AXIS 5400+/AXIS 5600+

Network Print Servers

User's Manual

Regulatory Information

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

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

Electromagnetic Compatibility (EMC)

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

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

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

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

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

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

Axis' Trademarks AXIS IP JumpStarter, AXIS ThinWizard, axinstall, AXIS Print Monitor.

Other Trademark Acknowledgments Adobe Acrobat Reader, Aix, Apple, Debian, Ethernet, EtherTalk, IBM, LAN Manager, LAN Server, Macintosh, Microsoft, Novell NetWare, OS/2, OS/400, AS/400, Red Hat, Solaris, SuSe, UNIX/Linux, Microsoft Windows, are registered trademarks of the respective holders.

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

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

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

USERS MANUAL AXIS 5400+/AXIS 5600+ EN

Part No. 21399, Revision 2.0

Date: November 2003- Copyright © Axis Communications AB, 2003

This manual applies to the AXIS 5400+/AXIS 5600+ with firmware version 6.43 or higher.

Table of Contents

Section 1 Introduction

Thank you for purchasing the AXIS 5400+/AXIS 5600+. This product has been developed to connect your printers anywhere in your network, allowing all network users access to shared printer resources.

About this Manual

This manual is applicable for the AXIS 5400+/AXIS 5600+ with firmware version **6.43** or higher, providing introductory information as well as detailed instructions on how to set up and manage the print server in various network environments. It is intended for everyone involved in installing and managing the print server. To fully benefit from this manual, you should be familiar with basic networking principles.

These instructions are based on the settings in a **new and unconfigured** print server**.** To reload the default parameters, you can perform a Factory Default, which will restore most of the settings. See *"Performing a Factory Default"* on page 123.

Supported Environments

- Windows
- NetWare
- UNIX/Linux
- Macintosh

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 2 Product Overview

Package Contents

Verify that nothing is missing from the AXIS 5400+/AXIS 5600+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 number*	*Power Adapter*
Axis Print Server	AXIS 5600+	0129-001-03	PS-H
	AXIS 5400+	0130-001-02	PS-H

Power Adapter	*Model*	*PS-H Part Number*
PS-H	Australia	19111
	Europe	19108
	Korea	19112
	UK	19109
	USA / Japan	19110

Media	*Title*	*Part Number*
CD	AXIS Network Product CD	rev 1.3 and up
Warranty sheet	Warranty Axis Servers	18909
Printed Material	AXIS 5400+/AXIS 5600+ User's Guide	rev 1.4 and up

Optional accessories (not included in box)	*Description*	*Part Number*
Cables	Parallel Printer Cable for AXIS 5600+	13360
	Centronics to Mini Centronics Cable for AXIS 5400+	16453
	Printer Extension Cable for AXIS 5400+	13522

Ensure that the print server's Power Adapter is marked with the correct voltage! Refer to the tables 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

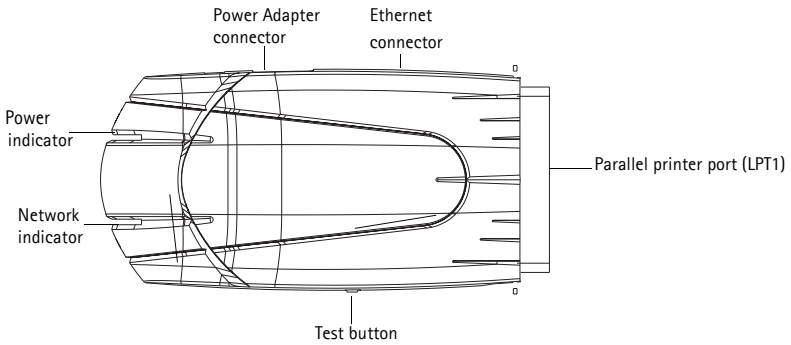
If your computer is configured to autostart CDs, the AXIS Network Product CD will start automatically when inserted into a local CD drive on Windows 98, Me, NT, 2000 and XP platforms. You can also navigate to the CD root directory and start the *index.htm* file from within the Windows file manager.

Start-up Procedures for UNIX/Linux, and Mac OS

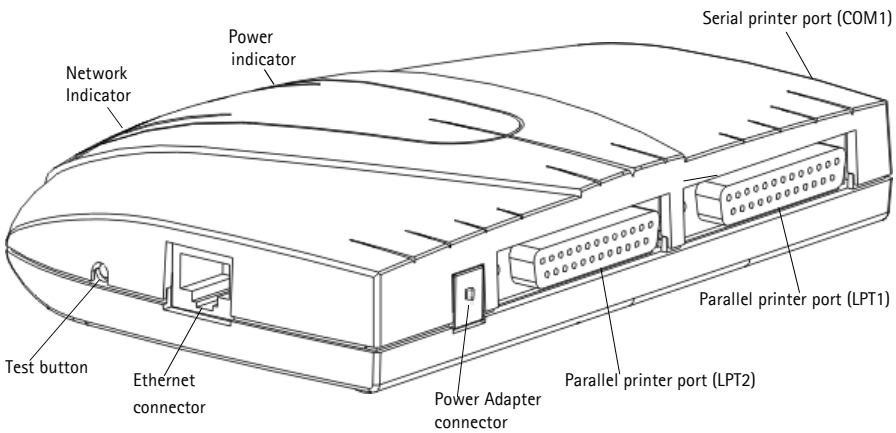
Using your preferred file manager application, navigate to the CD root directory and click *index.htm*

Physical Description

AXIS 5400+



AXIS 5600+



Backside label of print server

Serial number same as MAC/Ethernet number; e.g. 00408c181cf0 = 00-40-8c-18-1c-f0 (Windows) 00:40:8c:18:1c:f0 (Unix/Mac)

Note: "S/N" can also appear as "Ser. No." or "Serial no."

Network Connector

Axis Network Print Servers are designed for 10 Mbps or 100 Mbps Ethernet networks and connect to the network via a twisted pair RJ45 category 5 cable (10baseT and 100baseTX) or better.

Printer Ports	• AXIS 5400+: Parallel port: 36-pin Centronics connector. Highspeed IEEE 1284 compliant with ECP support and throughput of 1 MB/sec. • AXIS 5600+: 25-pin DSUB connector. Highspeed IEEE 1284 compliant with ECP support and throughput of 1 MB/sec. • Serial port: 9-pin DSUB connector, RS-232, XON/ XOFF or RTS/CTS, data rates up to 115.200 baud
Test Button	The test button is used for: • Printing a test page to check the connection to the printer. • Printing the parameter list showing the print server settings. • Performing a Factory Default of the print server, which will restore most of the parameters and settings to factory default values. See *The Test Button*, on page 123 for details.
Network Indicator	The network indicator flashes to indicate network activity.
Power Indicator	The power indicator is lit while power is applied. If it is not lit, or if it flashes, there is a problem with the print server or its Power Adapter.
Printer compatibility	All printers can be used **except host-based printers** (also known as GDI, PPA or Windows-based printers).
Configuration and Management	The print server can be configured and managed from its internal Web pages, using HTTP as well as HTTPS in the secure mode. These Web pages offer you a platform independent management tool that is suitable for all supported network environments. See *Using a Web Browser for Print Server Management*, on page 87 for details.

Features and Benefits

Reliability	The print server provides high performance and reliability combined with low power consumption. The electronic circuits are based on the AXIS ETRAX 100 LX chip, which comprises an integrated 32 bit RISC processor and associated network controllers.
Flexibility	The print server supports printing in all major computer systems and environments, including five different print methods in the TCP/IP environment. The integrated IPP (Internet Printing Protocol) function allows for printing from LAN to LAN via a WAN, such as the Internet.
Speed	The AXIS ETRAX 100 LX chip supports data transfer rates of up to 200 Mbit/s (100 Mbit Ethernet full duplex).
Easy to Install	The print server installs, operates and is managed in a reliable and easy fashion.
Security	You can assign a password to restrict login and printer access. It is also possible to disable protocols and force a secure mode (https).
Monitoring	The internal print server Web pages, AXIS NetPilot (2.70 and up) and AXIS ThinWizard (3.0 and up) allow you to continuously monitor printer status. The Web pages are used to monitor single Axis units while AXIS ThinWizard can be used to monitor multiple Axis units. AXIS NetPilot is primarily recommended for Queue-based printing over IPX/SPX in NetWare. 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 firmware stored in the print server Flash memory can be upgraded over the network. This allows you to quickly update and enhance its operational features when new print server software becomes available.
NetWare Packet Signature	The print server supports NetWare Packet Signature Level 1, 2, 3, which protects servers and clients using the NetWare Core Protocol™ services. NCP packet signature prevents packet forgery by requiring the server and the client to sign each NCP packet. See your Novell NetWare documentation for detailed information.

Section 3 Basic Installation

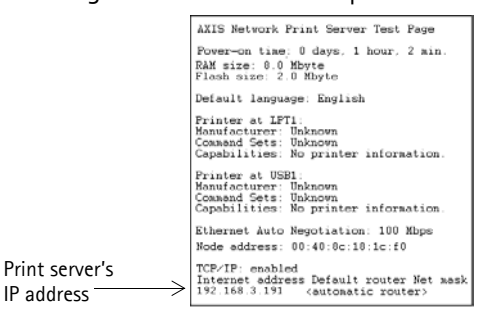
Quick overview

Follow these steps to make your printer network ready:

1. *Connect the Hardware*, on page 12
2. *Assign an IP Address to the Print Server*, on page 13
3. *Making Network Printers available for printing on your PC*, on page 18

Connect the Hardware

1. Make sure that the printer is switched off and that the Power Adapter is disconnected from the print server.
2. Locate the serial number, found on the underside label of the print server, and write it down. *Example: S/N: 00408c181cf0*
3. Connect the printer directly to a port on the print server or using an appropriate cable.
4. Connect the AXIS 5400+/AXIS 5600+ to your network (Ethernet Connector), using a twisted pair RJ45 category 5 cable.
5. Switch on the printer and make sure it is ready for printing (display showing "Online", "Ready", etc.)
6. Connect the Power Adapter to the print server. The Network Indicator will start flashing when the print server is correctly connected to the network.
7. Wait 1 minute and press the test button once. A **test page** will be printed on the connected printer — keep it handy during the installation. The test page will show the assigned IP address of the print server.



Note:

AXIS 5400+: the test page is printed on LPT1.

AXIS 5600+: when all printer ports are attached to a printer, the test page is printed in this order: LPT1, COM1, LPT2.

Assign an IP Address to the Print Server

Methods for Setting the IP Address

You can obtain an IP address for your print server by using one of the following methods, depending on your network operating environment.

See *IP Addressing*, on page 118 for detailed instructions on IP address management.

Automatic IP Address Assignment

Method	*Server required*	*Comment*
DHCP	DHCP server	Dynamic assignment of IP addresses. See *"Obtain an IP address with DHCP"* on page 14
RARP	RARP server	Static assignment of I P adresses. Cannot be used over routers. See *"Obtain an IP Address using RARP in UNIX/Linux"* on page 15
BOOTP	BOOTP server	Static assignment of IP addresses. See *"Obtain an IP Address using BOOTP in UNIX/Linux"* on page 14
AutoIP	No server required.	Automatic assignment of IP addresses. See *"Auto-IP Addressing"* on page 120

Manual IP Address Assignment

When assigning an IP address manually you need to know the Ethernet address of the print server. The Ethernet address is based on the print server's serial number, found on its underside label. A print server with the serial number 00408c181cf0 will have the Ethernet address 00 40 8c 18 1c f0.

Method	*Platform*	*Comment*	*See*
ARP/Ping	Windows	Requires the IP address for each device to be downloaded individually. Cannot be used over routers. You must define the **Default Router** and **Subnet Mask**. Log in to the print server's web pages and select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP** | **Default Router** and **Subnet Mask.** DHCP, Auto-IP, BOOTP and RARP must first be set to **No.**	*"Set the IP Address using ARP in Windows 98/NT/ Me/2000/XP/2003"* on page 15
	UNIX/Mac OS X		*"Set the IP Address using ARP in UNIX/Linux and Mac OS X"* on page 16
AXIS IP Jump-Starter	Windows	Axis software that allows you to find print servers in your network and assign an IP address to them. This software is recommended for small offices and local networks.	*"Set the IP Address using AXIS IP JumpStarter"* on page 16
AXIS ThinWizard	Windows 2000/XP	Axis software that assists in setting the IP address of multiple print servers simultaneously. This software is recommended for large organizations and enterprise networks.	*"Using AXIS ThinWizard software for Print Server Management"* on page 94

Notes:

- The ability to set the IP address with ARP and PING will only be enabled the first 10 minutes after restarting the print server.
- You need root privileges on your UNIX, Linux and Mac OS X system, or administrator privileges on a Windows NT server to set the IP address using RARP, BOOTP, DHCP and to add an entry to the ARP table with the command 'arp -s'.
- When assigning an IP address manually, you must utilize a unique IP address that is not already in use in your network.

Automatic IP address assignment

Obtain an IP address with DHCP

If you have a DHCP server on your network, your print server will automatically obtain an IP address when you connect it physically to the network. The IP address will appear on the test page that is printed when you press the test button once. The test button is located on the long-end side of the print server.

Obtain an IP Address using BOOTP in UNIX/Linux

Below is an example of how to set the IP address of the print server using BOOTP. 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
```

1. If necessary, update your host table and alias name databases as required by your system.
2. If it is not already running, start the BOOTP daemon. This is typically performed using the bootpd command.
3. Restart the print server to download the IP address, default router address, and subnet mask. The print server can automatically download a customized *config* file from a TFTP server. Just add the name of the *config* file and the TFTP server's IP address to your boot table. The *config* file is downloaded immediately after the print server receives its IP address.
4. You have now successfully set the IP address of the print server. Proceed to *"Making Network Printers available for printing on your PC"* on page 18.

Obtain an IP Address using RARP in UNIX/Linux

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

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
```

1. Update, if necessary, your host table and alias name databases as required by your system.
2. If it is not already running, start the RARP daemon. This is typically performed using the `rarpd -a` command.
3. Restart the print server to download the IP address.
4. You have now set the IP address of the print server. Continue to *"Making Network Printers available for printing on your PC"* on page 18.

Note:

You have to restart the print server to download the IP address.

Obtain an IP address using Auto-IP

Auto- IP is a scheme where devices allocate themselves an IP address at random from the industry standard subnet of 169.254.x.x. AXIS print servers are configured to support Auto-IP by default. See also "Auto-IP Addressing" on page 120.

Manual IP address assignment

Set the IP Address using ARP in Windows 98/NT/ Me/2000/XP/2003

1. Open a Command Prompt and enter the following commands:

Syntax	*Example*
arp -s <IP address> <Ethernet address>	arp -s 192.168.3.191 00-40-8c-10-00-86
ping <IP address>	ping 192.168.3.191

2. 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.
3. Log in to the print server's Web pages (see *Using a Web Browser for Print Server Management*, on page 87), select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP** and define **Default Router** and **Subnet Mask**. Make sure you first set **DHCP, Auto-IP, BOOTP** and **RARP (...Enabled)** to **No!**

You have now set the IP address of the print server. Continue to *"Making Network Printers available for printing on your PC"* on page 18.

Note:

- 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 restarting the print server.
- By using the `arp -d` command, the static entry in the arp table is removed from the host's cache memory.

Set the IP Address using ARP in UNIX/Linux and Mac OS X

1. Open a Terminal and enter the following commands:

Syntax	*Example*
arp -s <IP address> <Ethernet address>	arp -s 192.168.3.191 00:40:8c:10:00:86
ping <IP address>	ping 192.168.3.191

2. The host will return **`psname is alive`**, or a similar message. This indicates that the address has been set and that communication is established.
3. Log in to the print server's Web pages (see *Using a Web Browser for Print Server Management*, on page 87), select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP** and define **Default Router** and **Subnet Mask**. Make sure you first set **DHCP, Auto-IP, BOOTP** and **RARP (...Enabled)** to **No!**

You have now successfully set the IP address of the print server. Continue to *"Making Network Printers available for printing on your PC"* on page 18.

Notes:

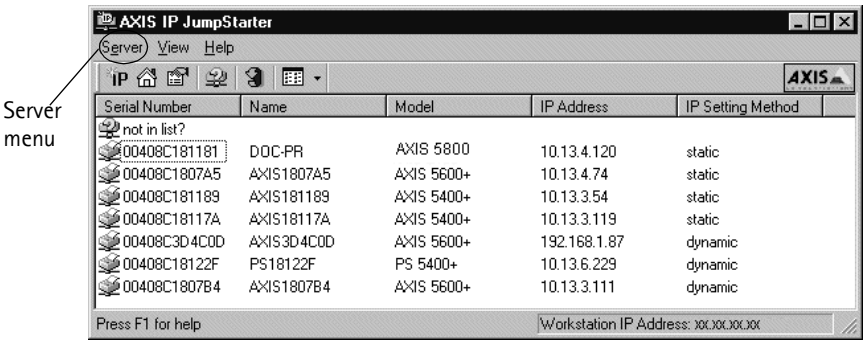
- If the host name has not been mapped to an IP address, simply replace the host name entry with the IP address.
- The ARP command varies between different UNIX/Linux systems. Some BSD type systems expect the host name and node address in reverse order. Furthermore IBM AIX systems will require the additional 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 restarting the print server

Set the IP Address using AXIS IP JumpStarter

AXIS IP JumpStarter is an application that assists in assigning an IP address to your print server and finding IP addresses already assigned to Axis servers.

1. Download and install AXIS IP JumpStarter. AXIS IP JumpStarter is available on www.axis.com
2. For optimal use, open AXIS IPJumpstarter before you attach the print server to the network.

3. The software will scan your network for attached print servers. Select a print server from the serial number list:



4. From the **Server** menu, select **Set IP Address**. The **Set IP Address** dialog appears.
5. Click the radio button that corresponds to your choice of IP setting method (static or dynamic using DHCP). When assigning a static IP address you also have to define **Subnet Mask** and **Default Gateway**.
6. Click **OK** to save your settings.
7. Enter the server root password (by default set to **pass**), click **OK** and the print server will appear in the list with the assigned IP address.
8. To verify that you have access to the print server's Web pages, highlight the print server in the list and select **Server Home Page** from the **Server** menu.
9. You have now finished the procedure of setting the IP address. Continue to *"Making Network Printers available for printing on your PC"* on page 18.

Note:

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

See *Using AXIS ThinWizard for Print Server Management*, on page 84 for instructions on setting ip addresses with AXIS ThinWizard.

Making Network Printers available for printing on your PC

Configuration Methods

Once you have set the IP address of your print server, your network printer can be added to any PC on your network. 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:

Installation Methods

Installation and Integration

Refer to the table below to select the appropriate installation method. All Axis client software is available on www.axis.com

Environment	*Method/ Client Software*	*Description*
Windows 2000, XP, 2003, NT	No software necessary, use Windows Add Printer Wizard	Used for adding network printers to your computer in Windows 2000, XP, 2003, NT
Windows 98, Me	Install AXIS Print Monitor software, then use Windows Add Printer wizard	Used for adding network printers to your computer in Windows 98, Me
UNIX/Linux	KDE Printtool	Used for installing network printers in Debian and others
	Printconf	Used for installing network printers in Red Hat and others
	YaST2 Printer Configuration Tool	Used for installing network printers in SuSE
	Sam	Used for installing network printers in HP UX
	axinstall	Axis script developed for installing network printers in UNIX/Linux for ptinting over PROS, LPR, FTP or Reverse Telnet protocols
NetWare Pure IP	NetWare Administrator	Used for installing network printers in NetWare
NetWare	AXIS Gateway Configuration Utility software	Used for installing and configuring NDPS printers in NetWare
	AXIS NetPilot software	Tool that runs on Windows platforms that for NetWare over IPX./SPX (Queue-mode)
Macintosh	Macintosh standard methods in native/classic mode	Used for installing network printers in Macintosh

See also "IPP (Internet Printing Protocol)" on page 97. for information on Internet printing over Large and Wide Area Networks.

Section 4 Adding Printers in Windows

Overview of Installation Methods

This section describes how to add network printers to a computer in Windows. Refer to the table below to determine the most appropriate installation method according to your computer environment:

Windows Platform	*Protocol*	*Method*	*See...*
Windows 2000, XP, Server 2003	TCP/IP (LPR)	Windows Add Printer Wizard	*"Windows 2000/Windows XP/Windows Server 2003"* on page 20
		Microsoft LPR Monitor	*"Adding Printers in Windows 2000/Windows XP/2003 using the Microsoft LPR Monitor"* on page 23
Windows 2000	**NetBIOS/NetBEUI**	AXIS Print Monitor software	*Adding NetBIOS/NetBEUI Printers in Windows 2000 using AXIS Print Monitor*, on page 28
Windows NT 4	TCP/IP (LPR)	Windows Add Printer Wizard	*Adding Printers in Windows NT4 using the Microsoft LPR Monitor*, on page 24
	NetBIOS/NetBEUI	Windows Add Printer Wizard	*"Adding Printers over NetBIOS/NetBEUI in Windows NT 4 using AXIS Print Monitor"* on page 29
Windows 98/Me	TCP/IP (LPR)	AXIS Print Monitor software	*"Adding Printers in Windows 98 and Me over TCP/IP using AXIS Print Monitor"* on page 30
	NetBIOS/NetBEUI		*"Adding Printers in Windows 98 and Me over NetBIOS/NetBEUI using AXIS Print Monitor"* on page 31

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

Client/Server Network

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

The printer must first be installed on the server computer (from the Add Printer Wizard, AXIS Print Monitor) and then shared on the network, which makes it a network printer. It will then appear as a **Network Printer** (in Windows' Add Printer Wizard and in AXIS Print Monitor) on the client computers. Each client computer must install the appropriate printer drivers in order to print properly.

