

Preface

Thank you for purchasing the Axis NPS 650 Network Print Server. Our goal in developing this product is to enable you to connect your printers anywhere in your network, allowing all network users access to shared printer resources.

About Axis

Axis Communications, founded in 1984, is one of the world's fastest growing companies in the printer interface and network print server market. The head quarters are located in Lund, Sweden, with subsidiaries in Boston, Tokyo, and Hong Kong.

Axis Communications has a distributor network operating in more than 60 countries world-wide, marketing three product lines:

Network CD-ROM Servers

CD-ROM servers provide a flexible and cost-efficient solution for sharing CD-ROMs across the network. They are available in Ethernet and Token Ring versions, with or without built in drive option.

Network Print Servers

These intelligent Ethernet and Token Ring print servers support a wide range of LAN protocols. The Axis NPS 530, 532, 550, AXIS 150 and 152 are Ethernet print servers, and the Axis NPS 630, 632 and 650 are Token Ring print servers.

IBM Mainframe and S/3x - AS/400 Printer Interfaces

These products include a wide range of plug-in interfaces and free standing products such as the Cobra+ and the AFP IPDS-to-PostScript converter.

Axis NPS 650 User's Manual Part No.:13437	Version 2.0 October 1995
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About this manual

This manual will guide you through a simple step-by-step installation and configuration procedure. It is divided into four sections:

Introduction The NPS 650 print server, how it works, where to use it, and its main features.

Getting started How to connect your NPS 650 to your printers, and how to install it in your network.

Setup How to set up your NPS 650 for the NetWare, Windows, OS/2 and Unix environments.

Advanced options An overview of unique NPS 650 functions that allows you to tailor your printer resources for specific needs.

The manual applies to the NPS 650 with firmware release 5.00 and subsequent releases until otherwise notified. Please refer to the Axis NPS Print Server Technical Reference for further information of functions and parameters.

Every care has been taken in the preparation of this manual; if you detect any inaccuracies or omissions, please inform us at the address on the back cover. 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.

Emission notices

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

Europe This digital equipment fulfils the requirements for radiated emission according to limit B of EN55022/1987, and the requirements for immunity according to EN50082-1/1992 residential, commercial, and light industry. (Compliance is not valid for unshielded twisted-pair (UTP) cabling.)

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Section 1

Introduction

The Axis NPS 650 is a stand-alone network print server for the Token Ring environment. Using the NPS 650 makes it possible to connect your printers anywhere in a Token Ring network, allowing all network users access to shared printer resources.

The NPS 650 connects your printer directly to your Token Ring network, no matter if you are using a PC, PS/2 or Unix system. The multiple protocol support makes it possible to print under NetWare, Microsoft and IBM networks, and TCP/IP simultaneously.

In addition, the NPS 650 provides you with two high-speed parallel ports and one serial port, allowing any combination of up to three standard printers or plotters. It combines a high degree of user-friendliness in both installation procedures and print management with an equally high degree of flexibility thanks to its powerful built-in functions.



How It Works

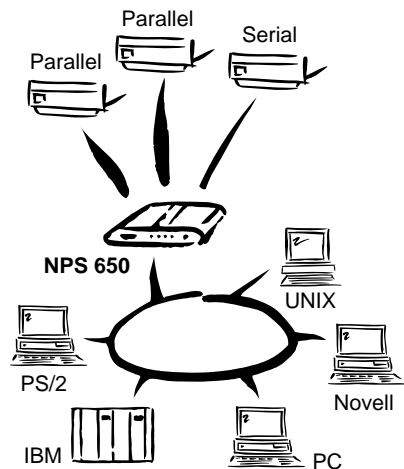
Token Ring network print data is transmitted as *packets* using a high-speed protocol very different from the standards used by serial or parallel printers. Each packet contains information about the sender, the receiver, how to unpack the packet, and the data itself.

The NPS 650 acts as a *station* in the Token Ring network, with its own unique address. It receives the packets addressed to it, unpacks them, and converts the print data to a format suitable for standard printers.

It is physically attached to the network by either *shielded twisted-pair* (Media Type 1/STP) or *unshielded twisted-pair* (Media Type 3/UTP) Token Ring cabling. The print data can be directed to two high-speed parallel ports and one serial port, making it possible to print on three different printers at the same time.

Where To Use it

The NPS 650 can communicate with PC, PS/2 and Unix systems. It supports three different network protocols: NetWare, Microsoft and IBM networks, and TCP/IP. Since the NPS 650 can handle these protocols simultaneously, it's the ideal printer server solution for a mixed environment.



NetWare The NPS 650 has two different modes in the NetWare environment – *Print Server Mode* and *Remote Printer Mode*.

In Print Server Mode, the NPS 650 emulates a NetWare Print Server. At power-on it will log in to each file server in the network to find out which print queues are to be serviced. Up to 16 file servers and up to 96 print queues are supported.

In Remote Printer Mode, the NPS 650 appears as a NetWare Remote Printer. At power-on it will log in and attach to up to eight specified NetWare print servers.

Windows The NPS 650 is set up using the supplied *Axis Print Utility for Windows*. You may print through a server (*client-server*), or directly (*peer-to-peer*). The supported platforms are Windows for Workgroups, Windows 95 and Windows NT.

OS/2 The NPS 650 is integrated to the OS/2 Spooler using the supplied *Axis Print Utility for OS/2*. The printers attached to the NPS 650 will appear as connected directly to the file server, and may be used by any PC running LAN Server or LAN Manager on your network.

Unix systems The NPS 650 can operate as an integrated part of your system. The printers connected to the NPS 650 will appear as if they were connected directly to the host printer spooler.

You have several protocols and print methods to choose from. The method you should select depends on your requirements, and what system you are running. Five print methods are supported in TCP/IP: **LPD**, **FTP**, **PROS A** (*named pipe*) **PROS B** (*filter*) and **Reverse Telnet**.

Any host supporting the **TCP/IP** suite of protocols is supported by the NPS 650.

Main Features

Reliability The Axis NPS 650 hardware provides high performance and reliability combined with low power consumption. It is based on the Axis ETRAX chip with an integrated 32 bit RISC CPU and Token Ring controller.

Flexibility It supports NetWare, Microsoft and IBM networks, and TCP/IP simultaneously. Five different print methods are supported for Unix systems. You may connect and print on up to three printers simultaneously.

Speed The sustained throughput exceeds 250 kbytes per second. High-speed Centronics communication such as Hewlett-Packard *Fast Mode* is supported.

Easy to Install Use *PCONSOLE* for NetWare Installation, *Axis Print Utility* for Windows and OS/2, and the supplied *axinstall* script for Unix systems.

Logical Printers This unique Axis concept allows you to perform auto ASCII to PostScript conversions, use different character sets, or select multiple bins and form sizes on the same printer.

Accounting The accounting function lets you keep track of the last ten print jobs.

Security You may set up passwords for all users, restricting both log in and printer access.

Section 2

Getting started

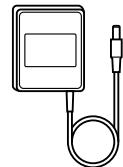
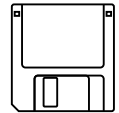
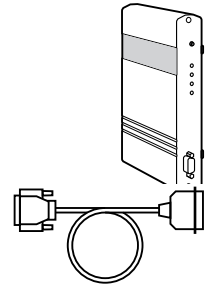
Unpack and inspect all parts for damage. Contact your dealer if anything is missing. All packing materials are recyclable.

The standard delivery

- NPS 650 Print Server; part no. 0038-1
- NPS 650 User's Manual; part no. 13437
- NPS 650 Quick Installation Guide; part no. 13509
- Warranty registration form; part no. 13510
- Parallel Printer Cable; part no. 13360

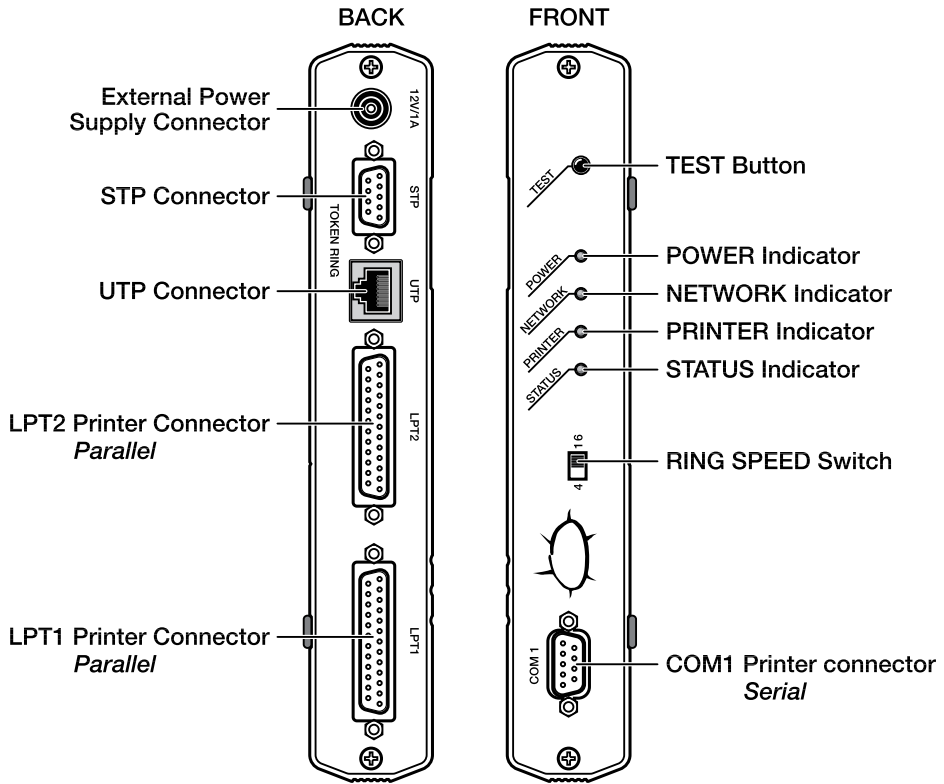
- 3.5" disk with NPS Installation Utilities for NetWare, Windows and OS/2; part no. 13493

- Power Supply Europe; part no. 13267 *or*
- Power Supply UK; part no. 13268 *or*
- Power Supply Australia; part no. 13269 *or*
- Power Supply USA; part no. 13270



Optional accessories

- Self-adhesive Velcro ribbons; part no. 13282 and 13283
- Serial Printer Cable; part no. 13281
- Parallel Printer Cable; part no. 13360
- NPS Print Server Technical Reference and Adobe Acrobat Reader; see Appendix D.



