecutive. A version of the UNIX operating system from IBM that runs on various IBM computers including Mainframe systems.

**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.

**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 5900 functionality. By editing the *config* file (changing the parameter settings), you can configure the AXIS 5900 to meet the printing needs of your network.

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 5900 also supports the WINS host name resolution protocol, which is available in Windows NT networks.

DNS
: Domain Name System. Reflects the server names and addresses within a network.

Firmware
: Firmware is programming that is inserted into programmable read-only memory thus becoming a permanent part of a computing device. It can be distributed like other software and, using a special user interface, installed in the programmable read-only memory by the user.

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. |
| 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. |
| IP | Internet Protocol. The TCP/IP session-layer protocol that regulates packet forwarding by tracking IP addresses, routing outgoing messages and recognizing incoming messages. |
| 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. |
| LED | Light Emitting Diode. |
| 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. |
| 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. |

MIB Management Information Base. A database of network configuration information used by SNMP and CMIP to monitor or change network settings.

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.

NDS NetWare Directory Services. A hierarchical data base that manages NetWare network resources such as servers and volumes.

PCL PCL (Printer Control Language) is a set of command codes used to print to Hewlett-Packard DeskJet, LaserJet, and other HP printers. A PCL driver is a small programs that works between the operating system and the printer.

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.

SNMP Simple Network Management Protocol. A TCP/IP protocol for managing and monitoring nodes on a network.

| | |
|---|---|
| TCP | Transmission Control Protocol. The connection-oriented, transport-level protocol used in the TCP/IP suite of protocols. |
| TFTP | Trivial File Transfer Protocol. A simpler version of the FTP protocol that is used by the print server for automatic downloading of config files. |
| 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. |
| WEP | Wired Equivalent Privacy - a protocol that provides security and privacy by encrypting data transmitted over the WLAN. |
| 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, and even for the experienced user can help to speed up an operation. |
| WLAN | Wireless Local Area Network - A local area network (LAN) to which a mobile user can connect wirelessly. |

# Index