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

Peer-to-Peer Network

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

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

Windows 2000/Windows XP/Windows Server 2003

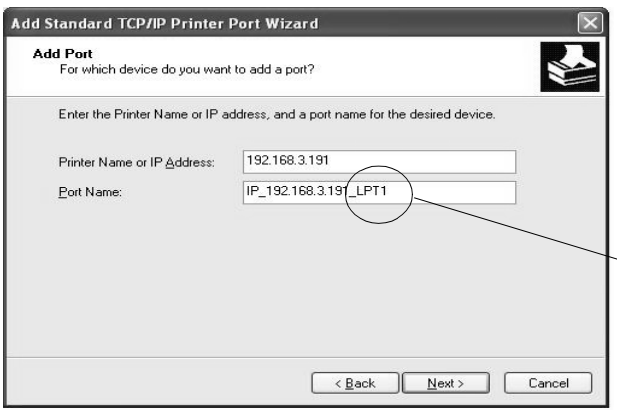
1. **Windows XP/Windows Server 2003:**
   Go to **Start** | **Printers and Faxes** and click the **Add a Printer** icon to start the Add Printer Wizard. Click **Next.**

   Windows 2000:
   Go to **Start** | **Settings** | **Printers** and click the **Add Printer** icon to start the Add Printer Wizard. Click **Next.**

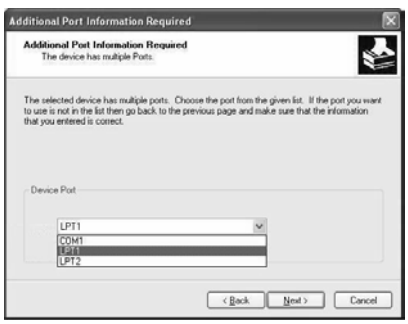
2. In the wizard, select **Local Printer attached to this computer.** Make sure the **Automatically detect and install my Plug and Play printer** check box is not checked. Click **Next.**

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

4. Enter the IP address of the print server in the **Printer Name or IP Address** field *(Example: 192.168.3.191*)
   The **Port Name** field will be filled in automatically when you enter the IP address.
   Optionally, add the port you want to use as a suffix
   - *_LPT1*
   - *_LPT2*
   - *_COM1*
     (Example: 192.168.3.191_LPT1) Click Next.

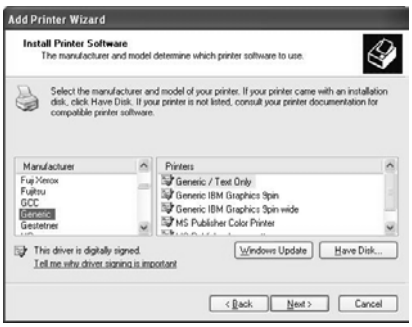


5. In the **Additional Port Information Required** window, select the **Device Port** you want to use;
   - LPT1
   - LPT2
   - COM1
     Click **Next** then **Finish.**

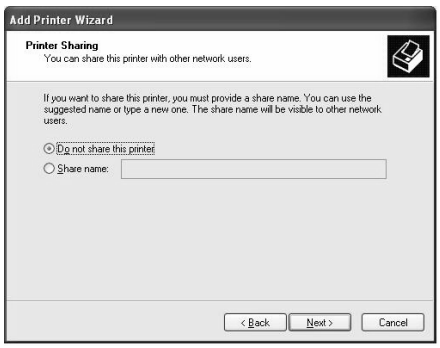


6. Select **Manufacturer and Printer** from the driver list or from a directory/file. Click **Next.** If you already have the printer's driver installed, you will be asked whether to keep it or replace it.

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



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



9. Print a test page to verify your installation.

You have now completed the installation.

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

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

Note:

> See *"Alternative Method for LPR Printing"* on page 24 for instructions on how to set up printing over LPR without installing Print Services for Unix**.**

Basic Setup

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

Preparing for LPR Printing

Follow the following steps to prepare for LPR printing:

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

Installing an LPR printer

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

Windows XP/2003:

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

Windows 2000:

1. Go to **Start** | **Settings** | **Printers** and click the **Add Printer** icon to start the **Add Printer Wizard**. Click **Next**.
2. Select the appropriate radio button: **Local Printer**. Click **Next.**
3. Click the **Create a new port** radio button and select **LPR Port** from the list. Click **Next**.
4. Enter IP address (or host name) of the print server in the field **Name and address of server providing lpr** (Example: 192.168.3.191) and enter the port you want to use in the field **Name of printer or print queue on that server** *(Example: LPT1, LPT2, COM1)*. Click **OK**.
5. End the wizard in the usual manner: select Manufacturer and Printer, keep/replace driver, name the printer, make it default or not, share it or not and finally decide whether you want to print a test page.

Client/Server Printing

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

Important!

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

Alternative Method for LPR Printing

If you wish to print over LPR but do not wish to install **Print Services for Unix** you can do this by changing the printing protocol after having installed the printer using the Standard TCP/IP method, see *"Windows 2000/Windows XP/Windows Server 2003"* on page 20 for instructions.

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

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

Adding Printers in Windows NT4 using the Microsoft LPR Monitor

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

Preparing for LPR Printing

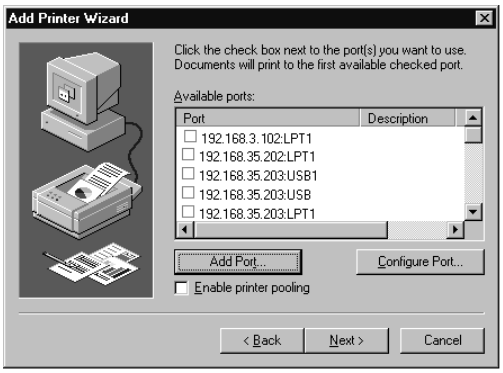
In the **Control Panel**, double-click the **Network** icon. Select the **Services** tab. If the TCP/IP Printing entry appears, then TCP/IP is already installed. Close the **Network** folder and go on to *Installing an LPR printer*, below.

First, prepare for LPR printing:

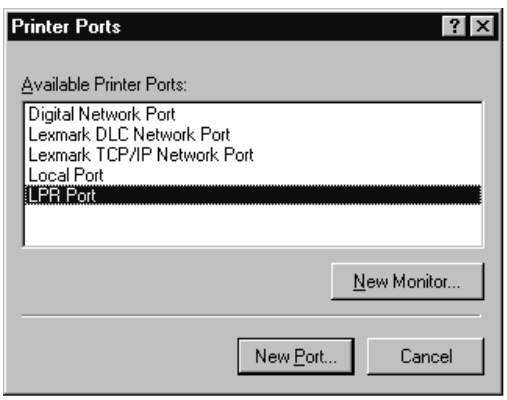
1. Open the **Control Panel** and double-click the **Network** icon.
2. Select **Protocols**.
3. Add **TCP\IP Protocol**.
4. Select **Services**.
5. Add **Microsoft TCP\IP Printing**.

Installing a Network printer

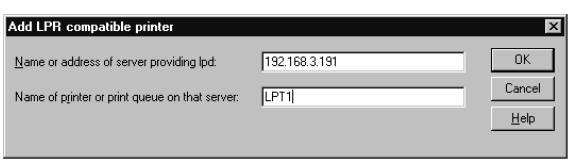
1. Go to **Start** | **Settings** | **Printers** | **Add Printer**. Select **My Computer** and click **Next**.
2. From the **Available Ports** list, choose the appropriate printer port, which will appear as the IP address or host name of the print server. If it doesn't appear in the list, click **Add Port**.



3. Choose **LPR Port** from **Available Printer Ports** and click **New Port**.



4. Type the print server's IP address (or host name) in the field **Name or address of server providing lpd** *(IP address example: 192.168.3.191*). Enter which port to use in the field **Name of printer or print queue on that server** *(Example: LPT1).* Click **OK** and then **Close**.



5. The added print server will now appear in the **Available Ports** list. Click **Next**, choose a driver and finish the installation as usual.

AXIS Print Monitor Software

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

AXIS Print Monitor Overview

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

Printing Environments

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

Peer-to-Peer Printing

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

Client/Server Printing

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

Note:

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

Adding Printers over TCP/IP in Windows NT 4 using AXIS Print Monitor

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

Configure the Port:

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

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

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

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

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

Ports available	Parallel port 1	Parallel port 2	Serial port
AXIS 5400+	LP1	—	—
AXIS 5600+	LP1	LP2	CM1

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

Note:

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

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

Adding Printers over NetBIOS/NetBEUI in Windows NT 4 using AXIS Print Monitor

See to it that the NetBEUI protocol is installed on your client. Follow the procedure below to install Axis Printer Ports from a Windows NT 4.0 workstation:

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

Ports available	Parallel port1	Parallel port 2	Serial port
AXIS 5400+	LP1	–	–
AXIS 5600+	LP1	LP2	CM1

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

Note:

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

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

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

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

Configure the Port:

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

Note:

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

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

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

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

Note:

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

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

Ports available	Parallel port1	Parallel port 2	Serial port
AXIS 5400+	LP1	–	–
AXIS 5600+	LP1	LP2	CM1

Example: AX100086.LP1

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

Section 5 Adding Printers in Macintosh

Having connected the AXIS 5400+/AXIS 5600+ to your network, this section now describes how to set up your print server for printing in Mac OS X and earlier Macintosh environments using AppleTalk.

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

Installation in Mac OS X

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

1. Start **Print Center** (from **Go** | **Applications** | **Utilities** | **Print Center**)
2. Select **Printers** | **Add Printer...**
3. From the **Printer List** dialog, select **AppleTalk**.
4. Now, the port of your print server will appear in the list of available printers. The port is shown as <host name>_<port>. **Example**: AXIS100086_LPT1. Select the print server port you want to use.
5. Select an appropriate printer driver for your printer from the **Printer Model** drop-down list. If the printer is not available in the list, select **Generic**. (You can also browse for a printer driver on your computer or network by selecting **Other...** from the list.)
6. Click **Add** to complete the installation.

Note:

If you want to print using LPR, select:

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

   Physical ports: LPT1, LPT2, COM1

   Logical printer ports: PR1, PR2, PR, PR4, PR5, PR6, PR7, PR8
4. Choose a printer driver from the **Printer Model** list and click **Add** to finish.

Installation on MacOS 9.1 or older, using AppleTalk

Basic Configuration

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

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

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

In order to use any of these methods, you must assign an IP address to the print server as described in *"Setting Parameters"* on page 36.

Choosing a Printer

Selecting a Printer

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

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

Autodetect Printer Type

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

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

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

LaserWriter 7.0 Printer Driver

Follow the instructions below to choose a printer:

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

4. Click the name of the printer you want – the ports are shown as <host name>_<port>. **Example**: AXIS100086_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 print server.

LaserWriter 8.0 Printer Driver

Follow the instructions below to choose a printer:

1. Select **Chooser** from the **Apple** menu.
2. Click the **LaserWriter 8.0** icon.
3. If your network has more than one zone click on the zone you want. (If your network does not have any zones, this box will not appear.)
4. Click the name of the printer you want – the ports are shown as <host name>_<port>. **Example**: AXIS100086_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 print server.

Bi-directional Support

The AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ is now ready for use.

BCP and TBCP

You should specify if you want to enable or disable binary transfer of print data in the print server's web interface **(Admin** | **Network Settings** | **Detailed View** | **Macintosh** | **Binary Protocol for Printer (1, 2)**. By enabling binary transfer you reduce printing time, provided that the print job is sent as binary data to the print server. This is particular true when you are printing large bitmaps.

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

Notes:

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

Setting Parameters

In AppleTalk, you can change a limited number of the parameters of the AXIS 5400+/AXIS 5600+, such as:

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

However, by assigning an IP address to your print server, you have access to all of the print server parameters via any standard Web browser or via FTP. Refer to *Section 1 Print Server Management*, on page 86 for more information.

Follow the instructions below to set the print server parameters in AppleTalk:

Important:

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

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

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

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

Note:

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

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

Note:

The _CFG port disappears 60 minutes after the AXIS 5400+/AXIS 5600+ has been powered on. If you want it to reappear, you must restart your print server.

Section 6 Setting Up - NetWare

This section describes how to continue the installation of the AXIS 5400+/AXIS 5600+ in the NetWare environment. Identify which transport protocol you are running on your network and which installation method you should use. Continue the installation by selecting the appropriate installing instructions from the table below:

Installation method	*Transport protocol*	*Action*
NDPS	TCP/IP IPX/SPX	See "Setup using NDPS" on page 39. - *Public Access Printers*, on page 40 - *Controlled Access Printers*, on page 44
iPrint	iPrint over LPR	See "Setup using iPrint" on page 53.and See "Install a printer using AXIS LPR Gateway Configuration Snapin" on page 55.
	iPrint over IPP	See "Setup using iPrint" on page 53.and See "Install a printer with AXIS IPP Gateway Configuration Snapin" on page 55.
Queue-based printing	IPX/SPX Basic Configuration	To install using the AXIS NetPilot Installation Wizard, See "Basic Setup with AXIS NetPilot" on page 58..
	IPX/SPX Advanced configuration	If you need a more advanced installation that is not covered by the AXIS NetPilot Installation Wizard, See "Advanced Installation using AXIS NetPilot" on page 60..

See "NetWare Administration" on page 64. for information on Novell's administration tools.

If you intend to operate your AXIS 5400+/AXIS 5600+ in a multi-protocol, mixed environment, you should also proceed to the other relevant sections in this manual.

Setup using NDPS

The AXIS 5400+/AXIS 5600+ supports Novell Distributed Print Services (NDPS). You can run NDPS over Pure IP (TCP/IP) or IPX/SPX.

Before the AXIS 5400+/AXIS 5600+ can be installed, make sure that NDPS is installed and a Broker is loaded on your NetWare file server.

AXIS 5400+/AXIS 5600+ 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.

Note:

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

Installing the AXIS 5400+/AXIS 5600+ in the NDPS environments

Having assigned an IP address to the AXIS 5400+/AXIS 5600+ as described in *Assign an IP Address to the Print Server*, on page 13, you are now ready to install the AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ using NDPS:

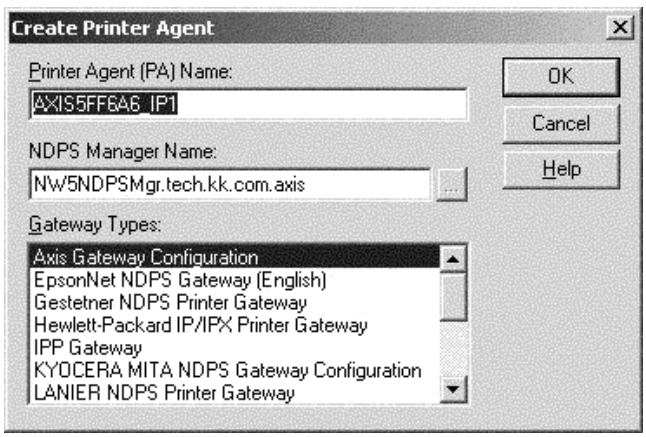
Important:

- The NDPS Enabled parameter of the AXIS 5400+/AXIS 5600+ must be set to Yes in order for the communication between the print server and the NDPS gateway to be enabled. To change this parameter, log in to the print server's web pages and choose: Admin => Network Settings=> Detailed View=> NetWare=> NDPS Enabled => Yes.
- If you do not have an NDPS Manager object available, start out with creating one in the NetWare Administrator.

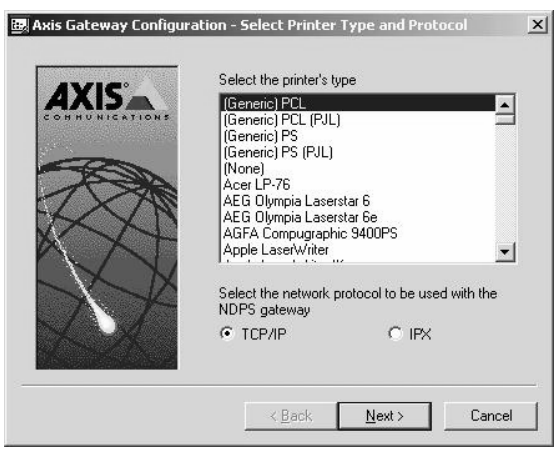
Public Access Printers

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

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



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

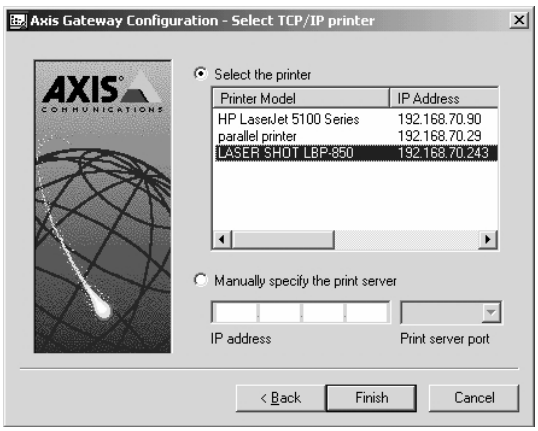


8. Select TCP/IP **(default)** or IPX as network protocol. Click **Next.**

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

- **TCP/IP Network protocol:**

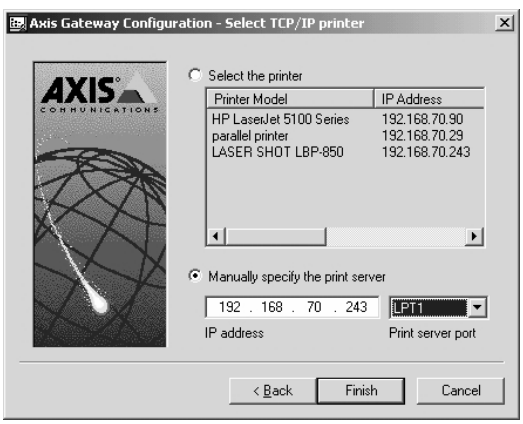
  IP Address and Port**,** e.g: *192.168.70.243* and *LPT1*



Only the ports with a connected printer show up in this window. If the printer is not in the displayed print list, click **Manually specify the print server** and do the following:Enter the Print Servers' IP address in the **IP Address** Field and choose a port in the **Print Server Port** field:
e.g., 192.168.70.243 and LPT1

The available ports are:

Ports available	Parallel port 1	Parallel port 2	Serial port
AXIS 5400+	LPT1	—	—
AXIS 5600+	LPT1	LPT2	COM1



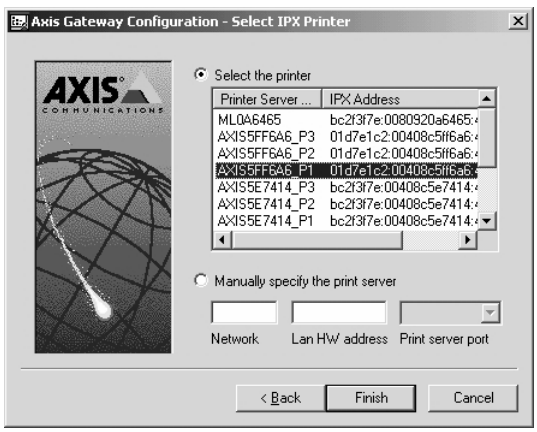
IPX Network protocol:
All the available ports will be presented, regardless if the printers are or not connected to those ports, e.g.

LPT1	AXIS5FF66A_P1
LPT2	AXIS5FF66A_P2
COM1	AXIS5FF66A_P3

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

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

LPT1	**400c**
LPT2	**401c**
COM1	**402c**



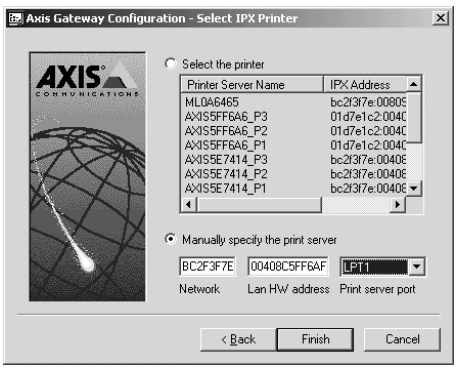
If the printer is not in the displayed print list, click **Manually specify the print server** and do the following:

1. Enter the <IPX External Network Number> in the **Network** field.
2. Enter the <Print Server's HW address> in the **LAN HW address** field.

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

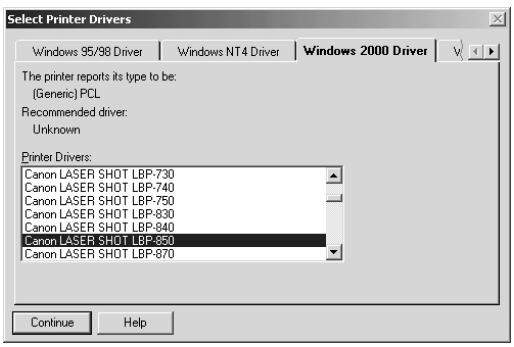
   The ports are **LPT1, LPT2** or **COM1**.