The AXIS NPS 650 back and front panels

Printer Installation

Before you begin:

Make sure that the external power supply is marked with the correct mains voltage.

Connect a parallel printer to NPS 650 and make a test printout:

1. **Switch off the printer.**
2. **Connect the printer to the LPT1 port** using the supplied printer cable.
3. **Connect the external power supply.** The indicators will flash during power-on and self-test. When the STATUS indicator stops flashing and remains unlit, the NPS 650 is ready for use.
4. **Switch on the printer.**
5. **Press and hold the test button** until the STATUS indicator starts to flash, then release the button to print a test page.

The test page shows the software revision and the basic setup of your NPS 650.

Note: The NPS 650 supports high-speed Centronics communication such as Hewlett-Packard Fast Mode. This function is disabled by default, since some printers support standard Centronics only. To activate high-speed Centronics, change the *Output Menu* parameters L1_CENTR and/or L2_CENTR to HISPEED as outlined in Appendix A.

Network Installation

Before you begin:

- Make sure that your network is ready to accept a new node.
- Any network configuration should always involve the network manager.
- **Don't** connect or disconnect the network cabling, or change the Ring Speed setting while the NPS 650 is powered on.

1. **Switch off the printer and disconnect the external power supply.**
2. **Record the serial number of your NPS 650.** You will need this number for the setup.
3. **Slide the RING SPEED switch towards 4 or 16 depending on the ring speed of your network.**
4. **Connect your NPS 650 to the network** using a STP (Media Type 1) or UTP (Media Type 3) Token Ring cable.
5. Switch on the printer and connect the external power supply.

Notes: It is not recommended to use standard UTP cabling on 16 Mbit networks, but screened or foiled Media Type 3 cabling may be used. Each NPS print server is preconfigured with a unique Node Address (identical to the serial number). You can change this to a *Locally Administrated Address*; see page 65.

The installation is now completed. Proceed with the setup sections for NetWare, Windows, OS/2 and/or Unix.

Section 3

Setup for NetWare

The NPS 650 can run in either *Print Server Mode*, *Remote Printer Mode* or both simultaneously. The basic configuration is done using the PCONSOLE software supplied from Novell, and if you choose a setup other than the automatic print server mode, also with AXCFG supplied with the NPS 650.

The overview on the following pages explains the advantages and limitations of each mode. Select the mode that best fits your needs, then carry out the configuration as described later in this section.

Before you begin:

- Make sure that the NPS 650 is powered on and attached to the network.
- You will need *root* privileges on the system.
- Have the serial number found on the back of the NPS 650 available.
- Any network configuration should always involve the network manager.
- If you use NetWare 4.0 or later, you must set up your file server for *bindery emulation* by specifying the *Bindery Context* parameter. See your Novell documentation for details.

Before configuring your NetWare system, you may want to configure the NPS 650 (e.g. logical printer definitions). This is done using the AXCFG software on the disk supplied with the NPS 650.

On the disk you will find a text file called *read.me*, containing installation instructions for AXCFG in the Novell environment.

Print Server Mode An NPS 650 in print server mode emulates a Novell print server (a workstation running PSERVER). This is the recommended mode for medium-sized to large networks.

There are three different ways to set up the print server mode, depending on how you want the NPS 650 to log in to the servers at power-up, and how you want to manage printer and queue configurations:

Automatic Log-In The NPS 650 will automatically detect and log in to all NetWare servers on the network at power-on. See page 17 for setup procedures.

Advantages	Limitations
High performance (typically 200 kbytes/s).	Requires a NetWare user licence for each NPS 650.
Easy to set up – no NPS 650 configuration required for automatic mode.	The NPS 650 power-up takes a long time on large networks

Parameter Controlled Log-In The NPS 650 will log in to only those NetWare servers specified by the NPS 650 configuration. See page 19 for setup procedures.

Advantages	Limitations
High performance (typically 200 kbytes/s).	Requires a NetWare user licence for each NPS 650.
Avoids the prolonged NPS power-up time caused by the automatic file server login.	Requires configuration of the NPS 650.
You can link a queue to a logical printer without having to use the <i>!n</i> queue name extension.	Difficult to manage print queues on larger networks.
An unavailable file server will not affect the access of the remaining specified servers.	

***File Server
Controlled Log-In***

The NPS 650 will first log in to the *Configuration File Server*, and then to any additional NetWare servers found in the file server configuration. See page 20 for setup procedures.

Advantages	Limitations
<p>High performance (typically 200 kbytes/s).</p> <p>Avoids the prolonged NPS power-up time caused by the automatic file server login.</p> <p>Simplifies the queue and printer set-up and maintenance, especially on larger networks.</p> <p>You can link a queue to a logical printer without having to use the <i>!n</i> queue name extension.</p>	<p>Requires a NetWare user licence for each NPS 650.</p> <p>Requires configuration of the NPS 650.</p> <p>If the configuration file server is unavailable, then none of the queues will be serviced.</p>

***Remote Printer
Mode***

An NPS 650 in remote printer mode emulates a workstation running RPRINTER or NPRINT (the Novell remote printer software). It is attached to a NetWare print server, that is either located on the file server (PSERVER.NLM), or a dedicated workstation running PSERVER.EXE. This mode is only recommended for small networks where the number of NetWare user licences is a major issue.

The setup procedure involves adding a printer, linking the printer to one or more print queues, and finally specifying which NetWare print servers the NPS 650 shall attach to. The first two steps are carried out in PCONSOLE, and the last step is done in AXCFG (supplied with the NPS 650). See page 24 for setup procedures.

Advantages	Limitations
<p>Allows up to 8 printers per NetWare user licence.</p>	<p>Lower performance – 20 - 100 kbytes/s for NLM, and 70 kbytes/s for EXE.</p> <p>Requires configuration of the NPS 650.</p> <p>Higher network load.</p>

Print Server Mode (Automatic)

The setup procedure involves adding a print server and linking it to one or more print queues. Both steps are carried out in PCONSOLE.

Add a Print Server Follow these steps to add a print server to your NetWare environment:

1. **Log in to a file server from a client workstation.**
2. **Start PCONSOLE.**
3. ***NetWare 4.xx only:* Press <F4> to switch to *Bindery Mode***
4. **Select *Print Server Information (3.xx)* or *Print Servers (4.xx)*.**
5. **Press <Insert> to add a new Print Server.**
6. **Enter the Print Server Name: AXIS<nnnnnn>** *(see notes below)*
<nnnnnn> are the last six digits of the NPS 650 serial number.
7. **Press Escape to return to the Main Menu.**

Repeat this procedure for each **file server** using the NPS 650.

- Notes**
1. If the serial number of your NPS 650 is **000231480061**, then the default name is **AXIS480061**. The serial number is found on the label at the back of the NPS 650.
 2. You may change the default name using AXCFG, the Axis Configuration Software. This must be done before running PCONSOLE.
 3. The print server name is case insensitive in print server mode. Both **AXIS480061** and **Axis480061** are valid default print server names.

Link a Print Queue to the Print Server

The next step is to link a print queue to the print server:

1. Start PCONSOLE according to steps 1-3 on the previous page.
2. Select *Print Queue Information* (3.xx) or *Print Queues* (4.xx). If you plan to use an existing queue, then skip to step 5.
3. Press <Insert> to add a new queue.
4. Type a queue name, and press <Enter>. *(see note below)*
5. Select the queue that you want the NPS 650 to service. The *Print Queue Information* menu appears.
6. Select *Queue Servers* (3.xx) or *Print Servers* (4.xx).
7. Press <Insert> to display the *Queue Server Candidates* list.
8. Select *AXIS<nnnnnn>*.
9. Press <Escape> repeatedly to return to the main menu.

Repeat this procedure for every queue you want the NPS 650 to service. The NPS 650 supports up to 96 print queues, defined on up to 16 file servers.

Note: Assuming that you have the default Logical Printer settings, output from the print queue will be directed to the LPT1 output of the NPS 650. If you want to print to LPT2, the queue name must end with '! 2'. When printing to NPS 650 serial port, the queue name must end with '! 3'.

Example: The Print Queue is called 'DESKTOP! 2'. Printouts will be directed to LPT2 (with the default logical printer settings).