Ports available	Parallel port 1	Parallel port 2	Serial port
AXIS 5400+	LPT1	—	—
AXIS 5600+	LPT1	LPT2	COM1

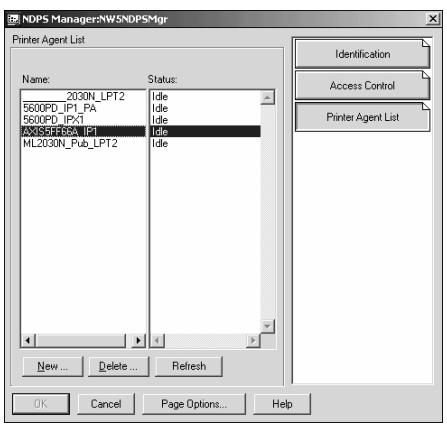


4. When done, select your printer and click **Finish**.

5. Next, select the printer drivers for each client operating system. (Windows 2000, Windows NT4 and Windows 95/98). These drivers will be automatically downloaded to users' workstations when they install this printer in the future.



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



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

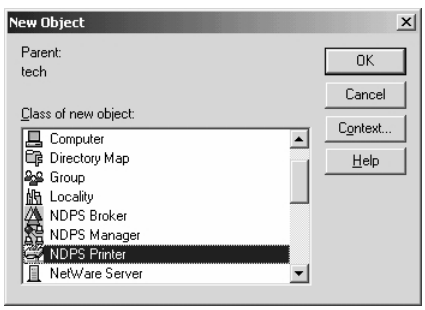
7. Press **Cancel** to close the NDPS Manager

To install the printer on the workstation, See "Installing an NDPS Printer on a Workstation" on page 49.

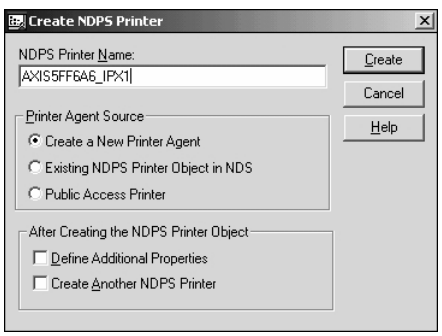
Controlled Access Printers

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

1. Log in as Admin.
2. Start the NW Admin utility on any Workstation (SYS:PUBLIC\WIN32\nwadmin32.exe).
3. Browse the context your NDPS Manager resides in.
4. From the **Object** menu, select **Create**. The New Object dialog appears.



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



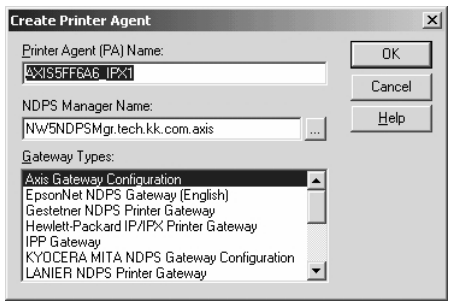
6. Type a name of your choice in the NDPS Printer Name field, e.g. **AXIS5FF66A_IPX1**
   In the Printer Agent Source field, select the source of the Printer Agent. The following options are available:

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

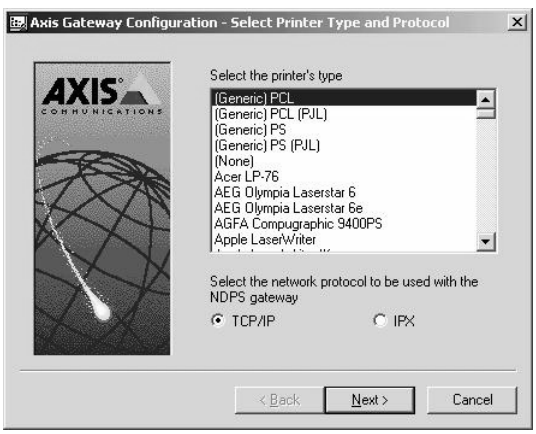
   - Printer Agent on Existing NDS Object. Use a Printer already configured as a controlled access printer (NDPS Printer Object).
   If you select this option, a list of current NDPS Printer Objects in this container will be displayed from which you can select the one you want to use.

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

7. Select **Create a New Printer Agent** and click **Create** to display the Create Printer Agent dialog.
8. Confirm the Printer Agent name (default is the name of the new printer you are creating) and browse to select the NDPS Manager to which you want to assign it



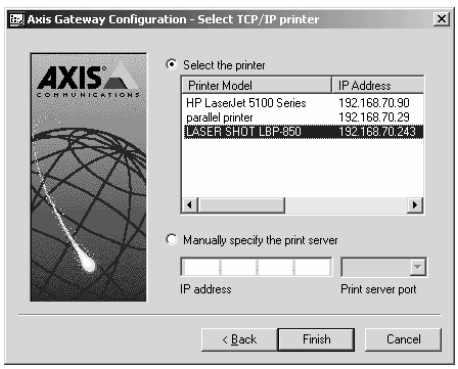
9. Select AXIS Gateway Configuration in the Gateway Type field.
10. Click **OK**.
11. In the **Select the printer's type** window choose your printer. If you cannot find the printer, select an appropriate Generic one (PCL, PS, etc)



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

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

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



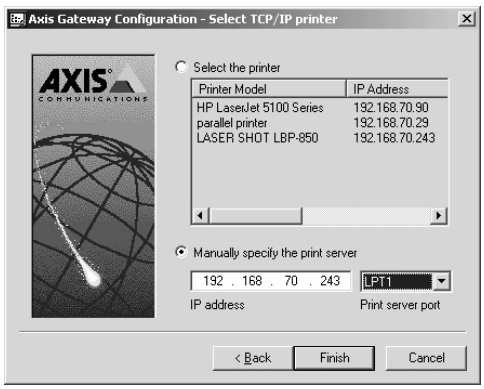
Only the ports with a connected printer will show up in this window.

If the printer is not in the displayed print list:

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

   The avaialable ports are **LPT1, LPT2** or **COM1**:

Ports available	Parallel port 1	Parallel port 2	Serial port
AXIS 5400+	LPT1	–	–
AXIS 5600+	LPT1	LPT2	COM1



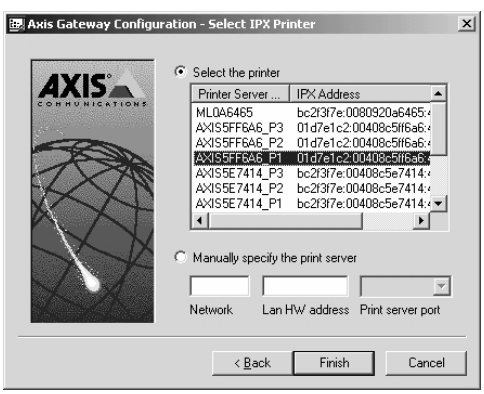
IPX Network protocol:
All the available ports will be presented, regardless if the printers are or not connected to those ports.

LPT1	AXIS5FF66A_P1
LPT2	AXIS5FF66A_P2
COM1	AXIS5FF66A_P3

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

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

LPT1	400c
LPT2	401c
COM1	402c

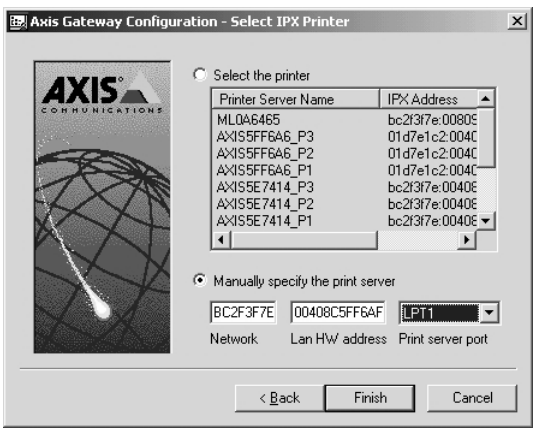


If the printer is not in the displayed print list:

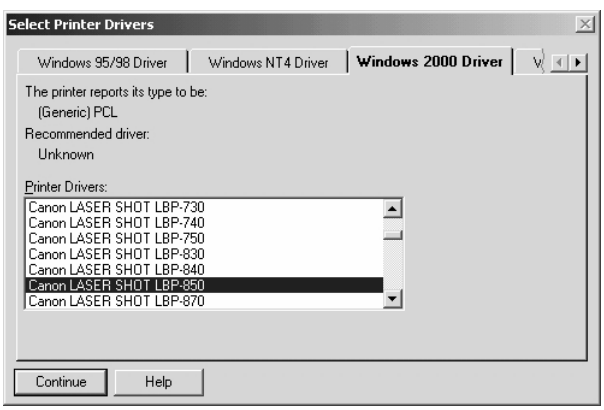
1. Click **Manually specify the print server** and enter the <IPX External Network Number> in the **Network** field.
2. Enter the <Print Server's HW address> in the **LAN HW address** field and choose a port in the **Print Server Port** field:
   e.g.: 01d7e1c2:00408c5ff6a6 and LPT1.

   The port numbers are **LPT1, LPT2** or **COM1**.

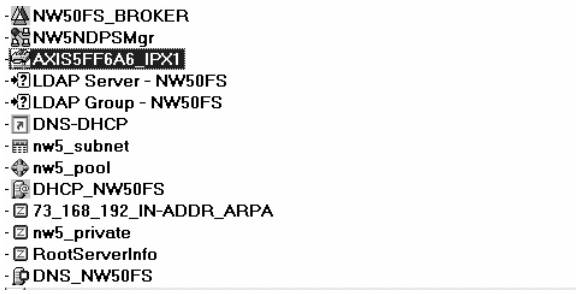
Ports available	Parallel port 1	Parallel port 2	Serial port
AXIS 5400+	LPT1	–	–
AXIS 5600+	LPT1	LPT2	COM1



3. When done, select your printer and click **Finish**.
4. Next, select the printer drivers for each client operating system. (Windows 2000, Windows NT4 and Windows 95/98). These drivers will be automatically downloaded to users' workstations when they install this printer in the future.



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



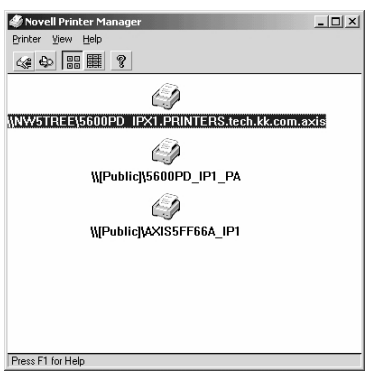
To install the printer on the workstation, See "Installing an NDPS Printer on a Workstation" on page 49.

Installing an NDPS Printer on a Workstation

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

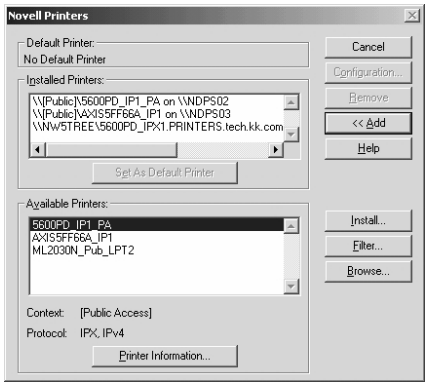
Using Novell Printer Manager

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

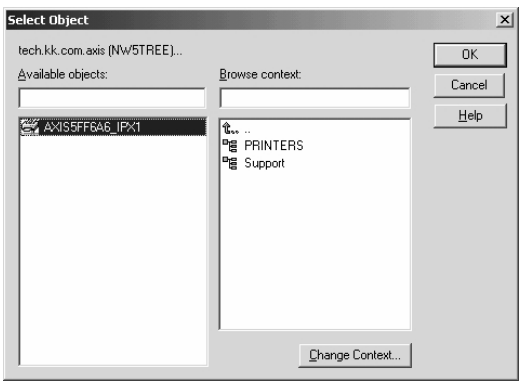


3. From the Printer Manager's Printer pull down menu, select **New**.

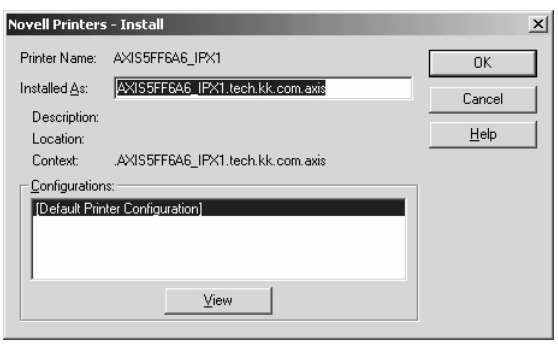
4. Click **Add**. A list of available printers appears.



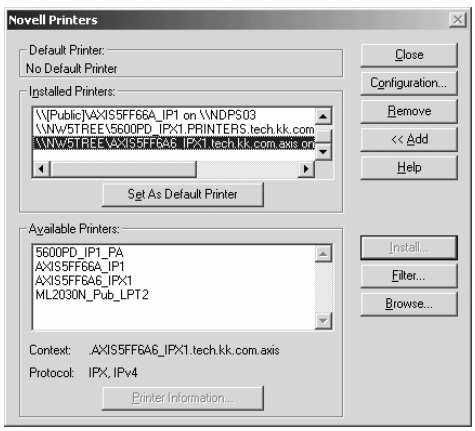
5. The list of available printers shows the NDPS Public Access Printers on the network and the NDPS Controlled Access Printers in you current NDS context. To see the Controlled Access Printers in other context that you have rights to, click the **Browse** button and select your choice. Click **OK.**



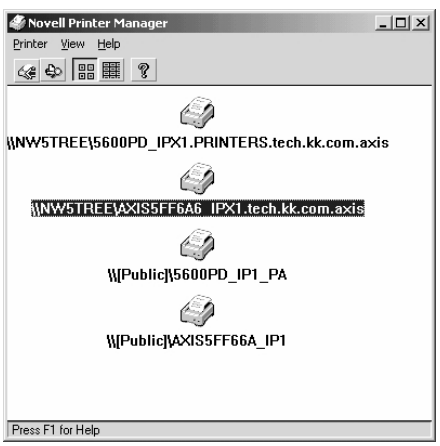
6. Once selected, click **Install**. The Novell Printers – Install dialog appears.



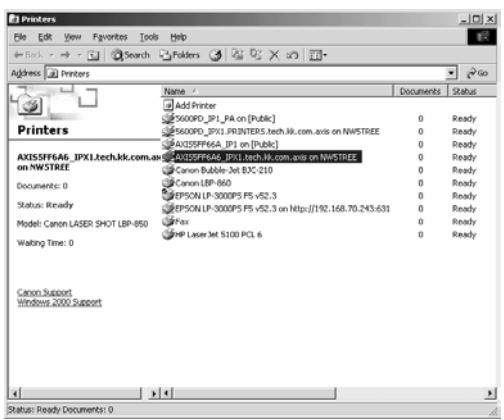
7. Click **OK**. The default driver for that printer is then automatically downloaded. If the printer object does not have a printer driver associated with it, or a driver was not found, you will be prompted to either to choose from a list of printer drivers provided by NDPS or to provide a disk with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



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

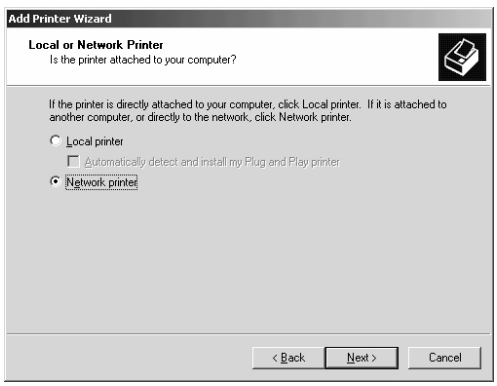


9. Verify by clicking **Start - Settings - Printers** on the workstation.

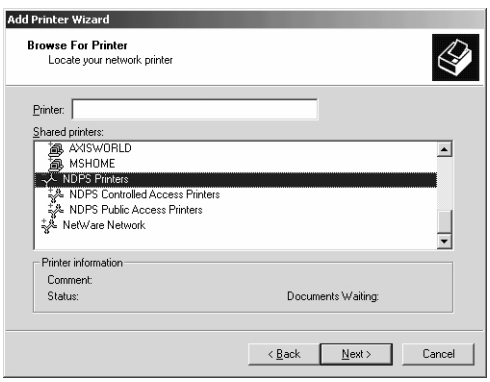


Using the Add Printer Wizard

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



4. Click **Next** again in the **Locate Your Printer** dialog (Win2000/XP) or press the **Browse** button (Win9X)
5. Browse to the **NDPS Printers**. Expand either the **NDPS Controlled Access Printers** or the **NDPS Public Access Printers** folder, select your newly installed NDPS printer and follow the instructions.



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

Notes:

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

Setup using iPrint

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

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

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

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

Axis provides two free Snap-ins for iPrint:

- **AXIS LPR Gateway Configuration**
- **AXIS IPP Gateway Configuration**

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

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

Installing AXIS IPP Gateway Configuration Snap-in for NetWare 6.0

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

4. Shutdown Tomcat and the NetWare Enterprise Web Server on the NetWare file server by executing the following commands:

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

5. Map the next available drive (e.g. G:) to the root of volume SYS on your NetWare server.
   From the temporary directory where **axisIPP-snap-in.zip** has been unzipped, run the batch file **AxisIPP.bat** (default G:).
   If the drive G: is not available, you have to edit the batch file and change the drive to next available one.
   Check that each line in the batch file is executed without failure.

6. Restart Tomcat and the NetWare Enterprise Web Server on the file server by executing the following commands:
   Type "TOMCAT33" <Enter>
   Type "NVXADMUP" <Enter>
   Type "NSWEB" <Enter.

7. Access the iManager web page on the NetWare server by opening the following URL:
   https://<IP address of NW server>:2200/eMFrame/iManager.html
   You have to authenticate.

8. Click on **iPrint Managemen**t on the left pane and select **Create Printer.**

9. On the right pane, verify that the newly installed **AXIS IPP Gateway Configuration** is under the **Gateway type** drop-down menu.
   If not, it may be necessary to restart the NetWare server.

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

Install a printer with AXIS IPP Gateway Configuration Snapin

1. Use an AXIS 5400+/AXIS 5600+ and connect a printer to any port.
2. Connect the print server to the network.
3. Connect the power supply.
4. Start both the printers and the print server.
5. Log in as Admin.
6. Use a web browser and the local host URL to login into iManager on your NetWare server.
7. Open your browser to the following URL:
   https://<IP address of NW server>:2200/eMFrame/iManager.html
   You have to authenticate.
8. Click on **iPrint Management** on the left pane.
9. Click on **Create Printer.**
10. Choose a name of your choice for the printer
11. Choose the context where the printer will be installed.
12. Browse for the NDPS Manager and select it.
13. In the **Gateway Type** drop-down list, choose the **Axis IPP Gateway Configuration**. Press **Next**.
14. In the Printer URL, you may choose either the IPP version 1.0 format:
    http://<IP address of your print server>:631/lptx

    or the IPP version 1.1:

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

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

Install a printer using AXIS LPR Gateway Configuration Snapin

1. Use an AXIS 5400+/AXIS 5600+ and connect a printer to whatever port you want.
2. Connect the print server to the network.
3. Connect the power supply.
4. Start both the printers and the print server.
5. Log in as Admin.
6. Use a web browser and the local host URL to login into iManager on your NetWare server.
7. Open your browser to the following URL:
   https://<IP address of NW server>:2200/eMFrame/iManager.html You have to authenticate.
8. Click on **iPrint Management** on the left pane.

9. Click on **Create Printer.**
10. Choose a name for the printer.
11. Choose the context where the printer will be installed.
12. Browse for the NDPS Manager and select it.
13. In the **Gateway Type** drop-down list, choose the **Axis LPR Gateway Configuration**. Click **Next**.
14. Choose either the IP address or the DNS Name for your print server.
15. Under **Printer name**, select the physical printer port, e.g. LPT1, or logical printer port pr1-pr8 using the drop-down list. Click **Next**.
16. Select default drivers for your printer. Click **Next** and **OK**.

Installing the iPrint Printer on the Workstation

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

- Using the iPrint Client
- Using the MS Add Printer Wizard at the workstation.
  See "Using the Add Printer Wizard" on page 52.)

Installing the iPrint Printer using the iPrint Client.

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

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

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

The user should use the following iPrint url:
http://<IP address of your NW server>:631/IPP

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

Basic Setup with AXIS NetPilot

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

Starting the Installation

Follow the instructions below to install the AXIS 5400+/AXIS 5600+ with AXIS NetPilot:

1. Start AXIS NetPilot by double-clicking the NetPilot icon, which is located in the folder where you installed AXIS NetPilot.
2. Locate the AXIS 5400+/AXIS 5600+ in the 'New Axis Units' folder. Select it and click the **Install** button on the AXIS NetPilot toolbar. If your network is large, it could take a few seconds before the print server appears in the folder.
3. Choose the **with Installation Wizard** option.

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

Note:

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

Print Server Name

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

Environments

Choose which networking environments you want to configure the AXIS 5400+/AXIS 5600+ for, e.g. NetWare, TCP/IP, Windows & OS/2 or Macintosh. If your network comprises various different platforms, you can enable any combination of environments.