Note that the number after the exclamation mark refers to the logical printer number rather than the port number. You can bypass any queue name restrictions by using one of the alternative print server modes described on the following pages.

Print Server Mode (Parameter Controlled)

This is similar to the automatic print server mode, but the NPS 650 will not automatically log in to all file servers and scan for queues to service. Instead, the file servers and print queues are specified by a set of parameters in the NPS 650 configuration. This is the recommended method for medium-sized networks.

NetWare Configuration The NetWare configuration is identical to the one described for automatic print server mode. Follow the instructions in “*Add a Print Server*” (page 17) and “*Link a Print Queue to the Print Server*” (page 18) to add a print server and assign queues to it.

NPS 650 Configuration The configuration involves specifying which NetWare file servers and print queues the NPS 650 shall attach to. This is done using AXCFG, the Axis NPS configuration software on the disk supplied with the NPS 650. Follow the instructions in the *read.me* file on the disk to install the software, then proceed as follows:

1. Start AXCFG, and select *NetWare*.
2. Select **No** at the ‘Look for old print servers’ prompt unless you are configuring an NPS 650 with software revision prior to 4.20.
3. Choose *Select All Networks*, then select your NPS 650.
4. Type *root* and *passat* at the login prompt.
5. Select *NETWARE MENU*.
6. Select *LOGIN1*.
7. Type the name of the NetWare file server, the print queue, and the logical printer number. Use the file server and print queue name from the NetWare configuration above, and one of the logical printer numbers 1–8.



8. To specify more print queues, select LOGIN2 through LOGIN16 in consecutive order. Repeat step 7 for each print queue.
9. Select *Save*, then select *Cancel* until AXCFG closes down.

Print Server Mode (File Server Controlled)

This method uses a NetWare file server (the *Configuration File Server*) to hold the print queue information. The NPS 650 will not automatically log in to all file servers and scan for queues to service. Instead, the file servers and print queues are specified on the configuration file server. This is the recommended method for large networks, since it simplifies the maintenance of a large number of print queues.

NetWare Configuration

The NetWare configuration is different from the automatic and parameter controlled modes. Instead of setting up queues on several file servers, all queues are set up and maintained on the configuration file server. The configuration procedure depends on which NetWare version you are using.

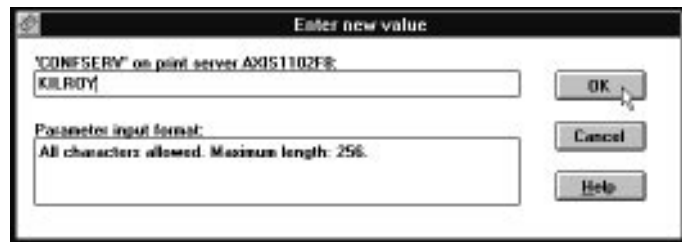
-
- NetWare 3.xx:**
1. Log in as supervisor to the NetWare server, and start PCONSOLE.
 2. Select *Change Current File Server*, then select the file server at which you want to keep the queue and printer configurations. Make a note of the configuration file server name, you will need it during the NPS 650 configuration.
 3. Select *Print Server Information*, then add the new print server **AXIS<nnnnnn>**. See “*Add a Print Server*” (page 17) for details.
 4. Select **AXIS<nnnnnn>**.
 5. Select *Print Server Configuration*, and then *File Servers to be Serviced*.
 6. Press <Insert> to see the list of Available File Servers. Add all file servers you want the NPS 650 to log in to, then press <Esc> to get back to the *Print Server Information Menu*.
 7. Select *Printer Configuration*. A list of 16 printers marked *Not Installed* appears. The printers numbered 1–8 correspond directly to the NPS 650 logical printers PR1–PR8. The remaining eight printers are not used by the NPS 650.
 8. Select the second printer (number 1). The printer is by default named ‘Printer 1’. The printer names are not used by the NPS 650.
 9. Select *Queues Serviced By Printer*, then select *Printer 1*.
 10. Press <Insert> to see the list of *Available Queues*, then select the queues you want the printer to service. Repeat steps 9 – 10 if you have installed more than one printer.
 11. Exit PCONSOLE.

- NetWare 4.xx:**
1. Log in as supervisor to the NetWare server, and start PCONSOLE.
 2. Press <F4> to switch to *Bindery Mode*.
 3. Select *Change Current NetWare Server*, then select the file server at which you want to keep the queue and printer configurations. Make a note of the configuration file server name, you will need it during the NPS 650 configuration.
 4. Select *Print Servers*, then add the new print server AXIS<nnnnnn>. See “Add a Print Server”(page 17) for details.
 5. Select AXIS<nnnnnn>.
 6. Select *Serviced NetWare Servers*.
 7. Press <Insert> to see the list of *Available NetWare Servers* Add all file servers you want the NPS 650 to log in to, then press <Esc> to get back to the *Print Server Information* menu.
 8. Select *Printers* An empty list of *Defined Printers* appears. Printers are numbered from 0 to 255 in the order that they are defined. The printers numbered 1–8 correspond directly to the NPS 650 logical printers PR1–PR8. No other printer numbers are used by the NPS 650.
 9. Press <Insert> to define printer number 0. Name it ‘DUMMY’, ‘UNUSED’ or similar to indicate that this printer is not used.
 10. Press <Insert> to define printer number 1. Name it ‘PRINTER_1’ or whichever name you prefer. The printer names are not used by the NPS 650.
 11. Select printer number 1. The printer is by default named ‘Printer 1’.
 12. Select *Print Queues Assigned* and press <Insert> to see the list of Available Print Queues.
 13. Select the queues you want printer number 1 to service. Repeat steps 10 – 13 for each additional printer number you want to define.
 14. Exit PCONSOLE.

***NPS 650
Configuration***

The configuration involves specifying the configuration file server. This is done using AXCFG, the Axis NPS installation software on the disk supplied with the NPS 650. Follow the instructions in the *read.me* file on the disk to install the software, then proceed as follows:

1. Start AXCFG, and select *NetWare*.
2. Select **No** at the 'Look for old print servers' prompt unless you are configuring an NPS 650 with software revision prior to 4.20.
3. Choose *Select All Networks*, then select your NPS 650.
4. Type *root* and *pass* at the login prompt.
5. Select *NETWARE MENU*.
6. Select *CONFSERV*.
7. Type the name of the NetWare file server dedicated as the configuration file server, then select *OK*.



Example: Use KILROY as configuration file server

8. Select *Save*, then select *Cancel* until AXCFG closes down.

Remote Printer Mode

The configuration for remote printer mode comprises the following steps:

1. **Add a Print Server**
2. **Create a Print Queue**
3. **Link a Remote Printer to the Print Queue**
4. **Configure the NPS 650**

Add a Print Server The NetWare print server software is either installed on a file server (PSERVER.NLM), or a dedicated workstation (PSERVER.EXE). If you don't already have a Novell print server installed, please refer to the Novell documentation for installation procedures.

Create a Print Queue Print queues are created in the same way as for print server mode. If you do not need any new queues, skip to "*Link a Remote Printer...*" below.

1. **Log in to a file server from a client workstation.**
2. **Start PCONSOLE.**
3. **Select *Print Queue Information* (3.xx) or *Print Queues* (4.xx).**
4. **Press <Insert> to add a new queue.**
5. **Type a queue name, and press <Enter>. Select a print queue volume (4.xx only). Repeat steps 4 – 5 for each queue you want to create.**
6. **Press <Esc> to return to the Main Menu.**

Link a Remote Printer to the Print Queue The procedures are slightly different depending on which NetWare version you are using. In either case, begin with starting PCONSOLE according to steps 1–3 in "*Create a Print Queue*" above if you have not already done so.

- NetWare 3.xx:**
1. Select *Print Server Information* from the PCONSOLE Main Menu.
 2. Select the NetWare Print Server to which you want to link your NPS 650.
 3. Select *Print Server Configuration*, and then *Printer Configuration*.
 4. Select the first free slot in the *Configured Printers* list.
 5. Make a note of the NetWare print server name and the Printer number; you will need it later during the configuration.
 6. Change *Name* to *AXIS<nnnnnn>/n* *(see notes below)*
<nnnnnn> are the last six digits of the NPS 650 serial number.
 7. Change *Type* to Remote Other/Unknown.
 8. Press <Esc>, and select *Yes* at the *Save Changes* prompt.
 9. Select *Queues Serviced by Printer* in the Print Server Configuration Menu.
 10. Select *AXIS<nnnnnn>/n* in the Defined Printers list.
 11. Press <Insert>, then select the queue you want to use from the Available Queues list. Repeat this step if you want more than one queue.
 12. Press <Esc> to get back to the Main Menu, then exit PCONSOLE.

Repeat this procedure for each file server and print server using the NPS 650.

- Notes**
1. If the serial number of your NPS 650 is **000231480061**, then the default name is **AXIS480061**. The serial number is found on the label at the back of the NPS 650.
 2. You may change the default name using AXCFG, the Axis Configuration Software. This must be done before running PCONSOLE.
 3. You may define up to eight remote printers, each attached to its own NPS 650 logical printer. Each remote printer must have a unique name distinguished by the */n* extension.

- NetWare 4.xx:**
1. Select *Print Servers* from the PCONSOLE Main Menu.
 2. Select the NetWare Print Server to which you want to link your NPS 650.
 3. Select *Printers*
 4. Press <Insert> to add a remote printer to the Defined Printers list.
 5. Type AXI S<nnnnnn>! n at the *Printer:* prompt. (see notes below)
<nnnnnn> are the last six digits of the NPS 650 serial number, and *n* is the logical printer number 1–8.
 6. Select *AXIS<nnnnnn>/n*.
Important: Always use printer numbers 1 and higher; the NPS 650 will not detect any remote printers with printer number 0.
 7. Make a note of the NetWare print server name and the Printer number; you will need it later during the configuration.
 8. Select *Printer type:* , and change to Other/Unknown.
 9. Select *Print Queues Assigned*, then press <Insert>
 10. Press <Insert>, then select the queue you want to use from the Available Print Queues list. Repeat this step if you want more than one queue.
 11. Press <F10> to save the changes, then press <Esc>.
 12. Press <Esc> to get back to the Main Menu, then exit PCONSOLE.

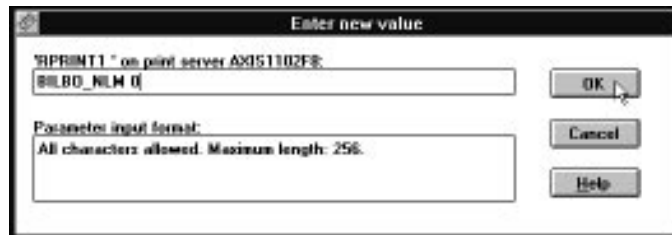
Repeat this procedure for each file server and print server using the NPS 650.

- Notes**
1. If the serial number of your NPS 650 is 000231480061, then the default name is AXIS480061. The serial number is found on the label at the back of the NPS 650.
 2. You may change the default name using AXCFG, the Axis Configuration Software. This must be done before running PCONSOLE.
 3. You may define up to eight remote printers, each attached to its own NPS 650 logical printer. Each remote printer must have a unique name distinguished by the */n* extension.

**Configure the
NPS 650**

The configuration involves specifying which NetWare print servers and printer numbers the NPS 650 shall attach to. This is done using AXCFG, the Axis NPS installation software on the disk supplied with the NPS 650. Follow the instructions in the *read.me* file on the disk to install the software, then proceed as follows:

1. Start AXCFG, and select *NetWare*.
2. Select **No** at the 'Look for old print servers' prompt.
3. Choose *Select All Networks*, then select your NPS 650.
4. Type *root* and *pass* at the login prompt.
5. Select *NETWARE MENU*.
6. Select *RPRINT1*.
7. Type the name of the NetWare print server and the printer number (4.xx: Use printer numbers 1 and higher). Use the name and number from the NetWare configuration earlier.



Example: Use printer 0 at BILBO_NLM as remote printer

8. To specify more print servers, select **RPRINT2 through RPRINT8** in consecutive order. Repeat step 7 for each print server.
9. Select *Save*, then select *Cancel* until AXCFG closes down.

Verify the Communication

To verify communication by making a test printout, just send a job to one of the print queues that NPS 650 will service. Use **CAPTURE**, **NPRINT**, or **PCONSOLE**.

Example: Use **CAPTURE** from the DOS command line when you are logged into the network, to print out the *autoexec.bat* file from the root of drive C:

```
CAPTURE /L=1 /Q=DESKTOP /NOTIFY /TI=30 /NT /FF /NB  
COPY C:\AUTOEXEC.BAT LPT1:
```

The **CAPTURE** switches have the following meanings: **/L=1** captures the printouts sent to the PC LPT1 port, **/Q=DESKTOP** specifies the print queue, **/NOTIFY** enables user messages, **/TI=30** sets the time-out to 30 seconds, **/NT** specifies no tab expansion, **/FF** ends the printout with a Form Feed, and **/NB** disables the banner page.

Section 4

Setup for Windows

This section describes how to set up your NPS 650 for the Microsoft Windows environment. The following Windows platforms are supported:

- **Windows 3.1** (requires add-on network support)
- **Windows for Workgroups**
- **Windows 95**
- **Windows NT**

The setup is done using *Axis Print Utility for Windows*. Install the utility if you haven't already done so (see the instructions on the *NPS 650 Setup* disk label).

Axis Print Utility for Windows

Axis Print Utility is a dual purpose application for network printing in the Microsoft Windows environment. It's two purposes are:

1. Install and maintain NPS 650 printer ports as Windows printer ports.

Axis Print Utility automatically detects all NPS 650s on your network. Any number of printers may be installed at any workstation.

2. Capture and monitor print jobs directed to NPS 650 ports.

Print jobs are directed through a spool directory, either at your local hard disk (peer-to-peer mode) or at the file server (Client-Server mode). NPS 650 printer ports can be monitored, and you get a pop-up notification message when your print job is finished.

For more information about Axis Print Utility, see the on-line help.

- Requirements**
1. Microsoft Network must be running when installing and using Axis Print Utility.
 2. Axis Print Utility must be running whenever you want to print to your network printer.

Peer-to-peer vs. Client-Server printing

Axis Print Utility supports both peer-to-peer and client-server printing. Peer-to-peer is the recommended print method for smaller networks. For more information on peer-to-peer and client-server printing, see the Axis Print Utility on-line help.

Windows 3.1

Windows 3.1 requires that network support such as *LAN Server* or *LAN Manager Workstation* software is installed in order to print to a network device. If this is the case, proceed as described under *Windows for Workgroups* below.

Windows for Workgroups

Setup for peer-to-peer printing

Follow these steps to install your NPS 650 for peer-to-peer printing at a Windows for Workgroups workstation:

1. Double-click the *Axis Print Utility* icon.
2. In the *Port* menu, click **Add**.
3. In the *NPS Port* list, select the NPS 650 port you want to install. The ports appear as <name>.LP1, <name>.LP2 and <name>.CM2, where <name> is the NPS 650 print server name (AXIS... is abbreviated to AX...).

Example:

<pre>AX480061.LP1 AX480061.LP2 AX480061.CM1</pre>

4. Accept or change the suggested *Windows port* name, and type any comments in the *Description* field. Make a note of the Windows port name (you will need it later), then click **OK** to install the Windows port.
5. In the *Port* menu, click **Connect** to bring up the Windows *Printers* dialog.
6. Select a printer driver from the list of *Installed Printers* (or click **Add>>** to install a new driver), then click **Connect...**
7. Select the *Windows port* from step 4 (at the bottom of the *Ports* list), then click **OK**.
8. Click **OK** to close the *Connect* dialog, and **Close** to close *Printers*. The setup is now completed and you can immediately print through your NPS 650.

Important: Axis Print Utility must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your Startup folder.

***Client-Server
printing
Server setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows for Workgroups server:

1. Choose a workstation that you want to use as server for network printing. The server must be available at all times, and must have sufficient hard disk space for spooling print jobs.
2. Make sure that the printer sharing option is enabled. (Open *Network Setup*, click **Sharing...**, check the 'I want to be able to allow others to print to my printer(s)' box).
3. Install Axis Print Utility on the server.
4. Set up your NPS 650 as described on page 31.
5. Open *Print Manager* and select your printer.
6. In the *Printer* menu, select **Share Printer As...**
7. Type a printer name in the *Share as* field (this is the printer name seen by the clients, see *Client setup* below). Check the *Re-share at Startup* box, then click **OK**.

The server setup is now completed. Set up the clients as described below.

Important: Both Axis Print Utility and Print Manager must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your Startup folder.

***Client-Server
printing
Client setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows for Workgroups client:

1. In the *Control Panel*, select *Printers*.
2. Select a printer driver from the list of *Installed Printers* (or click **Add>>** to install a new driver), then click **Connect...**
3. Select **Network...**
4. In the *Device Name* list, select a local port (LPT1 - LPT3) to redirect to your network printer.
5. In the *Show Shared Printers on* list, select the server from *Server setup* above.
6. In the *Shared Printers* list, select the printer you want to use.
7. Click **OK**, **OK** and **Close**, then exit *Control Panel*.

The client setup is now completed and you can immediately print through your NPS 650.

Windows 95

Setup for peer-to-peer printing

Follow these steps to install your NPS 650 for peer-to-peer printing at a Windows 95 workstation:

1. Double-click the *Axis Print Utility* icon.
2. In the *Port* menu, click **Add**.
3. In the *NPS Port* list, select the NPS 650 port you want to install. The ports appear as <name>.LP1, <name>.LP2 and <name>.CM2, where <name> is the NPS 650 print server name (AXIS... is abbreviated to AX...).

Example:

AX480061.LP1 AX480061.LP2 AX480061.CM1
--

4. Accept or change the suggested *Windows port* name, and type any comments in the *Description* field. Make a note of the Windows port name (you will need it later), then click **OK** to install the Windows port.
5. In the *Port* menu, click **Connect** to bring up the *Printers* folder.
6. Double-click the *Add Printer* icon. The *Add Printer Wizard* will guide you through the installation. Click **Next** to proceed.
7. Choose **Local Printer**, then click **Next**.
8. Choose *Manufacturer* and *Printer*, then click **Next**.
9. Select the *Windows port* from step 4, then click **Next**.
10. Accept or change the suggested *Printer name*, then click **Next**.
11. Click **Finish** to complete the installation.

The setup is now completed and you can immediately print through your NPS 650.

Important: Axis Print Utility must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your Startup folder.