NetWare NDS

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

The IP address

Choose the method the AXIS 5400+/AXIS 5600+ should employ for obtaining an IP address. DHCP, ARP, RARP, BOOTP and Auto-IP are supported. You can also select to set the IP address manually. Refer to *Assign an IP Address to the Print Server*, on page 13 for further information about setting the IP address.

Print Queues

The AXIS 5400+/AXIS 5600+ uses the print server name followed by the printer port as the default Print Queue names and print server port names. If you want to change the default printer queue names, just type the new names in the available text fields.

AXIS 5400+

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

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

AXIS 5600+

Environment	Default Names
NetWare	AXIS1A0003_LPT1_Q
	AXIS1A0003_LPT2_Q
	AXIS1A0003_COM1_Q
Windows & OS/2	AX1A0003.LP1
	AX1A0003.LP2
	AX1A0003.CM1
AppleTalk	AXIS1A0003_LPT1
	AXIS1A0003_LPT2
	AXIS1A0003_COM1

Default Print Queue Names and Print Server Port Names for each operating environment.

Test Page

The final user prompt in the Installation Wizard allows you to print a test page through NetWare. The test page displays the name of all the NetWare servers the AXIS 5400+/AXIS 5600+ is connected to and shows the status of each connection.

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

Notes:

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

Advanced Installation using AXIS NetPilot

Having installed your AXIS 5400+/AXIS 5600+ print server in accordance with the basic installation procedures described in *Basic Setup with AXIS NetPilot*, on page 58, your AXIS 5400+/AXIS 5600+ print server should now feature in the 'Network Print Servers' folder located in the AXIS NetPilot main window.

NetWare Network Environment Window

The NetWare Network Environment window allows you to connect additional print queues to your AXIS 5400+/AXIS 5600+ as well as create new ones.

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

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

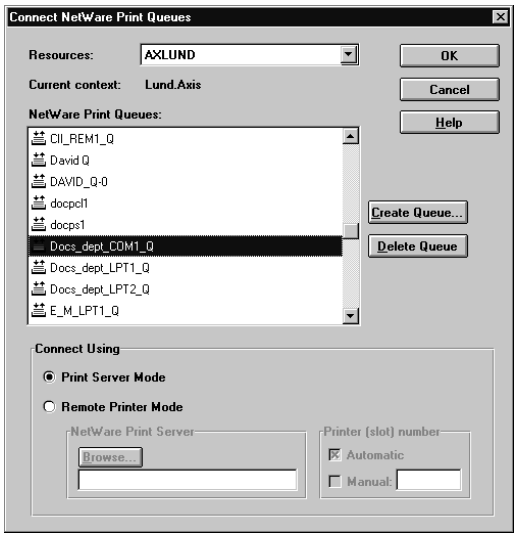
The AXIS 5400+/AXIS 5600+ periodically updates the configuration by scanning the NDS tree or, in the case of NetWare versions 3.x, the designated file servers.

Connecting Print Queues

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

1. Open the NetWare 'Network Environments' window.
2. Select the print server port you want to connect.

3. Click the **Connect...** button. The **Connect NetWare Print Queues** window appears.



The AXIS NetPilot Connect NetWare Print Queues window

4. Select the tree or server location of the print queue from the **Resources** box.
5. Select an existing print queue to connect to the server port, or create a new print queue by clicking on **Create Queue...** If you have selected an existing queue, advance to step 8. Continue with step 6 only if you want to create a new queue.
6. Type the queue name in the **Create Queue** dialog window. If you want to create a queue in the NDS tree you must also enter the name of the volume where the queue will be located. Click **OK**.
7. Select the newly created queue from the queue list.
8. Select **Print Server Mode** or **Remote Printer Mode**. If you selected **Print Server Mode**, advance directly to step 11, otherwise continue with step 9.
9. Select an appropriate NetWare Print Server name, that will be associated with the AXIS 5400+/AXIS 5600+ print server, by using the **Browse...** button.

Notes:

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

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

Basic Queue-based printing over IP

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

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

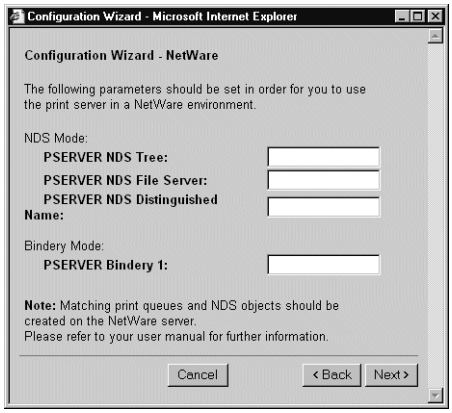
Installing the AXIS 5400+/AXIS 5600+

Follow the instructions below to install the AXIS 5400+/AXIS 5600+ in the NetWare Pure IP environment:

1. Start the Configuration Wizard from the **User mode** in the AXIS 5400+/AXIS 5600+ Web interface.
2. Click your way through the Wizard until reaching the **NetWare** page.
3. Set the parameters on the NetWare page:
   - PSERVER NDS Tree (example: NW5TREE)

     or

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



Setting the PSERVER parameters in the AXIS 5400+/AXIS 5600+ Web interface.

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

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

Any configuration and management of the AXIS 5400+/AXIS 5600+ can be performed from any standard Web browser. Please refer to *Using a Web browser*, on page 79.

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

Note:

Pure IP requires that you run NetWare 5 or higher.

Queue-based Printing Methods

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

Print Server Mode

The AXIS 5400+/AXIS 5600+ logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ to file server link.

Remote Printer Mode

The AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ 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 and higher network load.

Using Novell Utilities

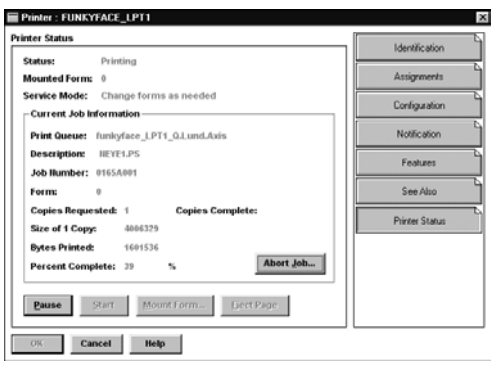
After installing the AXIS 5400+/AXIS 5600+ into the NetWare environment, you can manage your AXIS 5400+/AXIS 5600+, using either Novell's NetWare Administrator, or PCONSOLE.

NetWare Administration

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

Printer Status

The Printer Status menu, detailed below, shows the status of an active print job serviced by an AXIS 5400+/AXIS 5600+ network print server. It displays detailed information concerning the active job including, Print Queue, print job description, size of print file, percentage of job completed, etc. You can also abort or pause the print job from this menu.



Notification

You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the AXIS 5400+/AXIS 5600+, 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 5400+/AXIS 5600+ and their relative print queues for any NetWare Organizational Unit. You can also display summary information by right-clicking on the printer object you want to examine.

Section 7 Adding Printers in UNIX/Linux

Print Tools

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

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

Instructions:

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

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

I*nstructions:*

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

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

Instructions:

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

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

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

Instructions:

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

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

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

Instructions:

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

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

Instructions:

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

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

Notes:

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

Typical Invocation via a Windows Manager

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

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

Print Queues

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

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

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

Port number	LPT1	LPT2	COM1
AXIS 5400+	9900		
AXIS 5600+	9900	9902	9901

6. Click **Next**.
7. Fill in data to help users identify the printer, i.e. name, description and location. Click **Next**.
8. Select printer model and click **Next**.
9. Configure the printer and click **Next**. The printer is set up. Click **Finish** and the printer is accessible.

Typical Invocation from a Terminal Window

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

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

Debian 3.0

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

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

Invocation

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

Print Queues

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

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

Adding a Remote Unix Printer

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

Red Hat 7.3

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

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

Invocation

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

Print Queues

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

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

Important!

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

Adding a Remote Unix Printer

1. To add a remote UNIX printer, such as one attached to a different UNIX/Linux system on the same network, click the **New button** in the main `printconf` window.
2. Select **Unix Printer** from the **Queue Type menu**, and click **Next**.
3. Enter a unique name for the printer in the **Queue Name** text field. The printer name cannot contain spaces and must begin with a letter a through z or A through Z. The valid characters are a through z, A through Z, 0 through 9, -, and _. Click **Next**.
   Text fields for the following options appear:

   Server — The hostname or IP address of the remote machine to which the printer is attached.

   Queue — The remote printer queue. The default printer queue is usually lp.

   By default, the Strict RFC1179 Compliance option is not chosen. If you are having problems printing to a non-Linux lpd queue, choose this option to disable enhanced LPRng printing features.
4. Click **Next** to continue. The next step is to select the type of printer that is connected to the remote system.

Important!

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

Selecting the Print Driver

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

SuSE 8.0

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

There are two ways to setup printers on SuSE systems:

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

Invocation of YaST2

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

Print Queues

SuSE and YaST2 differ between these printer connections:

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

The SuSE installation manual explains the setup procedures in detail.

AXIS axinstall Script

Having performed the basic TCP/IP setup procedures as defined earlier in this manual, you are now able to print in interactive mode using PROS, LPR, FTP or Reverse Telnet protocols.

However, if you want to integrate the AXIS 5400+/AXIS 5600+ with your host spooler, you can use the Axis automatic installation script *axinstall.* This utility software is resident in the print server and can be downloaded to your host using FTP, so no disks are required. The *axinstall* script is also available from www.axis.com

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

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

Integration with the Host Printer Spooler

To integrate the AXIS 5400+/AXIS 5600+ with the host printer spooler, you can use the auto installation script *axinstall*, resident in the print server. Follow the instructions below to install *axinstall* onto your host using FTP:

1. Login to the print server using the command:
   `ftp <host name>`
   -or-
   `ftp <IP address>`
2. Enter `root` as user id and `pass` as 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 5600P FTP Print Server v6.43 March 23 2003
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 downloading the axinstall script

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

`sh axinstall` or `sh ./axinstall` (depending on your system).

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

Note:

NLPRng is not supported by axinstall.

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

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

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

Systems supported by axinstall

Print Methods on TCP/IP Networks

The AXIS 5400+/AXIS 5600+ supports several different print methods in the TCP/IP environment. *axinstall* will suggest a print method suitable for your particular UNIX/Linux system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc).

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

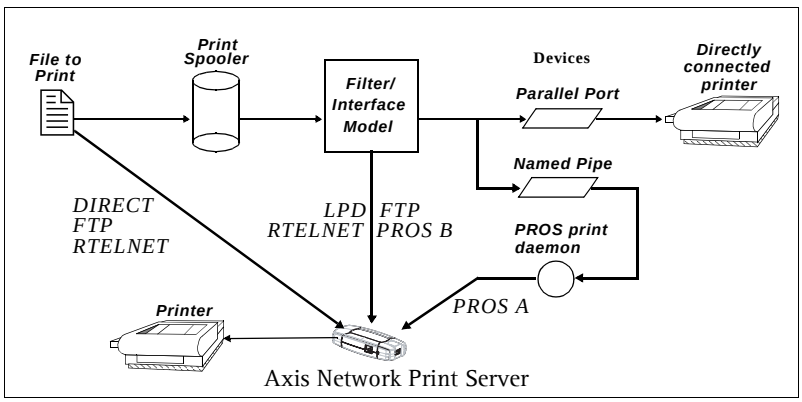


Illustration of different UNIX/Linux print methods

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

Advantages:
Easy to set up — install the AXIS 5400+/AXIS 5600+ as a remote queue in System V, or add a remote printer to `/etc/printcap` using the `rm` and `rp` fields (BSD).

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

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

Advantages:
Uses industry standard network software on the host.

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

PROS A protocol developed at Axis. Comes in two versions; *named pipe* (PROS A) and *filter* (PROS B).

PROS A Advantages The AXIS 5400+/AXIS 5600+ appears as a device to the system. This makes all filter and model options available. It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

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

Note:

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

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

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

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

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

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

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

If the system has BSD socket type networking support, then `prosbsd` (in the `bsd` directory of the AXIS 5400+/AXIS 5600+) can be used as a starting point. It receives print data from `stdin`, and writes a log file to `stderr`. Nothing is written to `stdout`.

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

IBM MVS Systems A sample JCL script, `jclex`, is available in the `mvs` directory of the print server. It gives an example of how to print a file from an MVS mainframe to an AXIS 5400+/AXIS 5600+ using FTP.

Section 8 Updating the Firmware

Upgrading the Firmware

You can upgrade the AXIS 5400+/AXIS 5600+ firmware using one of the following methods:

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

Note:

Updating instructions are supplied with the firmware release notes.

Upgrading from the Print Server's Internal Web Pages

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

1. Open your Web browser, enter the IP address of your print server and press **Enter**. (See *"Print Server Management"* on page 86 for detailed instructions on accessing your Axis print server on the Web).
2. From the **Admin** mode, click the **Firmware Upgrade** button. From here you can upgrade your print server with the latest available firmware.

Upgrading using AXIS ThinWizard

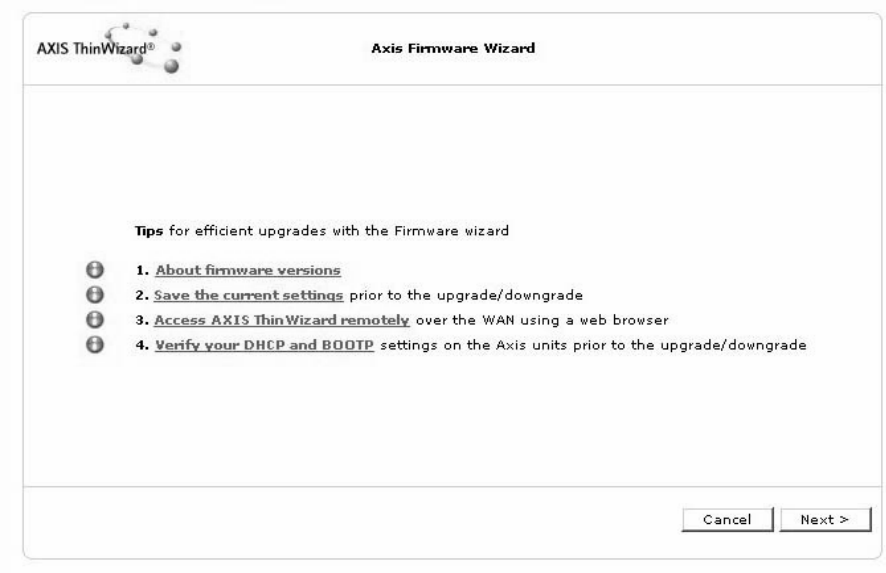
AXIS ThinWizard 3.0 is a tool that enables batch upgrading of several print servers and can be used for upgrading the print server's firmware in TCP/IP networks.

You must assign an IP address to the print server, as described earlier in this manual, before you can use this upgrading method.

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

1. Click the **Firmware** button. The Firmware Wizard starts.
2. Browse through the upgrading tips and click **Next >** when you are done. Select **Latest Available Version**. Click **Next >**.
3. Select the servers you want to upgrade, by checking the correct upgrade boxes. Click **Next >**.
4. Enter the default User ID and Password of the servers you selected in the previous step. Select whether you want AXIS ThinWizard to verify the password immediately or when the upgrading job has started, by checking the appropriate box. Click **Next >**.
5. If you do not have a default password, just click **Next >**. If some of your servers use a different User ID or Password than the default entries, they will be displayed in the **Remaining servers** list. Enter the User ID and Password for each individual server. Click **Next >**.

6. Name the upgrade job. This is optional, so you can leave the field blank if you want. Click the **Start** button to start the upgrading job.



Refer to *"Using AXIS ThinWizard software for Print Server Management"* on page 94, for more information about AXIS ThinWizard.

Upgrading using FTP

To upgrade over the network using FTP you will need a file with the new print server firmware. The name of this file is in the form `product_version.bin`.

You can use any of the previously mentioned methods to obtain the new file. You must assign an IP address to the AXIS 5400+/AXIS 5600+before you can use this upgrading method.

Caution!

Be careful not to interrupt the file transfer. If the transfer is interrupted, the AXIS 5400+/AXIS 5600+ may have to be re-initialized by your dealer.

The objective of this example is to upgrade a print server with firmware version 6.41 to firmware version 6.43.

This description from Windows XP uses the following *examples*:

- Print server model: AXIS 5400+
- IP address of print server: 10.13.4.105
- New firmware version name: 5400p_v2_6_43.bin
- Location of firmware and upgrade procedure: C:\Axis (Create a new directory named e.g. 'Axis' on your hard drive and download the firmware to that location).

1. From www.axis.com, download the firmware and save it to the new directory on your computer, e.g. C:\ Axis
2. Open a command prompt from **Start => Run**.
   The Run window will appear.
   Type **cmd** and click **OK**.
3. The DOS Command Prompt window will open.
   Type **c:** and press the Enter button on your keyboard.
4. The firmware is saved in C:\Axis
   Type **cd Axis**
5. Type **dir** and press Enter.
   The Axis directory you have created will list all files:
6. Connect to the print server using ftp.
   Type **ftp 10.13.4.105**
   (Example using print server IP address 10.13.4.105)
7. Type **root** after "User:", press Enter.
   Type **pass** after "Password:" (your entry will not be visible) press Enter.
8. Change to binary mode transfer.
   Type **bin hash** (or **binary hash**) and press Enter.
9. Use the 'put' command to upload the upgrade file to the flash location:
   (Example using firmware named 5400p_v2_6_43.bin):
   Type **put 5400p_v2_6_43.bin FLASH** (FLASH written in capital letters!)

Wait 30 seconds... You will receive a message stating "Transfer complete. Flash programming finished OK. "The print server will restart in five seconds running the new software.
When you see a new **ftp prompt** the procedure has been completed successfully.

Obtaining the Software

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

- http://www.axis.com
- your local dealer

Section 9 Management and Configuration

The management and configuration tools that are supported by the AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+

Configuration Overview

The method you should use to manage and configure your AXIS 5400+/AXIS 5600+ depends on the operating system protocols of your network. The table below displays which method to use for each supported environment.

Operating System Protocols	Configuration/Management methods
IBM Host (AS/400, IBM Mainframe)	From an IBM Host - See page 95
TCP/IP (AS/400, IBM Mainframe, UNIX, Windows	Web Browser - See page 79 AXIS ThinWizard - See page 84 FTP - See page 86 Telnet - See page 88 SNMP - See page 91
IPX/SPX (NetWare)	Novell Utilities - See page 94
NetBIOS/NetBEUI Windows	Web Browser - See page 79
AppleTalk	Web browser - See page 79 Mac-FTP - See page 86

Using a Web browser

Once you have established the AXIS 5400+/AXIS 5600+ in the TCP/IP environment, as described in *Assign an IP Address to the Print Server*, on page 13, you are free to access the AXIS 5400+/AXIS 5600+ Web pages from any standard Web browser.

The Web interface of the AXIS 5400+/AXIS 5600+ is divided into two modes of operation, User mode and Admin mode:

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

Admin When in Admin mode, you have access to all the print server's parameters and you can change them to your liking. This mode is intended for network administrators and can be password protected to prevent unauthorized changing of the print server parameters.

Note:

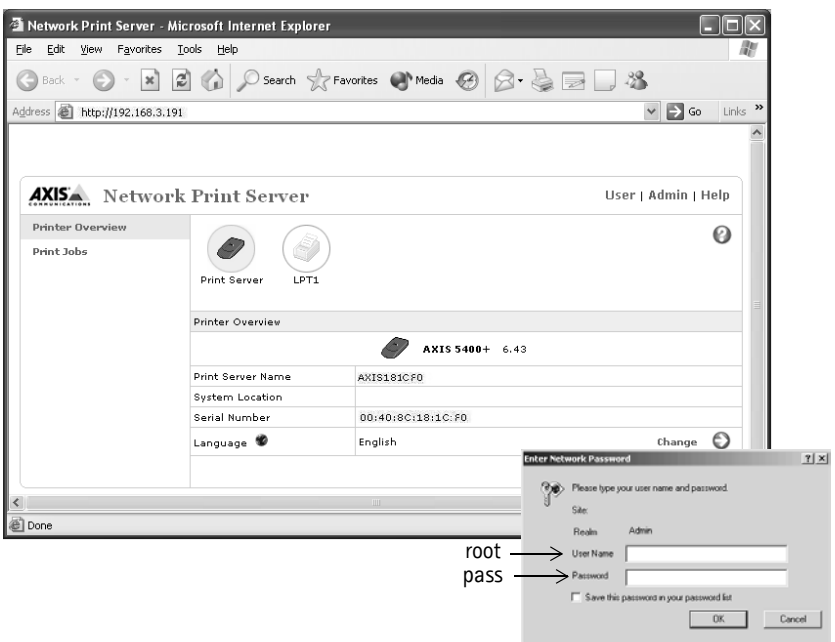
To protect the Admin pages from unauthorized use, enter a password in the Root Password field under Admin | General Settings

Accessing the Web Pages Follow the steps below to access the internal web pages of the AXIS 5400+/AXIS 5600+:

1. Enter the print server's IP address (or host name) in the **Location/Address** field of your Web browser. Press **Enter**
2. The **Printer Overview** page will appear. Click the **admin** button to access the Administration web pages.
3. You may be prompted for a password, enter the default user name **root** and the default password **pass**. Click **OK**.

Note:

- It is highly recommended that you change the default password. This is done from the **Admin** | **General Settings** | **General** tab in the **Root Password** field
- You can address the print server's Web interface via **https://** To do this you must enable the SSL/TLS protocols in the web interface: **Admin** | **Network Settings** | **Detailed View**| **TCP/IP** and set the **HTTPS Enabled** parameter to **Yes** (you must have a valid certificate loaded).If you do not have a valid certificate loaded, select **Admin** | **Security Settings** and click **Create.**



Available Services from the User Mode

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

Printer Overview

The Printer Overview page contains a section that allows you to view the general parameter setting of the AXIS 5400+/AXIS 5600+, including the print server name and the location of the print server in your organization, if defined.

By clicking the printer icon a printer page opens, allowing you to view the status and the supported capabilities ofconnected printer. The extent of this information depends on the printer model. From the printer page, you can also print a test page to the printer.

Print Jobs

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

Help

The Help page presents you with basic information about the AXIS 5400+/AXIS 5600+ and the Web user interface. A short description of the Axis installation tools you should use when installing a printer on your PC, is also included.

Available Services from the Admin Mode

The following services are available from the Admin mode. An additional link to www.axis.com is available from this mode.

This Print Server

The **This Print Server** page contains a section that allows you to view and modify the general parameter setting of the AXIS 5400+/AXIS 5600+, including the print server name, the node address, the password and the base URL. You can also configure any of the eight logical printers of the AXIS 5400+/AXIS 5600+. Management operations, like restarting the AXIS 5400+/AXIS 5600+ and resetting its parameters to the factory default settings, are also available.

Caution!

Any network configuration should involve the Network Administrator.

By clicking on the printer icon, a printer page opens, allowing you to view the status and the supported capabilities of connected printer. The extent of this information is depending on the printer model. From the printer page, you can also print a test page to the printer.

Print Jobs

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

Network Settings From the **Network Settings** page you can set all parameters that control the network traffic to and from the AXIS 5400+/AXIS 5600+. You can enable or disable any of the supported network protocols and fine-tune the parameter settings.

Support From the **Support** page you can receive help to resolve any installation or print problems that might occur. If your problems persist, the Support page allows you to produce a Server Report. The Server Report includes the settings of the AXIS 5400+/AXIS 5600+, information about your connected printers as well as the current network settings. The Server Report is of great value for support assistance, so please mail, email or fax it to your support channel together with a detailed problem description.

Statistics The **Statistic**s page displays information about the network traffic to and from the AXIS 5400+/AXIS 5600+ as well as information about servers and services that are connected or associated with the AXIS 5400+/AXIS 5600+.

Help The **Help** page displays a comprehensive description of the configuration and management activities that can be performed from the internal Web pages of the AXIS 5400+/AXIS 5600+. Theses activities include instructions on how to install the AXIS 5400+/AXIS 5600+ in various environments and how to upgrade it with new firmware. A detailed index is also available.

Security Settings

On the **Security Settings** page you can enable or disable *SSL* (Secure Socket Layer - a protocol designed to provide secure communications on the Internet.) and *TLS* (Transport Layer Security, a protocol that guarantees privacy and data integrity between applications communicating over the Internet) You can also create secure certificates and disable/enable insecure protocols.

Whenever SSL/TLS is enabled, you have to address the print server's Web interface in the secure way, i.e. via **https://**

See *Enabling SSL via the Web Interface*, on page 107 for a detailed description.

Parameter List

Shows all print server parameters and their current settings.

Restart

Restarts the print server.

Software Default

A Software Default will reset all print server parameters and settings to their default values **except:**

- Node address (NODE_ADDR.)
- IP Address (INT_ADDR.)
- DHCP enabled (DHCP_ENB)
- Installed certificate
- Private key

A Software Default differs from a Factory Default in that the latter is done by pressing the test button in a specific sequence to default/clear all print server parameters to default.

See *The Test Button*, on page 123 for instructions on performing a Factory Default.

Firmware Upgrade

Upgrades the print server's internal software.

Using AXIS ThinWizard for Print Server Management

AXIS ThinWizard software allows you to manage and upgrade **multiple** Axis products. Using a standard Web browser, you can find, install, monitor, configure and upgrade your Axis print servers remotely in any TCP/IP network. AXIS Thin Wizard 3.0 is Windows 2000 and Windows XP compatible.

Installing AXIS ThinWizard

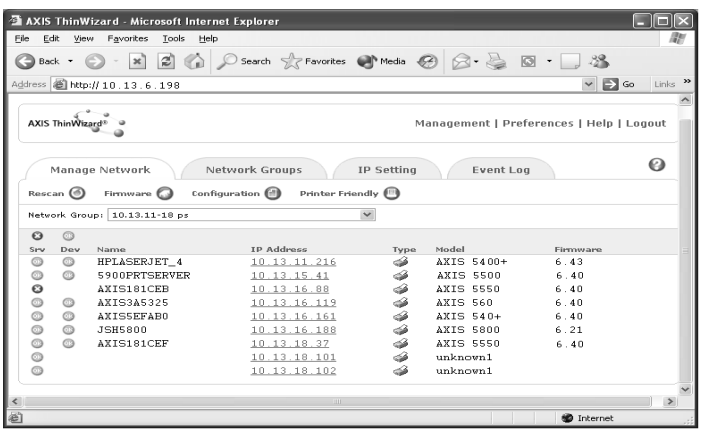
AXIS ThinWizard software is available on www.axis.com
You should only install AXIS ThinWizard on a designated computer on your network.

To install, follow the instructions given by the Installation Wizard. During the installation, you will be asked to enter a user id and a password — these will be used when logging in to AXIS ThinWizard, so please take a note of them.

Starting AXIS ThinWizard

Follow the instructions below to start 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 on a client in your network.
3. Enter the IP address or the host name of the computer where you installed AXIS ThinWizard. (If the server is installed on another port than 80, you must enter the port name after the host name or the IP address).
4. The AXIS ThinWizard start page now appears in the Web browser. Enter the user id and password you specified during installation and click **Log in**.
5. The AXIS ThinWizard interface appears:



Important!

These parameters must be enabled in the print server's web interface for AXIS ThinWizard to function properly:

- FTP_ENB (FTP enabled): click **Admin** | **Network Settings** | **Detailed view** | **TCP/IP** | **FTP Enabed => Yes.**
- SNMP_ENB (SNMP Enabled): click **Admin** | **Network Settings** | **Detailed view** | **SNMPv1 Enabled => Yes**

These parameters are enabled by default in the print server.

The first time you use AXIS ThinWizard, set the **Preferences** to reflect your network environment:

Select a network group from the list on the **Manage Network** page. If the list is empty, you must first create a group. Click the **Network Groups** tab and follow the instructions.

Creating a Network Group in AXIS ThinWizard

The network group concept is the corner stone of AXIS ThinWizard. By dividing your network into network groups, you can monitor your print servers more efficiently. The scope of each network group is determined by the Axis server types and IP address ranges that are included. You can create as many network groups as you want.

Follow the instructions below to create a network group:

1. Click **Network Groups** in the AXIS ThinWizard main menu.
2. Click **Create**.
3. The Create Network Group page opens. Type the name of the network group, enter the IP address ranges and Axis server types that should be included. If you are only interested in managing print servers, deselect all options but the **print server** option.
4. Click **OK** to create the network group.

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

Managing Print Servers

Follow the instructions below to access the AXIS 5400+/AXIS 5600+ using AXIS ThinWizard:

1. Click **Manage Network** in the main menu.
2. Select the network group, including the, from the drop-down list. All AXIS servers included in the network group appear in the window.
3. Click the link of the AXIS 5400+/AXIS 5600+ 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 print server as described in *Available Services from the User Mode*, on page 81.

Upgrading Axis Servers

Refer to *Upgrading using AXIS ThinWizard*, on page 76, 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 5400+/AXIS 5600+, as described in *Assign an IP Address to the Print Server*, on page 13, you can change the AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *config* file to your host by typing:
   `get config`
4. Edit the file using your preferred text editor.
5. Save the *config* file to the AXIS 5400+/AXIS 5600+ 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 5400+/AXIS 5600+ has been powered off.
- To edit the *config* file from a Macintosh you will need FTP support such as MacTCP, Fetch or Anarchie. The procedure for editing the file is the same as described above.

The example on the next page describes how to edit the *config* file using FTP from a DOS window.

Example:

```
> ftp npserver
connected to npserver.
220 AXIS 5400+/AXIS 5600+ FTP Print Server v6.30 Dec
16 2000 ready.
Name (npserver:thomas): root
331 User name ok, need password
Password: pass        (not visible)
230 User logged in
ftp> get config
200 PORT command successful.
150 Opening data connection for config
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.24 seconds (35.63 kbytes/s)
ftp> put config CONFIG
200 PORT command successful.
150 Opening data connection for CONFIG
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.45 seconds (19.04 kbytes/s)
ftp> bye
221 Goodbye.
>
```

Viewing the *Account* File

The *account* file contains data concerning the ten last print jobs. It specifies an internal job number, the user that initiated the job, the protocol and logical printer that was used, current status (Completed, Off-line, or Printing), number of bytes printed, elapsed time and off- line time.

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

1. Log in to the AXIS 5400+/AXIS 5600+ by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS windows (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *account* file to your host by typing:
   `get account`
4. View the *account* file using your preferred text editor.

Viewing the *Status* File

The status command shows which printer port the logical printers are assigned to, and their current status.

Follow the instructions below to view the *status* file using FTP:

1. Log in to the AXIS 5400+/AXIS 5600+ by typing:
   `ftp <host name>` or `ftp <IP address>` in a DOS windows (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *status* file to your host by typing:
   `get status`
4. View the status file using your preferred text editor.

FTP Help

By typing `help` in step 3 in the FTP instruction sets above, a list of all available files and commands will be displayed.

Using Telnet

Having assigned an IP address to your AXIS 5400+/AXIS 5600+, as described in *Assign an IP Address to the Print Server*, on page 13, you can manage your AXIS 5400+/AXIS 5600+ using the Telnet protocol.

Viewing the *Account* File

The *account* file contains data concerning the last ten print jobs. It specifies an internal job number, the user that initiated the job, the protocol and logical printer that was used, current status (Completed, Off-line, or Printing), number of bytes printed, elapsed time and off- line time.

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

1. Log in to the AXIS 5400+/AXIS 5600+ by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. View the *account* file by typing:
   `account`

The example on the next page shows how to view the *account* file using Telnet from a UNIX shell.

Example:

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

AXIS 5400+/AXIS 5600+ TELNET Print Server v6.30 Dec 16 2000

AXIS 5400+/AXIS 5600+ network login: root
Password: pass                  (not visible)