***Client-Server
printing
Server setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows 95 server:

1. Choose a workstation that you want to use as server for network printing. The server must be available at all times, and must have sufficient hard disk space for spooling print jobs.
2. Install Axis Print Utility on the server.
3. Set up your NPS 650 as described on page 33.
4. In the *Printers* folder, click the right mouse button over your new printer, then select **Sharing...**
5. Click the *Shared As:* radio button, type a name in the *Share Name:* field, then click **OK**.

The server setup is now completed. Set up the clients as described below.

Important: Both Axis Print Utility and Print Manager must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your *StartUp* folder.

***Client-Server
printing
Client setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows 95 client:

1. Open the *Network Neighborhood* folder and select the server where your printer is set up (see Server setup above).
2. Select the printer, and follow the Add Printer Wizard to set up the printer on your client.

The client setup is now completed and you can immediately print through your NPS 650.

Windows NT

Setup for peer-to-peer printing

Follow these steps to install your NPS 650 for peer-to-peer printing at a Windows NT workstation:

1. Double-click the *Axis Print Utility*.
2. In the *Port* menu, click **Add**.
3. In the *NPS Port* list, select the NPS 650 port you want to install. The ports appear as **<name>.LP1**, **<name>.LP2** and **<name>.CM2**, where **<name>** is the NPS 650 print server name (AXIS... is abbreviated to AX...).

Example:

<pre>AX480061.LP1 AX480061.LP2 AX480061.CM1</pre>

4. Accept or change the suggested *Windows port* name, and type any comments in the *Description* field. Make a note of the Windows port name (you will need it later), then click **OK** to install the Windows port.
5. In the *Port* menu, click **Connect** to bring up *Print Manager*.
6. In the *Printer* menu, click **Create Printer**.
7. Type a name in the *Printer Name* field, select a suitable printer driver from the *Driver* list, and select **Other...** in the *Print to* list.
8. In the *Print Destinations* dialog, select **Local Port**, then click **OK**.
9. In the Port Name field, type: **C:\~\<port>**
where **C:\~** is your spool directory, and **<port>** is the Windows port name from step 4. Click **OK**.
10. **Close** the *Print Manager*.

The setup is now completed and you can immediately print through your NPS 650.

Important: Axis Print Utility must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your Startup folder.

***Client-Server
printing
Server setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows NT server:

1. Choose a workstation that you want to use as server for network printing. The server must be available at all times, and must have sufficient hard disk space for spooling print jobs.
2. Install Axis Print Utility on the server.
3. Set up your NPS 650 following steps 1 - 9 on page 35 (do not close *Print Manager*).
4. In the *Printer* menu, select **Properties...**
5. Check the *Share this printer on the network* box, then click **OK**.

The server setup is now completed. Set up the clients as described below.

Important: Both Axis Print Utility and Print Manager must be running when you print through your NPS 650. We strongly recommend that you copy the Axis Print Utility icon into your Startup folder.

***Client-Server
printing
Client setup***

Follow these steps to install your NPS 650 for client-server printing at a Windows NT client:

1. Open *Print Manager*.
2. In the *Printer* menu, select **Connect to printer...**
3. In the *Shared Printers* list, select the printer you want to use. Click **OK**.

The client setup is now completed and you can immediately print through your NPS 650.

Windows NT - LPD printing

This section describes how to set up a Windows NT Server (ver. 3.5 or later) for LPD printing over the TCP/IP protocol.

Install the TCP/IP Protocol Stack

In the *Control Panel*, click the *Network* icon. If the **TCP/IP Protocol** entry appears, then TCP/IP is already installed. Close the *Network* folder and skip to *Installing a Printer* below.

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

1. In the *Network* folder, select **Add Software**.
2. Select **TCP/IP Protocol and Related Components**, then click **OK**.
3. Make sure that the following boxes are checked:
 - Connectivity Utilities
 - TCP/IP Printing Support
 - FTP Server Services
4. Click **OK** to complete the installation.

Installing a Printer

1. In the *Control Panel*, click the *Print Manager*.
2. In the *Printer* menu, select **Create Printer**.
3. In the *Printer Name* field, type a name for your printer.
4. Choose a printer driver suitable for your printer.
5. In the *Print to* field, select **Other...**
6. In the *Print Destinations* dialog, choose **LPR Port**, then click **OK**. The *Add LPR Compatible Printer* dialog now appears.
7. In the *Name or Address* field, type the IP address or the alias name of your NPS 650.

Note: If you use an alias name, this must be defined in the *hosts* file on your server prior to the installation. This file is normally located in */winnt35/system32/drivers/etc/hosts*

8. In the *Name of Printer on the Machine* field, type the logical printer number you want to use (e.g. **pr1**), then click **OK**.
9. Click **OK** to complete the installation.

Section 5

Setup for OS/2

The basic configuration in the OS/2 environment is done using the *Axis Print Utility for OS/2* included on the disk supplied with the NPS 650. It comprises four steps:

1. **Activate the NetBEUI protocol** (if not already activated).
2. **Install the *Axis Print Utility for OS/2*.**
3. **Install the NPS 650 using the Axis Print Utility.**
4. **Create print queues to be serviced by the NPS 650.**

Before configuring your LAN Server/LAN Manager system, you may want to configure the NPS 650 (e.g. logical printer definitions). This is done using the AXCFG software on the disk supplied with the NPS 650.

On the disk you will find a text file called *read.me*, containing installation instructions for AXCFG in the IBM OS/2 environment.

Before you begin:

- Make sure that the NPS 650 is powered on and attached to the network.
- Have the serial number found on the back of the NPS 650 available.
- Any network configuration should always involve the network manager.

Activate the NetBEUI Protocol

Activating the NetBEUI protocol is done using the LAN Server/LAN Manager Setup:

- **LAN Server**

Use **MPTS/LAPS** to activate NetBEUI (see the MPTS/LAPS documentation for details).

- **LAN Manager**

Use **SETUP** to activate NetBEUI (see the LAN Manager SETUP documentation for details).

Install the Axis Print Utility for OS/2

The *Axis Print Utility for OS/2* is included on the disk supplied with the NPS 650. Start the installation according to the description in the *read.me* file on the same disk. Follow the instructions on the screen to complete the installation. The Axis Print Utility will start automatically when the installation process is completed.

When the Axis Print Utility is running, an *action bar* and a *list of available Axis print server ports* (initially empty) will be displayed. The action bar contains the following commands: *Status*, *Install*, *Remove*, *Logfile*, and *Help*. The *Install* command is used for installing new Axis print servers. The *Help* command gives detailed descriptions of the actions that can be performed by Axis Print Utility.

Install the NPS 650

Once the Axis Print Utility is installed and running, you can install the NPS 650 by clicking the *Install* entry on the action bar. The *Install* command initiates a search for Axis print servers on the network. Your new NPS 650 will appear in the list (together with any other Axis print servers) as three printer ports:

```
AX480061.LP1  
AX480061.LP2  
AX480061.CM1
```

The digits following AX are the six last digits of the NPS 650 serial number (480061 in this example). LP1, LP2 and CM1 are the NPS 650 printer ports (LPT1, LPT2 and COM1 respectively).

The Axis print server ports appearing in the list can now be assigned as print queue destinations as described below.

Note: If the serial number of your NPS 650 is **000231480061**, then the default port names are **AX480061.LP1**, **AX480061.LP2** and **AX480061.CM1**. The serial number is found on the label at the back of the NPS 650. You may change the default names by editing parameters LPRINT_1, LPRINT_2, etc. in the *config* file as described in Appendix A. If you want to change the default port names, you must do that before installing the NPS 650 using Axis Print Utility.

Create a Print Queue

Each Axis print server port will be seen as a *print queue destination* by the OS/2 Print Manager. Print queue destinations are referred to as *devices* in OS/2 version 1.x and *ports* in version 2.x. They appear as *pipe names*, e.g. \PIPE\AX480061.LP1, etc. Assigning Axis print server ports as print queue destinations follow the standard procedures under OS/2. The procedures are identical for LAN Server and LAN Manager, but differ between OS/2 versions 1.x and 2.x as shown below.

The examples below demonstrate how to create a new print queue and assign it to an NPS 650 printer port. Alternatively, you may re-direct an existing queue to an NPS 650 port.

OS/2 Version 1.x The print queue assignment under OS/2 version 1.x requires two operations – the definition of a printer, and the definition of one or more print queues for that printer. Follow these steps to create a print queue and assign it to an NPS 650 printer port:

1. Double-click the *Print Manager* icon.
2. Click the **Setup** menu option, then select **Printers...**
3. Click **Add** to make a new printer definition.
4. Type a printer name in the *Name* field.
5. Select a *Device* (a pipe name, e.g. \PIPE\AX480061.LP1).
6. Select a *printer driver* suitable for the printer attached to the NPS 650.
7. Click **Add**, then click **OK** to confirm the new printer definition.
8. Click the **Setup** menu option, then select **Queues...**
9. Click **Add** to make a new print queue definition.
10. Type a queue name in the *Name* field (preferably the printer name assigned above).
11. Select the previously defined printer.
12. Click **Add**, then click **OK** to confirm the new queue definition.

OS/2 Version 2.x The print queue assignment procedure under OS/2 version 2.x is done in one operation – the definition of a printer will automatically create a queue. Follow these steps to create a print queue and assign it to an NPS 650 printer port:

1. Double-click the *Templates* folder.
2. Drag the *Printer* icon out to the *Workplace Shell* (or into a folder), while holding the *right* mouse button down.
3. Type a name in *Printer Name* field.
4. Select a printer driver from the *Standard printer* list suitable for the attached printer.
5. Select a *pipe name* (e.g. \PIPE\AX480061.LP1) from the Port list.
6. Click **OK** to confirm the new printer definition.