AXIS 5400+/AXIS 5600+ TELNET Print Server v6.30 Dec 16 2000

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

 1      Thomas      FTP       pr2 C 1885      2       0
 2      Joe         LPT       pr1 C 23074     4       0
 3      RICHARD     PSERVER   pr2 C 43044     5       0
 4      MacUser     APPLE     pr1 C 6717      2       0
 5      LSLM_user   NetBIOS   pr2 C 36995     3       0
 6      patrick     PROS      pr5 P 83208     9       0
Root>
```

Typical Telnet session to view the *Account* File

Viewing the *Status* file

The status command shows which printer port the logical printers are assigned to, and their current status.

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

1. Log in to the AXIS 5400+/AXIS 5600+ by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. View the *status* file by typing:
   `status`

Performing resets

Three types of reset commands allow you to perform soft resets, to perform hard resets, and to reset the print server's parameters to its default settings.

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

1. Log in to the AXIS 5400+/AXIS 5600+ by typing:
   `telnet <host name>` or `telnet <IP address>` in a DOS window (Windows and OS/2) or in a UNIX shell.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Restart the print server's protocols by typing:
   `softreset`

Replace the command in step 3 above with `hardreset` or `default` to perform the other two reset operations.

Using SNMP

You can use SNMP (Simple Network Management Protocol) for remotely monitoring and configuring of the AXIS 5400+/AXIS 5600+. 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 5400+/AXIS 5600+ SNMP implementation runs in the TCP/IP environment.

The management is handled by NMS (Network Management System) software running on a host on your network. The NMS software communicates with network devices by the means of messages, which are references to one or more objects.

A message can be a question or an instruction to a device, or an alarm triggered by a specific event in a device. Objects are contained in data bases called MIBs (Management Information Base), where MIB-II is a standard database.

The AXIS 5400+/AXIS 5600+ supports all relevant parts of MIB-II and also includes a private enterprise MIB. Refer to *The AXIS MIB,* on page 91.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the AXIS 5400+/AXIS 5600+ SNMP support:

- NMS software that allows you to install private enterprise MIBs
- A host, supporting FTP, on which to run the NMS software

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

1. Log in to the AXIS 5400+/AXIS 5600+ using FTP.
2. Download the MIB file */snmp/axis.mib* to the NMS host.
3. Install the AXIS MIB according to instructions in your NMS software documentation.

The AXIS MIB

The AXIS MIB contains a large number of objects which may be categorized as follows:

- Menu objects - used for viewing and changing the AXIS 5400+/AXIS 5600+ configuration from the NMS program. Refer to *The Parameter List*, on page 130.
- Printer status and unit administration objects - used for monitoring AXIS 5400+/AXIS 5600+ 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.

Exceptions

Even though the AXIS 5400+/AXIS 5600+ is fully compatible with the HP JetAdmin tool, the AXIS 5400+/AXIS 5600+ behaves differently than an HP print server in certain situations. The exceptions from the traditional HP JetAdmin functionality are presented below.

The print server concept

HP JetAdmin considers each printer port of the HP print server as an independent print server. One physical HP print server will act as one or three print servers depending on the number of supported printer ports. HP JetAdmin always considers the AXIS 5400+/AXIS 5600+ as one print server, independent of the number of supported ports. The effects of this different behavior are:

- You can change a printer port's properties from any of the AXIS 5400+/AXIS 5600+ printer ports' property pages. This can not be done with an HP print server.
- If you are performing a reset on one of the AXIS 5400+/AXIS 5600+ printer ports, all three ports will be reset.
- From each port you can view all print queues connected to the print server and not only the queues connected to the specific printer port. To be able to distinguish between the queues, they must be named <queue_name>!<logical_printer_number>.
- The AXIS 5400+/AXIS 5600+ printer ports have the same name. They are only distinguished by suffixes. If you change the name on one of the AXIS 5400+/AXIS 5600+ printer ports, all three port names will be changed. Note that the port names displayed in HP JetAdmin will not change until one of the refresh commands in the Device Refresh menu has been performed.

The Serial Printer Port

HP JetAdmin does not support serial printer ports. If you must change the default settings of the serial printer port of the print server, it is recommended that you use the AXIS NetPilot. This will become necessary when you are installing a printer on your serial port. Follow the steps below to change the serial port parameters using AXIS NetPilot.

1. Start the AXIS NetPilot.
2. Select your AXIS 5400+/AXIS 5600+ and click **Install** on the AXIS NetPilot toolbar. Select **with current configuration**.
3. Your AXIS 5400+/AXIS 5600+ has been transferred to the 'Network Print Servers' folder. Select your AXIS 5400+/AXIS 5600+ and click the **Property** button on the AXIS NetPilot toolbar.
4. Select the **Printer Ports** tab.
5. Select **COM1** from the Printer Port drop-down list.
6. Select **XON/XOFF** from the Handshake Protocol drop-down list, set the Baud Rate to 38400 and select 1 stop bit. Click OK.

The settings in step 6 varies between different printer models. Please refer to your printer documentation.

If your network supports TCP/IP you can also change the serial port parameters by using the AXIS 5400+/AXIS 5600+ Web interface.

Using Novell Utilities

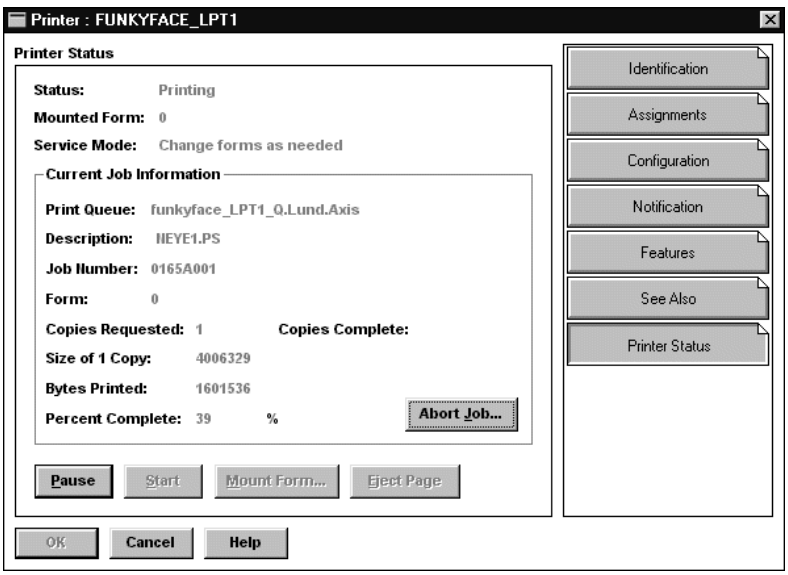
After installing the AXIS 5400+/AXIS 5600+ into the NetWare environment, you can manage your AXIS 5400+/AXIS 5600+, using either Novell's NetWare Administrator, or PCONSOLE.

NetWare Administration

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

Printer Status

The Printer Status menu, detailed below, shows the status of an active print job serviced by an AXIS 5400+/AXIS 5600+ 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.



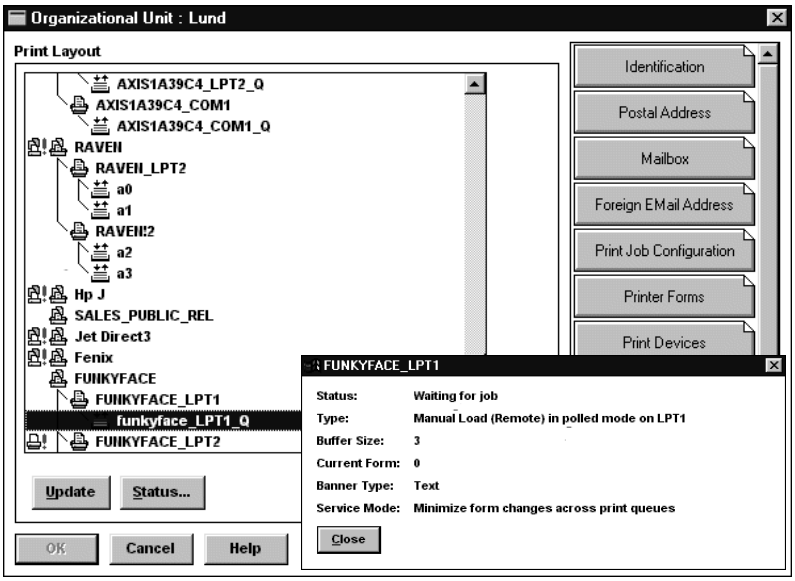
NetWare Administrator Printer Status Menu

Notification

You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the AXIS 5400+/AXIS 5600+, 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 5400+/AXIS 5600+ 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

Section 10 Configuration Possibilities

This section describes some configuration possibilities offered by the AXIS 5400+/AXIS 5600+:

Auto-detect Printer Type

The print server can automatically detect the type of printer you are using if you enable **Auto-detect Printer Type**. The print server can then recognize Epson and Hewlett Packard InkJet printers. Most Epson and Hewlett Packard InkJet printers that have Mac OS printer drivers for network printing are supported. If Auto-detect Printer Type is disabled, the AppleTalk printer type has to be specified manually in the print server. For Epson InkJets it would be "EPSONLQ2" and for HP InkJets it would be "DeskWriter". If the print server does not recognize the connected printer the default setting, "LaserWriter" will be used as printer type. "LaserWriter" is the recommended setting to be used with all PostScript printers.

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

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

E-mail Notification

Whenever an event that needs human intervention occurs in a network printer, the concerned person can be notified by e-mail. This 'trouble-report' contains a short and concise description of the event. Five events are covered: **Paper Jam, Out of Paper, Toner Low, No Toner, Printer Off-line**.

In order to determine who the e-mail recipients will be of these different trouble-reports, follow these instructions:

1. From your print server's internal web page, go to: **Admin** | **Network Settings** | **Detailed View** | **e-mail Notification.** The following options will appear:

Options	E-mail recipient
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**

IPP (Internet Printing Protocol)

The AXIS 5400+/AXIS 5600+ enables printing over the Internet with IPP (Internet Printing Protocol), an industry standard that allows users to print to remote printers across the Internet.

With IPP, a user with an Internet connection can send a document to any printer which is connected to the Internet. IPP is platform independent and can be used to print over any LAN or WAN that supports TCP/IP.

In practical terms, this means that you can send documents to a remote printer as an addition to or replacement of fax and e-mail, with the same quality and color options of traditional network printing.

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 99.
- The printer to which you want to send your print job needs to be connected to *a print server with IPP functionality*. The print server makes it possible for your printer to receive print jobs from an IPP client. The IPP functionality of the 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 brand and model of the printer** in order to install the appropriate printer driver.

Address Schemes for IPP Printers

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

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

Example using a Host Name in the 1.0 Standard:

If "axisps" is the host name of the print server, "631" is the port number and "LPT1" is the local printer port name, then the syntax of the address scheme will be **http://axisps:631/LPT1** in the 1.0 standard.

Example using an IP Address in the 1.1 Standard:

If "171.16.5.218" is the IP address of the print server and "LPT1" is the local printer port name, then the syntax of the address scheme will be **ipp://171.16.5.218/LPT1** in the 1.1 standard.

IPP 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 5400+/AXIS 5600+ with integrated IPP is compatible with any 1.0 and 1.1 compliant IPP client.

The AXIS 5400+/AXIS 5600+ 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 IPP 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/2003**: the Microsoft IPP Client (automatically installed with the Operating System).
- **For Windows 98, NT 4.0**: IPP clients can be downloaded from the Microsoft Web site.
- **For UNIX/Linux**: CUPS (can be downloaded from the Common Unix Printing System Web site at www.cups.org).

If you wish to print using iPrint over IPP, the following Axis snap-in tool is available from www.axis.com (Support | Select Software):

- AXIS IPP Gateway Comfiguration Snap-in for i-Print in NetWare 5.x. See the read-me file for installation instructions.

IPP User Requirements

The IPP protocol does not require any special configuration of the AXIS 5400+/AXIS 5600+, the IPP function is automatically activated when you install your print server.

IPP is platform independent and functional in Windows (NT, 98, Me and 2000/XP/2003), Macintosh, NetWare and UNIX/Linux.

Firewall Considerations with IPP

If there are one or more firewalls between the IPP client and the server, you may have to make some changes to the firewall configuration. IPP uses TCP Port 631 for printing, so any firewalls between client and server must be configured to allow bi-directional traffic on that port. Please consult your network administrator if you think any configuration changes are necessary.

How to Print from Windows 98:

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

- **the 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 and type of the printer** in order to install the appropriate printer driver.

If your destination printer does not exist in your **Printer name** list, you need to add it. Adding an IPP printer to your printer list is described below.

1. Select the IPP printer to which you want to send your document. Choose the destination printer from the **Printer name** field (in **File** | **Print**).
2. When you press **Print**, the print job is sent over the Internet to the AXIS 5400+/AXIS 5600+, which then forwards the print job to the destination printer.
3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows 98

1. Install the IPP client for Windows 98 on your computer. This IPP client can be downloaded from the Microsoft Web site.
2. Open **Start** | **Settings** | **Printers.**
3. Choose **Add Printer**, then **Network Printer**.
4. In the **Printer** field in the **Connect to Printers** window, write the http:// address of the destination printer.
(*Example: 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 and you are ready to print using IPP.

How to Print from Windows NT:

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

- **the 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 and type of the printer** in order to install the appropriate printer driver.

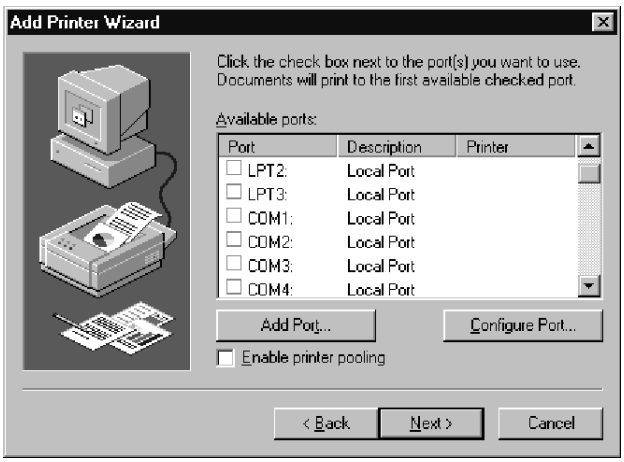
1. Select the IPP printer to which you want to send your document. Select the destination printer from your **Printer Name** list (in **File** | **Print** | **Printer Setup**).

   The printer name will begin with a URL: **http://...**

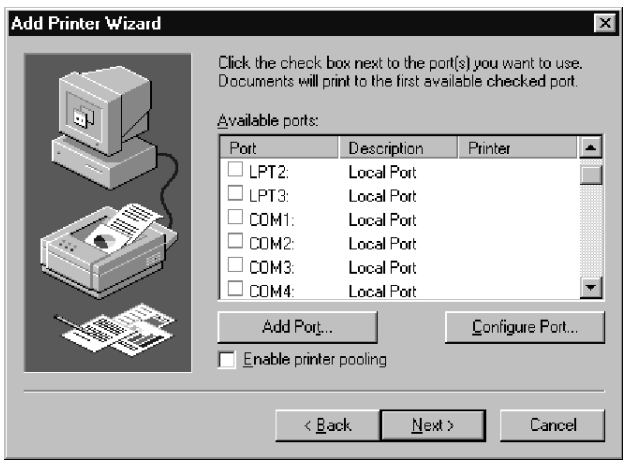
   If your destination printer does not exist in your **Printer Name** list, you need to add it. Adding an IPP printer to your printer list is described below.
2. Press **Print**. The print job is sent over the Internet/WAN to the AXIS 5400+/AXIS 5600+, which then forwards the print job to the destination printer.
3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows NT

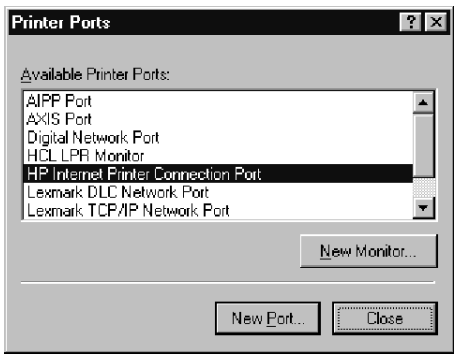
1. Install the **Internet Printer Connection** software from HP (can be downloaded from www.hp.com) on your computer.
2. Open **Start** | **Settings** | **Printers.**
3. Choose **Add Printer.** The Add Printer Wizard will start.
4. Next, the Wizard will ask you if you want to install on **My Computer** or on a **Network print server**. Choose **My Computer** and click **Next.**



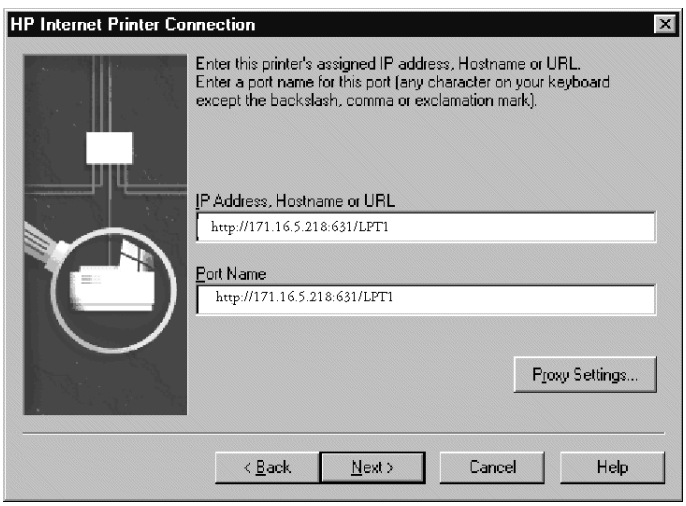
5. In the **Available Ports** window, click **Add Port**:



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



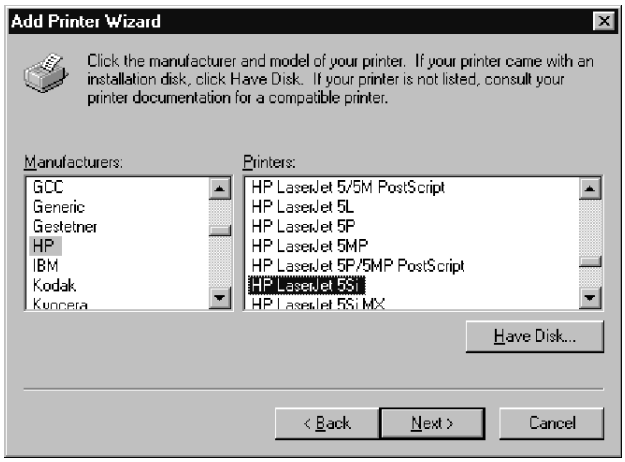
7. Choose **The HP Internet Printer Connection Port** and click **New Port.**
8. The HP Internet Printer Connection will start. Click **Next**.
9. In the **IP Address, Host Name or URL** field, type the http:// address of the AXIS 5400+/AXIS 5600+ to which the destination printer is connected. The URL will automatically appear in the **Port Name** field as well:



(*Example: http://171.16.5.218:631/LPT1* if you want to address the parallel port). Click **Next**.

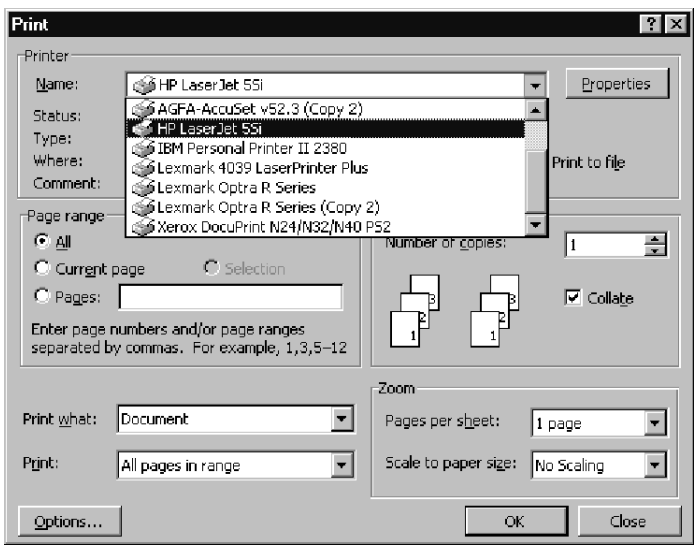
10. The Wizard will confirm the information you have entered. Click **Finish** to complete the installation and go back to the **Available Ports** list.
11. The IPP printer port list is now available in the **Available Ports** list. Click **Next.**

12. Next, choose a suitable driver for the destination printer and install it. Click **Next**.



13. You will be asked if you want the newly added printer to be your default printer and if you want to share the printer on your network with other users. Choose the alternatives that suit your printing needs and click **Finish** to complete the installation.

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



How to Print from Windows 2000/XP/2003

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 and type of the printer** in order to install the appropriate printer driver.

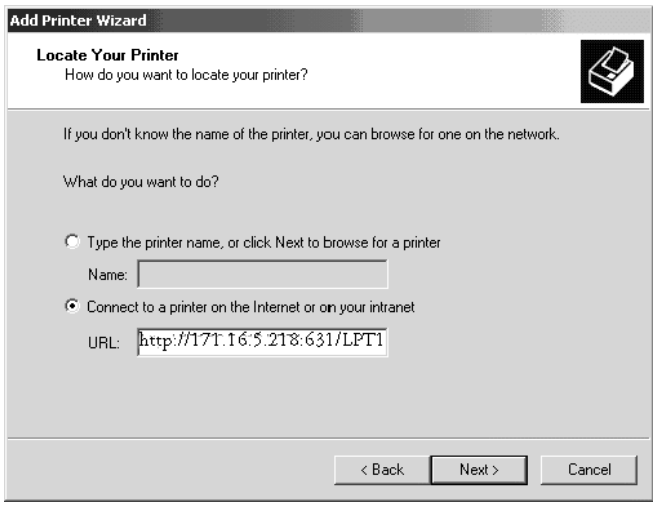
1. Select the IPP printer to which you want to send your document. Choose the destination printer from the **Select Printer** field (in **File** | **Print**).

   If your destination printer does not exist in your **Select Printer** list, you need to add it. Adding an IPP printer to your printer list is described below.

2. When you press **Print**, the print job is sent over the Internet to the AXIS 5400+/AXIS 5600+, which then forwards the print job to the destination printer.
3. The recipient of the print job can collect the print job at the destination printer.

Adding an IPP Printer to your Printer List in Windows 2000/XP/2003

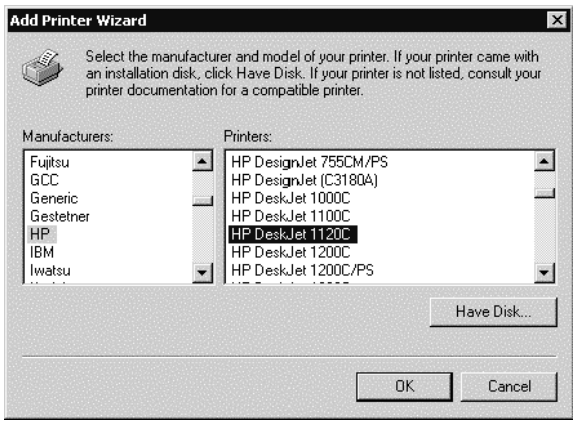
1. Choose **File** | **Print** from the document you wish to print.
2. In the **Select Printer** field, click the **Add Printer** icon. The **Add Printer Wizard** will start. Click **Next**.
3. The Wizard will ask you if you want to install a local printer or a network printer. Choose **Network Printer** and click **Next**.
4. Enter the printer http:// address in the **URL** field.



(*Example: http://171.16.5.218:631/LPT1* if want to address the parallel port) Click **Next**.

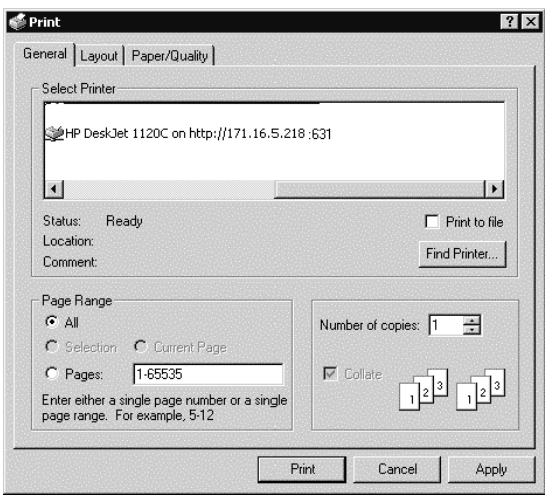
5. If you do not have a driver corresponding to the destination printer installed on your computer, the Wizard will prompt you to install one. Click **OK**.

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



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

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



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

Network Speed

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

To change the Network Speed in an Ethernet network, log in to the print server's internal Web pages and click **Admin** | **General Settings =>Change**. You have the options listed here:

Network Speed	*Comment*
AUTO_SENSE	This is the default value where the print server detects which speed is optimal for each network package you transfer.
10_HALF__DX	10 Half Duplex
10_FULL_DX	10 Full Duplex
100_HALF_DX	100 Half Duplex
100_FULL_DX	100 Full Duplex

The default Network Speed value is AUTO_SENSE, which is the correct option for the majority of users.
If you choose a faulty Network Speed option for your network, you may loose contact with the print server.
You can reset the Network Speed parameter to AUTO_SENSE, you will have to reboot the print server (disconnect and then re-connect the external power supply).

NetWare Packet Signature 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.

Changing Language in the print server's web interface

English, French, German, Italian, Japanese and Spanish is supported in the print server's web interface, with English as the default language.
You can change the language used for the print server's Web interface from the **User** mode:

1. Click the **Change** button next to 'Language'.
2. Choose your preferred language and character set from the drop-down lists, cllick OK and then press **F5** to refresh the view.

You can change the **Character Set** by clicking the **Change** button. The default Character Set is **ISO-8859-1**, which can be applied in most cases. Japanese requires SHIFT_JIS.

Enabling Secure Web Services — SSL/TLS

In a new and unconfigured AXIS 5400+/AXIS 5600+, SSL/TLS is **disabled**.

Certificates

To use SSL/TLS you have to create or obtain a digital certificate. There are two kinds of certificates: self-signed certificates and third party certificates.

- Self-signed certificates are less secure but normally they are sufficiently secure for small networks with no public access. You generate such a certificate yourself and there are no fees to pay.
- For large networks and for networks with public access, third party certificates from a trusted source are normally used. You obtain them for a yearly fee from a Certificate Authority (CA).

Among other things, a certificate gives information about which domain it is issued for, its validity and the name of issuer. With SSL/TLS enabled, the installed certificate authenticates the print server to the client and all information exchanged between them will be encrypted.

Enabling SSL via the Web Interface

You enable the print server's secure Web services through its internal Web pages. If you have a valid certificate loaded, select **Admin** | **Network Settings** | **Detailed View**| **TCP/IP** and set the **HTTPS Enabled** parameter to **Yes**.

If you do not have a valid certificate loaded, select **Admin** | **Security Settings** and click **Create**.

Decide whether you want to generate a self-signed certificate or if you want to generate a certificate request.

Generating a Self-Signed Certificate

1. Select the **Generate Self-Signed Certificate** radio button and click **Next**.
   - Enter the data asked for:
   - Country Name: ***Example***: US
   - State or Province Name: ***Example***: California
   - Locality Name: ***Example***: Los Angeles
   - Organization Name: ***Example:*** Printers Inc
   - Organizational Unit Name: ***Example:*** Sales Dept
   - Common Name*: ***Example:*** printserver2@company.com
   - Current Date (yyyy/mm/dd): ***Example:*** 2003/03/27
   - Validity Duration (in days): ***Example:*** 365

   * Common Name denotes the name given to the print server in the network. If you do not have a DNS server on your network, you must include the domain name, e. g. xxx@company.com
2. Click **Finish** and the print server will generate a public/private key pair as well as the self-signed certificate itself (this process will take a few minutes) and store these data in the print server.
3. When the certificate is generated, the print server automatically loads it into your present browser session. The browser reports the new state by changing into https mode. In the browser's Security Alert box, select **View Certificate** and **Install Certificate**. Follow the instructions of the Install Certificate wizard.

Generating a Certificate Request

1. Select the **Generate Certificate Request** radio button and click **Next**.
   - Enter the data asked for:
   - Country Name: ***Example:*** US
   - State or Province Name: ***Example:*** California
   - Locality Name: ***Example:*** Los Angeles
   - Organization Name: ***Example:*** Printers Inc
   - Organizational Unit Name: ***Example:*** Sales Dept
   - Common Name*: ***Example:*** printserver2@company.com
   - Current Date (yyyy/mm/dd): ***Example:*** 2003/03/27
   - Validity Duration (in days): ***Example:*** 365

   * Common Name denotes the name given to the print server in the network. If you do not have a DNS server on your network, you must include the domain name, e. g. xxx@company.com
2. Click **Finish**.
3. Now the print server will generate a public/private key pair and a PEM-encoded Certificate Request, called *cert.pem*. Click **Save**, **Save this file to disk** and **Save**. Send this Certificate Request to your Certificate Authority for their signature.

Importing a Certificate

When you receive the PEM-encoded certificate from your Certificate Authority, open the print server's Web interface and select **Admin** | **Security Settings**. Click **Import** and follow the instructions on the screen.

Accesing the print server's web pages over https://

Whenever SSL/TLS is enabled, you can only reach the print server's Web interface through the secure services. The unsecure way via http:// is closed and now you have to address the print server's Web interface in the secure way, i.e. via https://.

Disabling Protocols

To further increase security, you must disable protocols that are considered insecure;

- FTP (also used by AXIS ThinWizard. Note that if FTP is disabled, AXIS ThinWizard can not function properly.)
- Telnet
- Auto-IP
- DHCP
- BOOTP
- Remote Config (used by AXIS NetPilot)
- SNMPv1 Configuration

To disable these protocols, go to **Admin** | **Security Settings** | **Protocol Settings** | **Detailed View** and mark the check boxes. Click **OK** to finish. *Only enabled protocols will be visible from this view!*

To enable these protocols, select **Admin** | **Network Settings** | **Detailed View** | **TCP/IP** for FTP, Telnet, AutoIP, DHCP and BOOTP. Remote Config is enabled via **Admin** | **General Settings** | **RConfig Support**.

Important:

To ensure maximum security, it is highly recommended that you change your Administrator password after generating a certificate and disabling insecure protocols! This is done from **Admin** | **General Settings** | **Change =>** | **General** | **Root Password.**

Checking SSL/TLS Status

To check SSL/TLS status, open the print server's Web interface and select **Admin** | **Network Settings** | **Detailed View**| **TCP/IP** to see if the **HTTPS Enabled** parameter is set to Yes or No.

To View a Certificate

To view a Certificate, open the print server's Web interface, select **Admin** | **Security Settings** and click **View** next to the Certificate.

To Delete a Certificate

To delete a Certificate, open the print server's Web interface, select **Admin** | **Security Settings** and click **Delete** next to the Certificate.

Section 11 Logical Printers

The print server has a powerful facility for altering the print data. This means that your desired print format can be realized on any type of printer. The following actions can be invoked from the print server:

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

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 server's internal Web pages: Open a Web browser, enter the IP address of the print server in the Location/Address field and select **Admin** | **Logical Printers**.

The logical printers can also be set up by editing the *config* file. See *"Editing the config File"* on page 100.

Notes:

- The examples in this section describe how you can configure the available logical printers using a standard Web browser. If you want to set them directly by editing the *config* file, just enter the values for the corresponding parameters.
- The examples should only be viewed as suggestions how to configure the logical printers. You should, of course, configure them according to the needs of your network.
- In the Parameter List chapter of this manual, you can find a complete list of the print server's parameters.

Character Set Conversion

A common problem in a multiple host environment is that different hosts use different ASCII character sets. As a result of this, language specific characters (such as å ü ô ñ) are sometimes printed incorrectly.

The AXIS 5400+/AXIS 5600+ solution to this problem is to assign a character set conversion filter to a logical printer, and then link that logical printer to the host causing the problem.

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

Example:

Your network contains a host using the character set ISO 8859-2 and a host using the character set DEC.

In order to direct print jobs to the printer connected to the AXIS 5400+/AXIS 5600+, you should assign the host to a separate logical printer, and install a character set conversion filter.

Follow the instructions below to change the conversion filter:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** tab.
3. Set the parameter **Physical Port** to e.g. **LPT1**.
4. Set the parameter **Character Set Conversion** to **ISO>IBM**.
5. Click the **OK** button.
6. Select the **PR2** tab.
7. Set the parameter **Physical Port** to e.g. **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 Printers.**
2. Select the **PR5** tab.
3. Enter the string **04** in the **String After Print Job** text field.
4. Click the **OK** button.

Example:

You have an HP LaserJet printer with dual trays, and want to print on pre-printed forms when using the logical printer PR4. The standard forms are taken from the lower tray, and the pre-printed forms are taken from the upper tray. The string before print job should contain the command to select the upper tray: $^{E}_{C}$&l1H (hex 1B 26 6C 31 48). The string after print job should contain the command to select the lower tray: $^{E}_{C}$&l4H (hex 1B 26 6C 34 48).

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

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR4** tab.
3. Enter the string **1B 26 6C 31 48** in the **String Before Print Job** text field.
4. Enter the string **1B 26 6C 34 48** in the **String After Print Job** text field.
5. Click the **OK** button.

String Substitutions

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

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

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

Example:

Assume that you want to replace the UNIX/Linux New Line (hex 0A) with an Carriage Return/Line Feed (hex 0D 0A) for logical printer PR1.

Follow the instructions below to substitute command strings:

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

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

4. Click the **OK** button.

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

Example:

Assume that you want to replace the UNIX/Linux New Line (hex 0A) with an Carriage Return/Line Feed (hex 0D 0A), and the printer command $^{E}_{C}$G1 (hex 1B 47 31) with $^{E}_{C}$Y (hex 1B 59) for logical printer PR2.

Follow the instructions below to substitute command strings:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Enter the string **01 0A 02 0D 0A 03 1B 47 31 02 1B 59** in the **String Substitutions** text field.

Hex code	*Explanation*
01	length of the UNIX/Linux New Line command
0A	the UNIX/Linux New Line command
02	length of the Carriage Return/Line Feed command
0D 0A	the Carriage Return/Line Feed command
03	length of the printer command to replace
1B 47 31	the printer command to replace
02	length of the new printer command
1B 59	the new printer command

Click the **OK** button.

Note:

Extensive use of string substitutions will naturally decrease the throughput rate of the AXIS 5400+/AXIS 5600+.

ASCII to Postscript Conversion

The AXIS 5400+/AXIS 5600+ logical printers can translate ASCII print data into PostScript format. This makes it possible to print on a PostScript printer from a host that does not support PostScript. The conversion is selected by activating a filter that converts ASCII data into Postscript. This filter can be activated individually for each logical printer.

Activate your desired filter by setting the Printer Language Translation (PRx_FILT.) parameter.

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

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.
4. Click the **OK** button.

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

PostScript Settings

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

- page size
- page orientation
- page format
- which font to use

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

Page Format Parameter	*Default Value*	*Comment*
Lines per page (MPL)	66	
Characters per line (MPP)	0	0 = disable line wrap
Characters per inch (CPI)	100	100 = 10 char per inch
Lines per inch (LPI)	60	60 = 6 lines per inch
Left margin (LM)	30	30 = 3.0 mm
Top margin (TM)	50	50 = 5.0 mm

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

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

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR2** tab.
3. Set the **Printer Language Translation** parameter to **POSTSCR**.

4. Set the **PostScript Page Size** parameter to **LETTER**.
5. Set the **PostScript Page Orientation** parameter to **LANDS**.
6. Enter the string **48 0 120 60 30 50** in the **PostScript Page Format** text field.

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

7. Enter the string **Helvetica** in the **PostScript Font** text field.
8. Click the **OK** button.

Redirecting Print Jobs when a Printer is Busy

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

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

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR1** tab.
3. Set the **Physical Port** parameter to **LPT1**.
1. Set the **Secondary Printer** parameter to **PR3**.
2. Set the **Wait On Busy** parameter to **NO**.
3. Click the **OK** button.
4. Select **Admin** | **Logical Printers** and the **PR3** tab.
5. Set the **Physical Port** parameter to **LPT2**.
6. Click the **OK** button.

Notes:

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

Read Back of information

The AXIS 5400+/AXIS 5600+ 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 Printers.**
2. Select the **PR1** tab.
3. Set the **Read Back Port** parameter to **NONE**.
4. Click the **OK** button.

Debugging using the Hex Dump Mode

When hex dump mode is enabled, the print data is printed as hexadecimal byte values rather than characters; printer control commands are also printed as hex values. This allows you to inspect what control and print characters are actually being sent to the printer, which is a useful debugging facility for more difficult printing problems.

Example: Follow the instructions below to enable the hex dump mode for PR3:

1. From the print server's internal Web page, select **Admin** | **Logical Printers.**
2. Select the **PR3** tab.
3. Set the **Hex Dump Mode Enabled** radio button to **YES**.
4. Click **OK**.

Note:

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

Section 12 IP Addressing

IP Address and Subnet Mask

The print server must be correctly configured with the following information to function properly:

- an IP address
- a subnet mask
- a default gateway (or router)

IP Address

Each device on your network must have a unique IP address to operate correctly. An IP address identifies the address of the device to which data is being sent and the address of the destination network. IP addresses have the format n.n.n.x where n is a decimal number between 0 and 255 and x is a number between 1 and 254 inclusive.

Subnet Mask

In addition to the IP address, you need to set a subnet mask. All networks are divided into smaller sub-networks and a subnet mask is a number that enables a device to identify the sub-network to which it is connected.
For your network to work correctly, all devices on the subnet must have:

- The same sub-network address
- The same subnet mask

The only value that will be different is the specific host device number. This value must always be unique. The size of the network determines the structure of the IP addresses in it.

Default Gateway

In a network using subnets, the **router** that forwards traffic to a destination outside of the subnet of the transmitting device. If there is a server or a router which functions as a gateway, enter the IP address of the server or the router.

IP address and Subnet Mask structures

Two of the most common types of IP Address and subnet mask structures are described here:

Type One

In a small network, the IP address example '192.168.3.191' is split into two parts:

- Part one ('192.168.3') identifies the network on which the device resides.
- Part two ('.191') identifies the device within the network.

This type of IP Address generally operates on a subnet mask of '255.255.255.0'.

Type Two

In larger networks, where there are more devices, the IP address of '192.168.3.191' is split into two parts but is structured differently:

- Part one ('192.168') identifies the network on which the device resides.
- Part two ('.3.191') identifies the device within the network.

This type of IP Address operates on a subnet mask of '255.255.0.0'.

Default Gateway Examples

1. This example shows a network with:

- one computer
- one networked printer
- no router

Device	*IP address*	*Subnet Mask*	*Default Gateway*
print server	192.168.3.191	255.255.255.0	*
pc1	192.168.3.192	255.255.255.0	*

** When no router is present on the network, the default gateway can be left undefined.*

2. This example shows a network with:

- one computer
- one networked printer
- a router with ip value: 192.168.3.**1**

Device	*IP address*	*Subnet Mask*	*Default Gateway*
print server	192.168.3.191	255.255.255.0	192.168.3.**1**
pc1	192.168.3.192	255.255.255.0	192.168.3.**1**

Obtaining an IP address and subnet mask

There are three different ways to obtain an IP address and subnet mask. These are:

- Dynamic Host Configuration Protocol (DHCP) Addressing
- Static Addressing
- Automatic Addressing (Auto-IP Addressing)

DHCP Addressing

If your network contains a DHCP server, print servers on your network will obtain an IP address and subnet mask automatically. DHCP assigns a temporary IP address and subnet mask which gets reallocated once you disconnect from the network. DHCP will work on any client Operating System such as Windows® 95, Windows 98 or Windows NT 4.0. Also, using DHCP means that the same IP address and subnet mask will never be duplicated for devices on the network. DHCP is particularly useful for networks with large numbers of users on them.

Static Addressing

With this method you must enter an IP Address and the subnet mask manually on every device. Using a static IP and subnet mask means the address is permanently fixed.

Auto-IP Addressing

Network devices use automatic IP addressing if they are configured to acquire an address using DHCP but are unable to contact a DHCP server. Automatic IP addressing is a scheme where devices allocate themselves an IP address at random from the industry standard subnet of 169.254.x.x (with a subnet mask of 255.255.0.0). If two devices allocate themselves the same address, the conflict is detected and one of the devices allocates itself a new address.

Automatic IP addressing support was introduced by Microsoft in the Windows 98 operating system and is also supported in Windows 2000/XP/2003.

Registering and Resolving Host Names

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

The host name of the print server is specified by the PS_NAME. parameter. Refer to the *"The Parameter List"* on page 130.

WINS Host Name Rules

WINS only supports 15 character long host names. If your host name is longer than 15 characters, the print server truncates the host name to 15 characters when registering with a WINS server. You can view the print server's host name that is registered at a WINS server in the print server's Web interface. Refer to *"Print Server Management"* on page 86.

DDNS Host Name Rules

DDNS supports 47 character long host names and can only consist of the characters 'A-Z', 'a-z', '0-9' and '-'. If your host name consists of any other characters, they are converted to '-' when registering with a DDNS server. You can view which host name that is registered at a DDNS server in the print server's Web interface. Refer to *"Print Server Management"* on page 86.

If the host name matches another entry in the DDNS data base, the print server deletes that entry before registering.

Notes:

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

Setting the IP Address using DHCP

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

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

2. Activate the scope. The print server automatically downloads the DHCP parameters. If you are using WINS or DNS, you should include at least one WINS or DNS server IP address in the DHCP scope. Immediately after the IP address has been received, the print server registers its host name and IP address on the WINS alternatively DNS server. Refer to *"Registering and Resolving Host Names"* on page 121 for more information. The print server can automatically download a customized *config* file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your DHCP scope. The *config* file is downloaded immediately after the print server receives its IP address.
3. You have now successfully set the IP address of your print server.

Note:

You have to restart the print server to download the IP address.

Section 13 The Test Button

The test button is located on the front right hand side of the AXIS 5400+/AXIS 5600+ and is used for:

- Printing a test page to check the connection to the printer.
- Printing a parameter list to see the print server's current settings.
- Performing a Factory Default of the print server.

If you want to change any of the parameters, use one of the methods described in *Section 1 Print Server Management*, on page 86.

Printing a Test Page

Press the test button **once** to print a test page. The test page contains basic information about the AXIS 5400+/AXIS 5600+. It is recommended that you print a test page every time you connect the print server to a printer.

Note:

For AXIS 5600+: if just one of ports is connected to a printer, the test page will be printed on that port. If each port is connected to a printer, the default setting will send the test page to the parallel printer. The default behavior can be changed from the print server's internal Web pages under **Admin** | **General Settings =>Change**.

Printing the Parameter List

Press the test button **twice** to print a parameter list showing the current AXIS 5400+/AXIS 5600+ settings. This list provides comprehensive details of all the parameters and their current status. Refer to *Section 16 The Parameter List*, on page 130.

Performing a Factory Default

1. Remove the external power supply to switch off the print server.
2. Press and hold down the test button, while you reconnect the external power supply.
3. Continue to hold down the test button until the network indicator remains constantly lit. This should take about 20 seconds.
4. Restart the print server by disconnecting and reconnecting the external power supply.

For print servers with firmware version 6.43 and higher, a Factory Default will reset all AXIS 5400+/AXIS 5600+ parameters and settings to their default values, except:
- Installed certificate
- Private key

Section 14 Troubleshooting

This section provides useful information to help you resolve difficulties you might have with your AXIS 5400+/AXIS 5600+. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

Please visit the Axis Web site for latest troubleshooting tips, more support and additional help through the FAQ database or to fill in and submit a Support question.

LED Indicators

Indicator	*Color/Behavior*	*Explanation*
Power	Yellow	OK
	Not lit	No power/Error
Network	Orange	OK - network connected
	Orange flashing	Activity on network
	Not lit	No physical connection to the network

Web Interface

Symptoms	*Possible causes*	*Remedial actions*
The AXIS AXIS 5400+/AXIS 5600+ Web interface cannot be accessed from a Web browser.	The AXIS 5400+/AXIS 5600+ is not connected properly.	1. Check Power and Network indicator. 2. Check that assignment of IP addresses for the AXIS 5400+/AXIS 5600+ is correct. 3. To further check the IP addresses, run the Ping command from another computer as described in "IP address check" at the end of this chapter. Follow the appropriate recommendations.
	Problem with your proxy server.	Verify the proxy server settings in your Web browser.
	Other networking problems.	1. Verify that your network is accessible through your network socket. 2. Verify that your network cable is functional.

IP Address Check with Ping

By sending a data packet to a specific IP address and waiting for a reply, Ping can determine whether that IP address is accessible. Ping can also help you to determine IP address conflicts with your AXIS 5400+/AXIS 5600+ and troubleshoot TCP/IP problems on the network. Follow the instructions below to diagnose your problem.

Windows:

Open a Command Prompt and enter the following commands:

	Syntax	*Example*
1.	arp -s <IP address> <Ethernet address>	arp -s 192.168.3.191 00-40-8c-10-00-86
2.	ping <IP address>	ping 192.168.3.191

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

UNIX/Linux and MacOSX

Open a Terminal and enter the following commands:

	Syntax	*Example*
1.	arp -s <IP address> <Ethernet address>	arp -s 192.168.3.191 00:40:8c:10:00:86
2.	ping <IP address>	ping 192.168.3.191

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

Replies:

Subsequent replies will provide an explanation of the cause of the problem. Replies from DOS can be interpreted as defined in the table below (for UNIX/Linux replies please refer to the UNIX/Linux chapter of this manual):

Ping Reply	*Interpretation and recommendation*	
	Axis Network Print Server connected	*Axis Network Print Server disconnected*
bytes = 32 time = 2 ms..... - or something similar	The AXIS 5400+/AXIS 5600+ is responding correctly. There are probably no conflicts with the IP address - disconnect the AXIS 5400+/AXIS 5600+ and ping again to verify.	The IP address is already in use and cannot be used again. You must obtain a new IP address for your AXIS 5400+/AXIS 5600+.
destination host unreachable	The AXIS 5400+/AXIS 5600+ is not accessible. Check your network settings.	–
request timed out	The IP address is not in use. You are either pinging the wrong IP address or your AXIS 5400+/AXIS 5600+ does not have the correct IP address.	This IP address is not used by anyone and is available for use for your AXIS 5400+/AXIS 5600+. Set the IP address again, power on the AXIS 5400+/AXIS 5600+ and then try accessing the unit.
no response from ping command	The AXIS 5400+/AXIS 5600+ is not accessible. Check your network settings.	–

Axis Support Server Report

In order to obtain optimal support from Axis support technicians, please follow these instructions when filling in and submitting a Support question.

1. Go to the print server's Web pages by typing the print server's IP address in the **Address/Location** field of your Web browser.
2. Go to **Admin** | **Support**. Click the **Server Report** link. A new window will open.
3. Save the Server report as an HTML file (with an .html file extension) and go to the Axis Web site.
4. Choose **Support** and report your case, attaching the Server Report.

Section 15 Technical Specification

Supported Printers:	All printers **except host-based printers** (also known as GDI, PPA or Windows-based printers).
Supported Systems:	
Microsoft Windows:	Windows NT4, Windows 98, Windows Me, Windows 2000, Windows XP, Windows Server 2003. 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.
	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. Print Methods: LPD, FTP, PROS (named pipe & filtered), Reverse Telnet.
Apple EtherTalk:	Print Method: AppleTalk Phase 2.
WWW:	Netscape Communicator 4.7 and above, Internet Explorer 4.0 and above, Mozilla 1.0 and above.

Supported Protocols:	
Windows and OS/2:	NetBIOS/NetBEUI or TCP/IP, WINS.
NetWare:	IPX, IP, iPrint, 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, TFTP, SLP, Raw TCP, IPP, AutoIP, DDNS.
Apple EtherTalk:	AAPR, ATP, DDP, NBP, PAP, RTMP, ZIP.

Secure Management:	SSL 2.0, 3.0, TLS 1.0, HTTPS
NetWare:	Encrypted passwords, NetWare Packet Signature Level 1, 2, 3.
UNIX/Linux:	Root password, user access list and printer access.