Sharing Print Queues

To access a print queue from other computers in the network (either clients or other servers), the queue must be made a *shared resource*. Open an OS/2 window and issue the following command (you will need administrator privileges to do this):

```
NET SHARE <queue name> /PRINT
```

<*Queue name*> is the queue created above. Note that the queue name equals the printer name for OS/2 version 2.x, while queue and printer names may differ for version 1.x.

For further information on queue sharing, please refer to your LAN Server or LAN Manager documentation.

Verify the Communication

To verify communication by making a test printout, use the NET COPY command (or any other print method such as drag-and-drop, etc.) to send a job to one of the print queues that NPS 650 will service.

Example: Use NET COPY from the OS/2 or DOS command line when you are logged into the network, to print a file:

```
NET COPY <file name> \\<server name>\<queue name>
```

For further information on printing to print queues, refer to the appropriate OS/2, LAN Server and LAN Manager documentation.

Section 6

Setup for Unix systems

This section covers the setup for TCP/IP in a Unix environment. The steps described on the following pages are:

1. Prepare your system for a new TCP/IP node.

Procedures: Find an unused Internet (IP) address and choose a unique host name for your NPS 650. Update your host table and alias name data bases.

2. Set up the NPS 650 as a TCP/IP node.

Procedures: Down-load the IP address to your NPS 650 using the *arp*, *rarp* or *bootp* method.

3. Set up and attach a print queue at your Unix workstation.

Procedures: Use the automatic *axinstall* script to complete the setup. Up-load and run the script, then follow the instructions on your screen.

Before you begin:

- Make sure that the NPS 650 is powered on and attached to the network.
- You will need *root* privileges on the system.
- Have the serial number found on the back of the NPS 650 available.
- Any network configuration should always involve the network manager.

Prepare your system

Each node in a TCP/IP network must have a unique *Internet (IP) address* and also a unique *host name* to be used as an alias for the IP address. Before you add your NPS 650 to a TCP/IP network, you must prepare your system for a new node.

Find an unused IP address The IP addresses used in your network are listed in the system host table (*/etc/hosts* on most Unix systems). Find an unused IP address, and choose a unique host name for your NPS 650.

Important:

Don't use the default or example IP address when installing your NPS 650. Always consult your network manager before assigning an Internet Address.

Update your system host table Open the system host table using a text editor (e.g. **vi** */etc/hosts*), and add a line containing the IP address and host name for your NPS 650:

Example:

```
192.36.253.96          salesdept
```

Update your alias name data bases If your system uses alias name data bases such as Yellow Pages (YP) or Network Information Services (NIS), update these using the commands below. If you intend to use the *arp* or *bootp* method, update the YP or NIS now. If you intend to use the *rarp* method, you must first update the *node address table*, see “*The rarp method*” (page 48).

Commands:

```
cd /var/yp
make
```

Note: These commands may vary between different systems. When in doubt, consult your system documentation for the proper commands.

Set up your NPS 650

When you have prepared your system to accept a new TCP/IP node, you are ready to set up your NPS 650 as a node on your network. This is done by down-loading the new IP address to the NPS 650 using one of these three methods:

- ***arp*** – the easiest method, but requires down-loading of the Internet address to each new device individually.
- ***rarp*** – down-loads the Internet address to each device automatically. Requires a rarp daemon on your system, and operates within a single network segment only.
- ***bootp*** – similar to rarp, but operates on the entire network. Requires a bootp daemon on your system.

Note: NPS 650 has an auto-sensing router facility that automatically adapts to the network topology. However, if you do run into problems in a complex network, we recommend that you specify the default router and net mask parameters manually. Refer to the Axis NPS Print Server Technical Reference for details.

The arp method The *arp* command associates your NPS 650's node address with an IP address. The IP address is then down-loaded by the *ping* command. The *arp* command syntax depends on your Unix system (see examples below). This is the syntax for IBM AIX systems:

```
arp -s 802.5 <host name> <node address> temp
ping <host name>
```

The node address is the serial number found at the back of the NPS 650. Each pair of digits must be separated by colons as in examples below.

Examples: The *arp* command differs between different Unix systems. The '802.5' argument is only required for IBM AIX systems, and some BSD-type systems expect the host name and node address in reversed order.

IBM AIX Systems:

```
arp -s 802.5 salesdept 00:02:31:48:00:61 temp
ping salesdept
```

BSD-Type Unix Systems:

```
arp -s 00:02:31:48:00:61 salesdept temp
ping salesdept
```

System V Unix Systems:

```
arp -s salesdept 00:02:31:48:00:61 temp
ping salesdept
```

The host will return '*salesdept is alive*' or similar indicating that the IP address has been set, and that communication is established.

Note: When you execute the ping command for the first time, you should expect a response time significantly longer than usual.

The rarp method The *rarp* method uses a daemon to establish and maintain communication between the hosts listed in a *node address table* (*/etc/ethers* on most systems). Rarp daemons are normally only used on BSD-type and System V Unix systems. If you are an IBM AIX user, use the arp or bootp methods instead.

Follow these steps to use the rarp method:

1. Open the node address table using a text editor (e.g. **vi /etc/ethers**), and add a line containing the node address and host name for your NPS 650.

Example:

```
00:02:31:48:00:61 salesdept
```

2. Update your alias name data bases (see page 45).
3. Start the rarp daemon (if not already running) by the command **rarpd -a**.
4. Restart the NPS 650 to down-load the IP address.

The bootp method The *bootp* method uses a daemon to establish and maintain communication between the hosts listed in a *boot table* (*/etc/bootptab* on most systems). Follow these steps to use the bootp method:

1. Open the boot table using a text editor (e.g. **vi /etc/bootptab**), and add the following entry for your NPS 650:

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

Example:

```
salesdept:ht=tr:vm=rfc1048:\
      :ha=000231480061:ip=192.36.253.96:\
      :sm=255.255.255.0:gw=192.36.253.254
```

2. Start the bootp daemon (if not already running) by the command **bootpd**.
3. Restart the NPS 650 to down-load the IP address, default router address, and net mask.

- Notes**
1. The *ht* and *vm* fields must be entered exactly as in the example.
 2. The *ha* and *ip* fields are the Node and IP Addresses respectively.
 3. The *sm* and *gw* fields correspond to the default router address and net mask (*TCP/IP Menu* parameters DEF_ROUT and NET_MASK, see Appendix A).

Set up and attach a print queue

The final step is done using the *axinstall* script, which is up-loaded from the NPS 650 to your host using FTP. You don't need any technical knowledge about your Unix system; *axinstall* will automatically detect your system's characteristics, and guide you through the setup procedure.

Below is a list of Unix systems that are supported by *axinstall*:

* BSD (Berkley Unix)	IRIX (Silicon Graphica, SGI)
SunOS 4 (Sun BSD, Solaris 1.x)	BOS (BULL DPX 2)
ULTRIX (Digital Equipment, DEC)	* SYS V R4 (UNIX System V Release 4)
DEC OSF/1 (Digital Equipment, Alpha)	SunOS 5 (Sun SYS V, Solaris 2.x)
FreeBSD (Berkley Unix)	HP-UX (HP 9000)
* SYS V R3 (Unix System V Release 3)	AIX (IBM RS/6000, BULL DPX 20)
SCO (Santa Cruz Operation)	

If your particular system isn't listed, *axinstall* tries to use one of the generic Unix systems (BSD, SYS V R3 or SYS V R4). If *axinstall* fails to recognize your system, complete the setup manually as described in the Axis NPS Print Server Technical Reference.

Up-load axinstall

1. Log in to the NPS 650 with the command **ftp <host name>**, where *host name* is the name assigned in your system host table (e.g. *sales-dept*). You will be prompted for user id and password. Enter *root* as user id, and *pas* as password.
2. Up-load the script using the command **get axinstall**.
3. Log out using **quit**, **bye** or **exit** (depending on your FTP version).

Example: Below is a sample FTP session showing how to up-load *axinstall* (user entries appear in bold):

```
> ftp salesdept
Connected to salesdept.
220 Axis NPS 650 FTP Print Server V5.00 ready.
Name (salesdept: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)
226 Transfer complete.
local: axinstall remote: axinstall
27545 bytes received in 4.1 seconds (6.5 Kbytes/s)
ftp> bye
221 Goodbye.
>
```

The *axinstall* script has now been up-loaded to your host.

Run *axinstall* Type the command **sh axinstall** to run the script.

You will be guided through the setup by a step-by-step procedure. *Axinstall* will first detect what kind of Unix system you are using, and then suggest a suitable print method. The suggested print method will be sufficient in most cases, but you can also choose one of the PROS methods for more advanced print capabilities. See page 52 for a brief overview of the different print methods. For more detailed information, please refer to the NPS Technical Reference.

After you have selected a print method, *axinstall* will automatically set up the necessary print queues, filters, etc. You will then be offered to make a test printout, and after that the setup is completed.

Print methods

The NPS 650 supports several different print methods for printing under TCP/IP. *Axinstall* will suggest a print method suitable for your particular Unix system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc.) Use the overview below to determine which method to use:

LPD The recommended method where available.

Advantages Easy to set up – install the NPS 650 as a remote queue in *SMIT* (AIX), or add a remote printer to */etc/printcap* using the *rm* and *rp* fields (BSD).

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

FTP The recommended method when LPD is not available.

Advantages Uses industry standard network software on the host.

Limitations No printer status logging. *BSD*: May conflict with other input or output filters. Doesn't allow both input and output filters. *System V*: No filters or interface programs can be used.

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

Advantages The NPS 650 appears as a device to the system. Print traffic (including printer status and readback) is logged to file. *BSD*: All *printcap* options are available.

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

Reverse Telnet Often used for printing via a terminal server printer port. Only recommended if you already have a Reverse Telnet driver installed (not available for AIX).

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

Limitations No status logging. Drivers are not supplied with the NPS 650. Existing drivers may be slow.

Section 7

Advanced Options

This section takes you beyond the “plug-and-print” concept and into the area of *Print Server Configuration* and *Print Management*.

This section provides an overview of the unique functions that make the NPS 650 more than ‘just another print server’. For a complete description of these functions, please refer to the NPS Print Server Technical Reference.

Print Server Configuration

How to solve printout related problems by tailoring your NPS 650 configuration to meet specific needs. The key feature is the *Logical Printer Concept*, which will be discussed in the following pages.

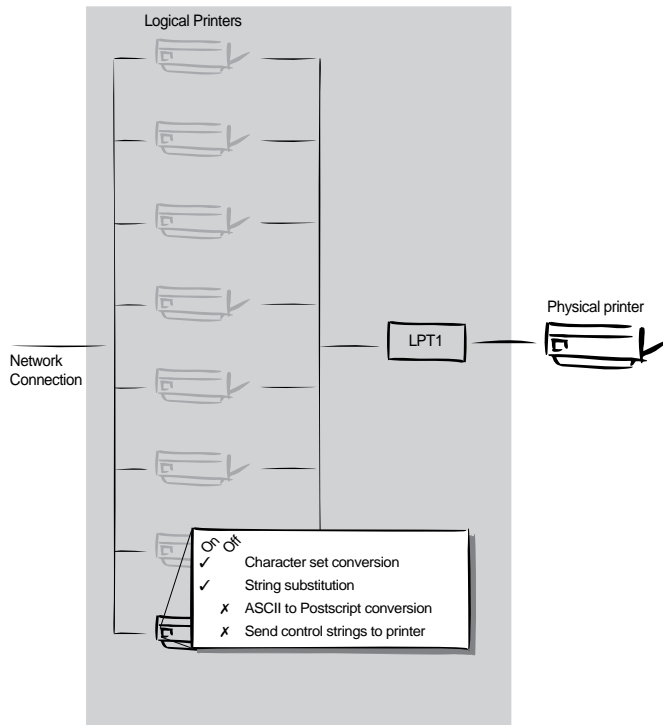
Print Management

The NPS 650 has a number of built-in tools and features to help you to manage and monitor your printing environment. This section covers the following topics:

- **Telnet Login** – how to log in to the NPS 650 (page 62).
- **Accounting** – keep track of the last ten print jobs (page 63).
- **Status Logging** – display the current status of the logical printers (page 64).
- **Locally Administrated Address** – change the preconfigured node address (page 65).
- **SNMP** – monitor the NPS 650 using the Simple Network Management Protocol (page 66).

Logical Printers

One of the most powerful features of the NPS 650 is the *Logical Printer* concept. A logical printer is a configurable device driver acting as an interface between the network and the physical printer. You may specify up to eight logical printers, each with different properties, even if you have only one physical printer attached.



The following properties can be configured individually for each logical printer:

- Physical Printer Port (see table below)
- Character Set Conversion (page 56)
- Strings Before and After Print Jobs (page 57)
- String Substitutions (page 58)
- PostScript Functions (page 59)
- Action at Printer Busy (page 61)
- Hex Dump Mode (page 61)

The table below shows the default logical printer configuration:

Logical Printer	Printer port	Properties
PR1	LPT1	pass-through
PR2	LPT2	pass-through
PR3	COM1	pass-through
PR4	LPT1	pass-through
PR5	LPT2	LF to CR+LF
PR6	COM1	LF to CR+LF
PR7	LPT1	LF to CR+LF
PR8	LPT1	LF to CR+LF

Note: LF to CR+LF means that UNIX New Line commands are converted to Carriage Return + Line Feed.

Logical printers are configured by editing a number of parameters in the *config* file. There is a menu for each logical printer (PRINTER1 - PRINTER8), see Appendix A.

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 ä ü ô ñ) are sometimes printed incorrectly.

The NPS 650 solution to this problem is to assign a character set conversion filter to a logical printer, and link that logical printer to the host causing the problem.

There are several different filters to choose from, see *Printer1 Menu* parameter PR1_CSET in Appendix A. The output from the conversion filter is always IBM PC Set 2 (Code Page 437), and that is the character set the printer must be set up for.

Example: Your network contains three hosts using the character sets IBM PC Set 2, ISO 8859-2, and DEC. In order to direct their print jobs to the same printer, for instance LPT1, you should assign each host to a separate logical printer, and install character set conversion filters. Edit the following entries in your *config* file:

```
PR1_OUT .      : LPT1
PR1_CSET .     : NONE
PR2_OUT .      : LPT1
PR2_CSET .     : ISO>IBM
PR3_OUT .      : LPT1
PR3_CSET .     : DEC>IBM
```

The logical printer PR1 prints data transparently without conversion, PR2 converts ISO 8859-2 data to IBM PC Set 2, and PR3 converts DEC data to IBM PC Set 2. This will produce correct printouts for all language specific characters.

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 1: Assume that the logical printer PR5 is configured as a PostScript printer. To append the PostScript End of File character (ctrl-D, hex 04) after each print job, edit the following entry in your *config* file:

```
PR5_AFT.      : 04
```

Example 2: You have a HP LaserJet printer with dual input bins, and want to print on pre-printed forms when using the logical printer PR4. The standard forms are taken from bin 1, and the pre-printed forms are taken from bin 2. The strings before and after print jobs should then contain commands to select bin 2 (`^C&l4H`) and bin 1 (`^C&l1H`) respectively. Edit the following entries in your *config* file:

```
PR4_BEF.      : 1B 26 6C 34 48
PR4_AFT.      : 1B 26 6C 31 48
```

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 20 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.

Example 1: To replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A) for logical printer PR1, edit the following entry in your *config* file:

```
PR1_STR.      : 01 0A 02 0D 0A
```

'01' is the match string count byte (length of the match string), '0A' is the match string, '02' is the substitute count byte, and '0D 0A' is the substitute string (This is the default setting for logical printers PR5 through PR8).

Example 2: To replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A), and the printer command ^EC_G1 (hex 1B 47 31) with ^EC_Y (hex 1B 59) for logical printer PR2, edit the following entry in your *config* file:

```
PR2_STR.      : 01 0A 02 0D 0A 03 1B 47 31 02 1B 59
```

Note: Extensive use of string substitutions may decrease the throughput rate of the NPS 650.

PostScript Functions

The NPS 650 can translate standard ASCII print data into PostScript format. This makes it possible to print with a PostScript printer from a host that doesn't support PostScript. The PostScript functions are controlled by a number of parameters described below.

ASCII to PostScript Conversion The conversion is selected by activating a filter that converts ASCII data into PostScript. This filter may be activated individually for each logical printer.

Example: The following entries in your *config* file will activate pass-through (no filter) for PR1, ASCII to PostScript conversion for PR2. On PR3 the incoming data will be searched, ASCII data will be converted to PostScript, PostScript data will pass-through without conversion:

```
PR1_FILT.      : NONE
PR2_FILT.      : POSTSCR
PR3_FILT.      : AUTO_PS
```

Use this configuration when print jobs directed to PR1 are already in PostScript format, print jobs directed to PR2 are in ASCII format and direct print jobs to PR3 when you are not sure if it is ASCII or PostScript format.

PostScript Page Size When the ASCII to PostScript filter is active, a page size must be specified. The default page size is A4, and may be specified individually for each logical printer. See the example on the next page on how to change the page size.

The page size setting is ignored when the ASCII to PostScript filter is inactive.

PostScript Page Orientation

When the ASCII to PostScript filter is active, a page orientation must be specified. The default page orientation is Portrait, and may be specified individually for each logical printer. See the example below on how to change the page orientation.

The page orientation setting is ignored when the ASCII to PostScript filter is inactive.

PostScript Page Format

When the ASCII to PostScript filter is active, a page format must be specified. The page format is defined by six byte values: Lines per Page, Characters per Line, Characters per Inch, Lines per Inch, Left Margin, and Top Margin (see also PR1_FORM, *Printer1 Menu* in Appendix A).

The page format settings are ignored when the ASCII to PostScript filter is inactive.

Example:

The following entries in your *config* file will activate the ASCII to PostScript conversion for PR2, set the page size to *Letter*, the page orientation to *Landscape*, and the page format to *48 lines per page, 0 characters per line (equal to disable line wrap), 12 CPI, 6 LPI, 3 mm left margin and 5 mm top margin*:

```
PR2_FILT.      : POSTSCR
PR2_SIZE.     : LETTER
PR2_ORNT.     : LANDS
PR2_FORM.     : 48 0 120 60 30 50
```

PostScript Font

You may specify a PostScript font to be used when the ASCII to PostScript filter is active. The specified font must be available in the attached PostScript printer. An invalid font name may cause a PostScript error and terminate the printout.