Network Management:	Print server/job/printer status presentation and management via NWAdmin/PCONSOLE. AXIS ThinWizard for monitoring, configuration and firmware upgrade.
Available languages:	English, French, German, Italian, Japanese, Spanish in the print server's web interface.
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.
Wired Network Attachments:	
Ethernet:	RJ-45 connector (Category 5 twisted pair cable) for 10baseT Ethernet or 100base TX Fast Ethernet.
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.
Printer Ports:	• AXIS 5400+: Parallel port: 36-pin Centronics connector. Highspeed IEEE 1284 compliant with ECP support and throughput of 1 MB/sec. • AXIS 5600+: 25-pin DSUB connector. Highspeed IEEE 1284 compliant with ECP support and throughput of 1 MB/sec. • Serial port: 9-pin DSUB connector, RS-232, XON/ XOFF or RTS/CTS, data rates up to 115.200 baud
Power Consumption:	5400+: Maximum 3W 5600+: Maximum 5W Power provided by Power Adapter type PS-H: 5.1V DC 2000 mA
Dimensions:	*Height x Width x Depth* AXIS 5400+: 1.1in (29 mm), 2.4in (62 mm), 5.1in (130 mm) AXIS 5600+: 1.1in (29 mm), 2.4in (62 mm), 4.6in (117 mm) *Weight* AXIS 5400+: 0.17lb (77g)

AXIS 5600+: 0.18lb (81g)

Environmental:

Temperature: 40 - 105 °F (5 - 40 °C)

Safety: EN 60950, 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.

Test button for information printouts.

All specifications are subject to change without prior notice.

Section 16 The Parameter List

You will find a complete list of all Axis print server parameters on www.axis.com

AXIS 5400+

--- General Menu

NODE_ADDR. : 00 40 8C xx xx xx

NETWORK_SPEED. : AUTO_SENSE (AUTO_SENSE, 10_HALF_DX, 10_FULL_DX, 100_HALF_DX, 100_FULL_DX)

PS_NAME. : AXISXXXXXX

ROOT_PWD. : pass

USERS. :

BASE_URL. : www.axis.com

CHARSET. : ISO-8859-1 (SHIFT_JIS, ISO-8859-1, UTF-8)

LANG. : English (English, French, German, Spanish, Italian, Japanese)

AXIS_PRINT_SYSTEM. : YES

RCONFIG_ENB. : YES

DEF_OUT. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

SYS_LOC. :

SYS_CONT. :

P1284_4_UDP. : 0 0 0 0

--- TCP/IP Menu

TCP_ENB. : YES

INT_ADDR. : 10 13 4 132

DEF_ROUT. : 0 0 0 0

NET_MASK. : 0 0 0 0

HTTPS_ENB. : NO

PROS_PWD. : netprinter

PROS_PRT. : 35

LPD_BANN. : OFF (OFF, AUTO, LAST)

DHCP_ENB. : NO

AUTOIP_ENB. : NO

BOOTP_ENB. : YES

RARP_ENB. : YES

WINS_ENB. : YES

WINS_ADDR1. : 0 0 0 0

WINS_ADDR2. : 0 0 0 0

NBT_SCOPE_ID. :

DNS_ENB. : YES

DNS_ADDR1. : 0 0 0 0

DNS_ADDR2. : 0 0 0 0

DOMAIN_NAME. :

SLP_ENB. : YES

SLP_SCOPE_LIST. : DEFAULT

SMTP_SERVER. :

FTP_ENB. : YES

TELNET_ENB. : YES

DEFAULT_RAW_TCP. : 9100 (9100, CLOSED)

RTN_OPT. : NO

RTEL_PR1. : 0

RTEL_PR2. : 0

RTEL_PR3. : 0

RTEL_PR4. : 0

RTEL_PR5. : 0

RTEL_PR6. : 0

RTEL_PR7. : 0

RTEL_PR8. : 0

DEF_IP_FRAME_TYPE. : EthernetII (EthernetII, SNAP)

--- SNMP Menu

SNMP_ENB. : YES

SNMP_V1_CONFIG. : YES

READ_COM. : public

WRT_COM. : pass

TRAPADDR. : 0 0 0 0

TRAP_COM. : public

SYS_NAME. :

SNMP_AUT. : DISABLE (DISABLE, ENABLE)

TRAP_PRT. : DISABLE (DISABLE, ENABLE)

--- NetWare Menu

NETW_ENB. : YES

NETW_TRANSPORT_PROTOCOL. : DUAL_STACK (IPX_ONLY, IP_ONLY, DUAL_STACK)

NDPS. : TCP_AND_SPX (TCP_AND_SPX, TCP_ONLY, SPX_ONLY, DISABLED)

JOB_CHECK_DELAY. : 5

CONF_CHECK_DELAY. : 300

FR_802_3. : YES

FR_ETH_2. : YES

FR_802_2. : YES

FR_SNAP. : YES

NCP_BURST_MODE. : YES

PSERVER_NDS_TREE. :

PSERVER_NDS_FILESERVER. :

PSERVER_NDS_DISTINGUISHED_NAME. :

PSERVER_BINDERY1. :

PSERVER_BINDERY2. :

PSERVER_BINDERY3. :

PSERVER_BINDERY4. :

PSERVER_BINDERY5. :

PSERVER_BINDERY6. :

PSERVER_BINDERY7. :

PSERVER_BINDERY8. :

PSERVER_BINDERY9. :

PSERVER_BINDERY10. :

PSERVER_BINDERY11. :

PSERVER_BINDERY12. :

PSERVER_BINDERY13. :

PSERVER_BINDERY14. :

PSERVER_BINDERY15. :

PSERVER_BINDERY16. :

NPRINTER1. :

NPRINTER2. :

NPRINTER3. :

NPRINTER4. :

NPRINTER5. :

NPRINTER6. :

NPRINTER7. :

NPRINTER8. :

--- NetBIOS/NetBEUI Menu

LSLM_ENB. : YES

NB_FR_TYPE. : FR_802_2 (FR_AUTO, FR_802_2, FR_DIX)

LPRINT_1. : AX634000.LP1

LLOGIC_1. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_2. :

LLOGIC_2. : PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_3. :

LLOGIC_3. : PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_4. :

LLOGIC_4. : PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_5. :

LLOGIC_5. : PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_6. :

LLOGIC_6. : PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_7. :

LLOGIC_7. : PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

LPRINT_8. :

LLOGIC_8. : PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

--- AppleTalk Menu

ATLK_ENB. : YES

ATK_ZONE. :

ZONER_EN. : YES

ATK_FONT. : DEFAULT (DEFAULT, 35N, ALL)

AUTO_DT_PRIN. : NO

APRINT_1. : AXIS634000_LPT1

ATYPE_1. : LaserWriter

ALOGIC_1. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

BINARY_TYPE_1. : TBCP (TBCP, BCP, NONE)

APRINT_2. : AXIS634000_2

ATYPE_2. :

ALOGIC_2. : PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)

BINARY_TYPE_2. : TBCP (TBCP, BCP, NONE)

--- Printer1 Menu

PR1_NAME. :

PR1_IN. : AUTO (AUTO, NONE)

PR1_BEF. :

PR1_STR. :

PR1_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR1_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR1_AFT. :

PR1_DUMP. : NO

PR1_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR1_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR1_FORM. : 66 0 100 60 30 50

PR1_FONT. :

--- Printer2 Menu

PR2_NAME. :

PR2_IN. : AUTO (AUTO, NONE)

PR2_BEF. :

PR2_STR. :

PR2_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR2_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR2_AFT. :

PR2_DUMP. : NO

PR2_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR2_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR2_FORM. : 66 0 100 60 30 50

PR2_FONT. :

--- Printer3 Menu

PR3_NAME. :

PR3_IN. : AUTO (AUTO, NONE)

PR3_BEF. :

PR3_STR. :

PR3_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR3_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR3_AFT. :

PR3_DUMP. : NO

PR3_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR3_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR3_FORM. : 66 0 100 60 30 50

PR3_FONT. :

--- Printer4 Menu

PR4_NAME. :

PR4_IN. : AUTO (AUTO, NONE)

PR4_BEF. :

PR4_STR. :

PR4_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR4_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR4_AFT. :

PR4_DUMP. : NO

PR4_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR4_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR4_FORM. : 66 0 100 60 30 50

PR4_FONT. :

--- Printer5 Menu

PR5_NAME. :

PR5_IN. : AUTO (AUTO, NONE)

PR5_BEF. :

PR5_STR. : 01 0A 02 0D 0A

PR5_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR5_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR5_AFT. :

PR5_DUMP. : NO

PR5_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR5_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR5_FORM. : 66 0 100 60 30 50

PR5_FONT. :

--- Printer6 Menu

PR6_NAME. :

PR6_IN. : AUTO (AUTO, NONE)

PR6_BEF. :

PR6_STR. : 01 0A 02 0D 0A

PR6_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR6_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR6_AFT. :

PR6_DUMP. : NO

PR6_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR6_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR6_FORM. : 66 0 100 60 30 50

PR6_FONT. :

--- Printer7 Menu

PR7_NAME. :

PR7_IN. : AUTO (AUTO, NONE)

PR7_BEF. :

PR7_STR. : 01 0A 02 0D 0A

PR7_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR7_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR7_AFT. :

PR7_DUMP. : NO

PR7_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR7_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR7_FORM. : 66 0 100 60 30 50

PR7_FONT. :

--- Printer8 Menu

PR8_NAME. :

PR8_IN. : AUTO (AUTO, NONE)

PR8_BEF. :

PR8_STR. : 01 0A 02 0D 0A

PR8_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR8_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR8_AFT. :

PR8_DUMP. : NO

PR8_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR8_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR8_FORM. : 66 0 100 60 30 50

PR8_FONT. :

--- LPT1 Menu

L1_CENTR. : HISPEED (IBM_PC, STNDRD, FAST, HISPEED, HINOACK)

L1_BSYTM. : 60

L1_MGM_INFO. : AUTO (DISABLE, AUTO)

L1_COMMENT. :

L1_BIDIR. : AUTO (DISABLE, AUTO)

L1_READT. : 3

--- Email Menu

EMAIL_NOTIFICATION. : YES

REPLY_ADDRESS. :

PAPER_JAM_ADDRESS. :

OUT_OF_PAPER_ADDRESS. :

TONER_LOW_ADDRESS. :

NO_TONER_ADDRESS. :

PRINTER_OFFLINE_ADDRESS. :

AXIS 5600+

--- General Menu

NODE_ADDR. : 00 40 8C 63 AC 15

NETWORK_SPEED. : AUTO_SENSE (AUTO_SENSE, 10_HALF_DX, 10_FULL_DX, 100_HALF_DX, 100_FULL_DX)

PS_NAME. : AXIS63AC15

ROOT_PWD. : pass

USERS. :

BASE_URL. : www.axis.com

CHARSET. : ISO-8859-1 (SHIFT_JIS, ISO-8859-1, UTF-8)

LANG. : English (English, French, German, Spanish, Italian, Japanese)

AXIS_PRINT_SYSTEM. : YES

RCONFIG_ENB. : YES

DEF_OUT. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

SYS_LOC. :

SYS_CONT. :

--- TCP/IP Menu

TCP_ENB. : YES

INT_ADDR. : 10 13 4 234

DEF_ROUT. : 0 0 0 0

NET_MASK. : 0 0 0 0

HTTPS_ENB. : NO

PROS_PWD. : netprinter

PROS_PRT. : 35

LPD_BANN. : OFF (OFF, AUTO, LAST)

DHCP_ENB. : YES

AUTOIP_ENB. : YES

BOOTP_ENB. : YES

RARP_ENB. : YES

WINS_ENB. : YES

WINS_ADDR1. : 0 0 0 0

WINS_ADDR2. : 0 0 0 0

NBT_SCOPE_ID. :

DNS_ENB. : YES

DNS_ADDR1. : 0 0 0 0

DNS_ADDR2. : 0 0 0 0

DOMAIN_NAME. :

SLP_ENB. : YES

SLP_SCOPE_LIST. : DEFAULT

SMTP_SERVER. :

FTP_ENB. : YES

TELNET_ENB. : YES

DEFAULT_RAW_TCP. : 9100-9102 (9100-9102, CLOSED)

RTN_OPT. : NO

RTEL_PR1. : 0

RTEL_PR2. : 0

RTEL_PR3. : 0

RTEL_PR4. : 0

RTEL_PR5. : 0

RTEL_PR6. : 0

RTEL_PR7. : 0

RTEL_PR8. : 0

DEF_IP_FRAME_TYPE. : EthernetII (EthernetII, SNAP)

--- SNMP Menu

SNMP_ENB. : YES

SNMP_V1_CONFIG. : YES

READ_COM. : public

WRT_COM. : pass

TRAPADDR. : 0 0 0 0

TRAP_COM. : public

SYS_NAME. :

SNMP_AUT. : DISABLE (DISABLE, ENABLE)

TRAP_PRT. : DISABLE (DISABLE, ENABLE)

--- NetWare Menu

NETW_ENB. : YES

NETW_TRANSPORT_PROTOCOL. : DUAL_STACK (IPX_ONLY, IP_ONLY, DUAL_STACK)

NDPS. : TCP_AND_SPX (TCP_AND_SPX, TCP_ONLY, SPX_ONLY, DISABLED)

JOB_CHECK_DELAY. : 5

CONF_CHECK_DELAY. : 300

FR_802_3. : YES

FR_ETH_2. : YES

FR_802_2. : YES

FR_SNAP. : YES

NCP_BURST_MODE. : YES

PSERVER_NDS_TREE. :

PSERVER_NDS_FILESERVER. :

PSERVER_NDS_DISTINGUISHED_NAME. :

PSERVER_BINDERY1. :

PSERVER_BINDERY2. :

PSERVER_BINDERY3. :

PSERVER_BINDERY4. :

PSERVER_BINDERY5. :

PSERVER_BINDERY6. :

PSERVER_BINDERY7. :

PSERVER_BINDERY8. :

PSERVER_BINDERY9. :

PSERVER_BINDERY10. :

PSERVER_BINDERY11. :

PSERVER_BINDERY12. :

PSERVER_BINDERY13. :

PSERVER_BINDERY14. :

PSERVER_BINDERY15. :

PSERVER_BINDERY16. :

NPRINTER1. :

NPRINTER2. :

NPRINTER3. :

NPRINTER4. :

NPRINTER5. :

NPRINTER6. :

NPRINTER7. :

NPRINTER8. :

--- NetBIOS/NetBEUI Menu

LSLM_ENB. : YES

NB_FR_TYPE. : FR_802_2 (FR_AUTO, FR_802_2, FR_DIX)

LPRINT_1. : AX63AC15.LP1

LLOGIC_1. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_2. : AX63AC15.LP2

LLOGIC_2. : PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_3. : AX63AC15.CM1

LLOGIC_3. : PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_4. :

LLOGIC_4. : PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_5. :

LLOGIC_5. : PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_6. :

LLOGIC_6. : PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_7. :

LLOGIC_7. : PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

LPRINT_8. :

LLOGIC_8. : PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

--- AppleTalk Menu

ATLK_ENB. : YES

ATK_ZONE. :

ZONER_EN. : YES

ATK_FONT. : DEFAULT (DEFAULT, 35N, ALL)

AUTO_DT_PRIN. : NO

APRINT_1. : AXIS63AC15_LPT1

ATYPE_1. : LaserWriter

ALOGIC_1. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

BINARY_TYPE_1. : TBCP (TBCP, BCP, NONE)

APRINT_2. : AXIS63AC15_COM1

ATYPE_2. : LaserWriter

ALOGIC_2. : PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

BINARY_TYPE_2. : TBCP (TBCP, BCP, NONE)

APRINT_3. : AXIS63AC15_LPT2

ATYPE_3. : LaserWriter

ALOGIC_3. : PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1, COM1, LPT2)

BINARY_TYPE_3. : TBCP (TBCP, BCP, NONE)

--- Printer1 Menu

PR1_OUT. : LPT1 (NONE, LPT1, COM1, LPT2)

PR1_NAME. :

PR1_SCND. : PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR1_WAIT. : YES

PR1_IN. : AUTO (AUTO, NONE, COM1)

PR1_BEF. :

PR1_STR. :

PR1_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR1_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR1_AFT. :

PR1_DUMP. : NO

PR1_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR1_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR1_FORM. : 66 0 100 60 30 50

PR1_FONT. :

--- Printer2 Menu

PR2_OUT. : LPT2 (NONE, LPT1, COM1, LPT2)

PR2_NAME. :

PR2_SCND. : PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR2_WAIT. : YES

PR2_IN. : AUTO (AUTO, NONE, COM1)

PR2_BEF. :

PR2_STR. :

PR2_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR2_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR2_AFT. :

PR2_DUMP. : NO

PR2_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR2_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR2_FORM. : 66 0 100 60 30 50

PR2_FONT. :

--- Printer3 Menu

PR3_OUT. : COM1 (NONE, LPT1, COM1, LPT2)

PR3_NAME. :

PR3_SCND. : PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR3_WAIT. : YES

PR3_IN. : AUTO (AUTO, NONE, COM1)

PR3_BEF. :

PR3_STR. :

PR3_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR3_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR3_AFT. :

PR3_DUMP. : NO

PR3_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR3_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR3_FORM. : 66 0 100 60 30 50

PR3_FONT. :

--- Printer4 Menu

PR4_OUT. : COM1 (NONE, LPT1, COM1, LPT2)

PR4_NAME. :

PR4_SCND. : PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR4_WAIT. : YES

PR4_IN. : AUTO (AUTO, NONE, COM1)

PR4_BEF. :

PR4_STR. :

PR4_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR4_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR4_AFT. :

PR4_DUMP. : NO

PR4_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR4_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR4_FORM. : 66 0 100 60 30 50

PR4_FONT. :

--- Printer5 Menu

PR5_OUT. : LPT1 (NONE, LPT1, COM1, LPT2)

PR5_NAME. :

PR5_SCND. : PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR5_WAIT. : YES

PR5_IN. : AUTO (AUTO, NONE, COM1)

PR5_BEF. :

PR5_STR. : 01 0A 02 0D 0A

PR5_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM,

7FR>IBM, 7ND>IBM, DEC>IBM)

PR5_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR5_AFT. :

PR5_DUMP. : NO

PR5_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR5_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR5_FORM. : 66 0 100 60 30 50

PR5_FONT. :

--- Printer6 Menu

PR6_OUT. : LPT2 (NONE, LPT1, COM1, LPT2)

PR6_NAME. :

PR6_SCND. : PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR6_WAIT. : YES

PR6_IN. : AUTO (AUTO, NONE, COM1)

PR6_BEF. :

PR6_STR. : 01 0A 02 0D 0A

PR6_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR6_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR6_AFT. :

PR6_DUMP. : NO

PR6_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR6_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR6_FORM. : 66 0 100 60 30 50

PR6_FONT. :

--- Printer7 Menu

PR7_OUT. : COM1 (NONE, LPT1, COM1, LPT2)

PR7_NAME. :

PR7_SCND. : PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR7_WAIT. : YES

PR7_IN. : AUTO (AUTO, NONE, COM1)

PR7_BEF. :

PR7_STR. : 01 0A 02 0D 0A

PR7_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR7_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR7_AFT. :

PR7_DUMP. : NO

PR7_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR7_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR7_FORM. : 66 0 100 60 30 50

PR7_FONT. :

--- Printer8 Menu

PR8_OUT. : COM1 (NONE, LPT1, COM1, LPT2)

PR8_NAME. :

PR8_SCND. : PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)

PR8_WAIT. : YES

PR8_IN. : AUTO (AUTO, NONE, COM1)

PR8_BEF. :

PR8_STR. : 01 0A 02 0D 0A

PR8_CSET. : NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)

PR8_FILT. : NONE (NONE, POSTSCR, AUTO_PS)

PR8_AFT. :

PR8_DUMP. : NO

PR8_SIZE. : A4 (A4, LETTER, LEGAL, EXECUT)

PR8_ORNT. : PORTR (PORTR, LANDS, R_PORTR, R_LANDS)

PR8_FORM. : 66 0 100 60 30 50

PR8_FONT. :

--- LPT1 Menu

L1_CENTR. : HISPEED (IBM_PC, STNDRD, FAST, HISPEED, HINOACK)

L1_BSYTM. : 60

L1_MGM_INFO. : AUTO (DISABLE, AUTO)

L1_COMMENT. :

L1_BIDIR. : AUTO (DISABLE, AUTO)

L1_READT. : 3

--- COM1 Menu

C1_BAUDR. : 9600 (300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200)

C1_NBITS. : 8 (7, 8)

C1_PARIT. : NONE (NONE, ODD, EVEN)

C1_STOPB. : 2 (1, 2)

C1_HNDSH. : ROBUST-BOTH (NONE, XON/XOFF, ROBUST, RDY/BSY, BOTH, ROBUST-BOTH)

C1_READT. : 3

C1_BSYTM. : 60

C1_MGM_INFO. : AUTO (DISABLE, AUTO)

C1_COMMENT. :

--- LPT2 Menu

L2_CENTR. : HISPEED (IBM_PC, STNDRD, FAST, HISPEED, HINOACK)

L2_BSYTM. : 60

L2_MGM_INFO. : AUTO (DISABLE, AUTO)

L2_COMMENT. :

L2_BIDIR. : AUTO (DISABLE, AUTO)

L2_READT. : 3

--- Email Menu

EMAIL_NOTIFICATION. : YES

REPLY_ADDRESS. :

PAPER_JAM_ADDRESS. :

OUT_OF_PAPER_ADDRESS. :

TONER_LOW_ADDRESS. :

NO_TONER_ADDRESS. :

PRINTER_OFFLINE_ADDRESS. :

Section 17 Glossary

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

AppleTalk A local area network protocol for communication between Apple Computer products and other computers and peripherals.

ARP Address Resolution Protocol. A protocol within the TCP/IP suite of network protocols that allows a host to find the physical address of a node on the same network. ARP cannot be used across routers.

Authentication Verification of identity, for instance by use of digital signatures.

AutoIP A method to automatically set an IP address in the absence of a DHCP server.

BOOTP BOOT Protocol. A TCP/IP protocol, used for downloading start-up information such as the IP address to hosts on the network. BOOTP requires a BOOTP daemon on your system. A request made to an active BOOTP daemon initiates a search of the Boot Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.

BSD Berkeley Software Distribution. The University of California, Berkeley additions to the UNIX operating system.

Certificate Authority, CA An organization or company that issues digital certificates.

***config* File** This is a file that resides in the print server's memory and contains all the parameters that determine the print server's functionality. By editing the *config* file (changing the parameter settings), you can configure the print server to meet the printing needs of your network.

Client/server Printing Means that print jobs are sent to a file server, with different clients attached to the print queue, rather than directly to the print server (Peer-to-Peer printing).

DHCP Dynamic Host Configuration Protocol. Enables e.g. a print server to automatically obtain an unused IP address from the DHCP server.

To fully benefit from this method, the print server also supports DDNS, which is available in Windows 2000 networks.

Digital Certificate Used to create digital signatures and public/private key pairs for secure Web services.

DNS Domain Name System. Resolves host names into IP addresses.

Dynamic DNS Dynamic Domain Name System. Allows hosts to dynamically change the Ip address in DNS, e.g. when the host is given a new IP address by DHCP.

Firmware Firmware is the printserver's internal software.

Flash Memory The print server firmware is stored in Flash memory.

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.

HTTPS HyperText Transmission Protocol, Secure, i.e. HTTP for secure transactions.

IP Internet Protocol. The TCP/IP network-layer protocol that regulates packet forwarding by tracking IP addresses, routing outgoing messages and recognizing incoming messages.

IPP Internet Printing Protocol. A developing industry standard that allows users to print to remote printers across the Internet. With IPP, a user with an Internet connection can send a document to any printer connected to the Internet. IPP is platform independent and can be used to print over any LAN or WAN that supports TCP/IP.

IPX Internetwork Packet Exchange, a networking protocol used by NetWare.

LAN Local Area Network.

LED Light Emitting Diode.

Linux An open source implementation of UNIX.

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

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/Linux 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 whenever a line feed is detected.

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.

NDPS Novell's Distributed Printing Services.

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

NetBIOS/NetBEUI Network Basic Input Output System, a network protocol with special functions for local area networks. NetBIOS Enhanced User Interface is an enhanced version of NetBIOS.

NetWare An operating system for local area networks.

PCL Printer Control Language — a set of command codes used when printing. A PCL driver is a small program that works between the operating system and the printer.

Peer-to-Peer Printing When selecting Peer-to-peer printing, all print jobs are sent directly to the print server, rather than through a file server (client/server).

PEM Privacy Enhanced Mail.

RARP Reverse Address Resolution Protocol. A TCP/IP protocol used for downloading IP addresses in UNIX/Linux networks. It requires a RARP daemon on your system, and only operates within a single network segment. A request made to an active RARP daemon initiates a search of the Ethernet Address Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.

RISC Reduced Instruction Set Computing. A processor designed to increase performance, using a limited set of 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. Standard management protocol for network attached devices.

SSL Secure Sockets Layer, a protocol designed to provide secure communications on the Internet.

SPX Sequenced Packet Exchange, a NetWare communications protocol used to transmit messages reliably over a network.

TCP Transmission Control Protocol. The connection-oriented, transport-level protocol used in the TCP/IP suite of protocols.

Telnet A terminal emulation program for networks, often used to remotely control Web servers.

TFTP Trivial File Transfer Protocol (TFTP) is an Internet software utility for transferring files that is simpler to use than the File Transfer Protocol (FTP) but less capable. It is used where user authentication and directory visibility are not required. TFTP uses the User Datagram Protocol (UDP) rather than the Transmission Control Protocol (TCP).

TLS Transport Layer Security, a protocol that guarantees privacy and data integrity between applications communicating over the Internet.

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 information on the Internet.

USB Universal Serial Bus.

WAN Wide Area Network.

WINS Windows Internet Name Service. A NetBIOS Name Server that maps NetBIOS names to dynamically assigned IP addresses.

Wizard A special form of user assistance that automates a task through a dialog with the user. Wizards help the user to accomplish tasks that are complex and require experience, and even for the experienced user can help to speed up an operation.

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