If no font name is specified, Courier (fixed pitch) will be used.

The font settings are ignored when the ASCII to PostScript filter is inactive.

Example:

The following entry in your *config* file will select the Helvetica proportional font as the PR2 PostScript font:

```
PR2_FONT.     : Helvetica
```

Action at Printer Busy

If the printer is busy when NPS 650 receives a new print job, you have the choice between sending the print job to another logical printer, and make the host wait until the printer is ready.

The default selection is 'wait until printer is ready'. You may redirect print jobs by specifying a secondary logical printer assigned to a different printer port.

Example: The following entries in your *config* file will redirect PR1 print jobs to PR3 when the printer assigned to PR1 is busy:

```
PR1_OUT.      : LPT1
PR1_SCND.    : PR3
PR1_WAIT.    : NO
PR3_OUT.     : LPT2
```

Note: Logical printer redirection cannot be nested. If the printer assigned to PR3 in the example above is also busy, the print job will be held waiting even if PR3 is further redirected.

Hex Dump Mode

When hex dump mode is activated, the print data will be printed as hexadecimal byte values rather than characters. Printer control commands are also printed as hex values. This function is used for debugging purposes.

Example: The following entry in your *config* file will activate the hex dump mode for PR3:

```
PR3_DUMP.    : YES
```

Note: The page length for hex dump printouts is determined by the *Lines per Page* value of the *PostScript Page Format* parameter.

Telnet Login

The Telnet support makes it possible to log in to the NPS 650 and execute various commands as shown in the example below. Use the **telnet** <hostname> command to log in.

Example: This sample telnet session illustrates the **help** command:

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

Axis NPS 650 TELNET Print Server V5.00

NPS 650 network login: root
Password: pass (not visible)

Axis NPS 650 TELNET Print Server V5.00

Root> help
Commands may be abbreviated:
logout      logout from TELNET
version     print current software version
help        print this list
status      show current printing status
account     show current account file
softreset   protocol restart of Axis NPS 650
hardreset   reboot of Axis NPS 650
defaults    set default parameters in Axis NPS 650
Root> logout
Goodbye!
Connection closed by foreign host.
>
```

The *account* and *status* commands are shown on the following pages.

Accounting

The accounting 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, Offline, or Printing), number of bytes printed, elapsed time and off-line time. The file can be accessed using FTP, Telnet, or AXCFG.

Example: This sample telnet session illustrates the **account** command:

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

Axis NPS 650 TELNET Print Server V5.00

NPS 650 network login: root
Password: pass (not visible)

Axis NPS 650 TELNET Print Server V5.00

Root> account
Current account file:
JOB      USER      PROT      LPR  S   BYTES    ETIME    OTIME
-----
1       thomas    FTP       pr2  C   1885     2        0
2       bengt     LPD       pr1  C   23074    4        0
3       RICARD    NETWARE  pr2  C   43004    5        0
4       LSLM_user NetBIOS  pr1  C   6717     2        0
5       thomas    FTP       pr2  C   36955    3        0
6       patrik    PROS     pr5  P   832081   9        0
Root>
```

Status Logging

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

Example: This sample telnet session illustrates the **status** command:

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

Axis NPS 650 TELNET Print Server V5.00

NPS 650 network login: root
Password: pass (not visible)

Axis NPS 650 TELNET Print Server V5.00

Root> status
Current printout status:
Printer  Port  Status  Bytes printed  Comments
pr1     LPT1  Occupied  Ready
pr2     LPT2  Available  Busy  Out of paper
pr3     COM1  Available  Busy
pr4     COM1  Available  Busy
pr5     LPT1  Printing  20916  Ready
pr6     LPT2  Available  Busy  Out of paper
pr7     COM1  Available  Busy
pr8     COM1  Available  Busy

Root>
```


Locally Administrated Address

Each NPS 650 is preconfigured with a unique Node Address (identical to the serial number). You may change the node address to a *Locally Administrated Address* by editing the Node Address entry in your *config* file.

Important: Always consult your network manager before changing the Node Address.

The Node Address consists of six hexadecimal numbers in the range 00 - FF. The numbers are separated by spaces.

Example 1: The following *config* entry shows an example of a preconfigured Node Address:

```
NODE_ADDR.      : 00 02 31 48 00 61
```

A locally administrated address must begin with one of the hexadecimal numbers 4x, 5x, 6x, or 7x (01xx xxxx in binary format). Examples: 4B, 50, 6F and 77 are valid leading numbers. No restrictions apply to the five remaining numbers.

Example 2: The following *config* entry shows an example of a locally administrated address:

```
NODE_ADDR.      : 4B CF 08 74 04 D0
```

If you enter an invalid address, the current Node Address will remain unchanged. It is not possible to set an address other than a valid locally administrated address or the preconfigured Node Address.

You can restore the preconfigured Node Address by entering the NPS 650 serial number, or an address consisting of all 0's.

Example 3: The following *config* entry restores the Node Address to the preconfigured setting:

```
NODE_ADDR.      : 00 00 00 00 00 00
```

SNMP

You may use SNMP (Simple Network Management Protocol) for remote monitoring of the NPS 650. All major functions applicable to print servers are supported.

SNMP actually refers to a set of standards for network management, including a protocol, a database structure specification, and a set of data objects. The NPS 650 SNMP implementation runs in the TCP/IP environment.

The actual management is handled by an 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.

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

The NPS 650 supports all relevant parts of MIB-II. It also includes a private enterprise MIB (the AXIS MIB described in the NPS Print Server Technical Reference).

Appendix A

The parameter list

This appendix contains an overview of the NPS 650 parameters and how to edit them. Please refer to the NPS Print Server Technical Reference for a complete description of the parameters.

The current parameter settings are stored in the NPS 650 *config* file. Editing parameter values involve three steps: Up-load the *config* file to your system, edit the parameter values, and down-load the modified file to the NPS 650. There are a number of methods for doing this depending on the environment you work in.

NetWare, Windows, OS/2

The disk supplied with the NPS 650 contains AXCFG, a menu-driven configuration utility that performs the tasks mentioned above. Follow the instructions given in the *read.me* file to install and use AXCFG.

Unix (TCP/IP)

Use FTP to change the *config* file:

1. **Log in to the NPS 650.**
Command: **ftp <host name>**
Enter **root** as user id and **pass** as password.
2. **Up-load the config file.** Command: **get config**
3. **Edit the file using your favorite text editor.**
4. **Down-load the config file.** Command: **put config CONFIG**

The NPS 650 will automatically activate the new settings.

Factory Default Settings

If you should need to reset the NPS 650 to factory default conditions, the best way to do this is to use the TEST button. This procedure involves switching the NPS 650 off and on. If you use an external power supply, unplug the power cord to switch off the NPS 650, otherwise use the printer's power switch.

- 1. Switch off the NPS 650.**
- 2. Press and hold the TEST button while you switch on the NPS 650.** Keep the TEST button pressed for at least 20 seconds until the NETWORK, PRINTER and STATUS indicators flash simultaneously with one second intervals.
- 3. Release the TEST button and wait at least five seconds** (five indicator flashes).
- 4. Press and hold the TEST button for at least five seconds** until the STATUS indicator remains constantly lit.
- 5. Restart the NPS 650** (power-off/power-on).

The NPS 650 is now reset to factory default conditions.

Note: The Node and Internet Addresses (NODE_ADDR and INT_ADDR) remain unchanged, but all other parameters are reset to factory default values.

The Config File

The remainder of this appendix contains the complete NPS 650 parameter list. The left column shows the parameters and their default values as they appear in the config file, and the right column contains brief descriptions of the parameters. For a full description of the parameters, please refer to the NPS Print Server Technical Reference.

--- CONFIG MENU	
NODE_ADDR. : 00 02 31 48 00 61	Node Address
ROOT_PWD. : pass	Root Password
USERS. :	User Authority and Printer Access
S_ROUTE. : AUTO (OFF SINGLE ALL AUTO)	Token Ring Source Routing Mode
--- TCP/IP MENU	
TCP_ENB. : YES	TCP/IP Protocol Enabled
INT_ADDR. : 192 36 253 80	Internet Address
DEF_ROUT. : 0 0 0 0	Default Router Address (<i>0.0.0.0 for no router</i>)
NET_MASK. : 0 0 0 0	Net Mask (<i>e.g. 255.255.255.0 for class C, 0.0.0.0 for auto-sense</i>)
PROS_PWD. : netprinter	PROS Protocol Password
PROS_PRT. : 35	PROS TCP Port Number
LPD_BANN. : YES	LPD Banner Page Enabled
BOOTP_ENB. : YES	BOOTP Protocol Enabled
RARP_ENB. : YES	RARP Protocol Enabled
RTN_OPT. : YES	Reverse Telnet Options Enabled
RTEL_PR1. : 0	PR1 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR2. : 0	PR2 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR3. : 0	PR3 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR4. : 0	PR4 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR5. : 0	PR5 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR6. : 0	PR6 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR7. : 0	PR7 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
RTEL_PR8. : 0	PR8 Reverse Telnet TCP Port Number (<i>0 for Disabled</i>)
--- SNMP MENU	
READ_COM. : public	Read-Only Community Name
WRT_COM. : pass	Read-Write Community Name
TRAPADDR. : 0 0 0 0	SNMP Trap Internet Address
TRAP_COM. : public	SNMP Trap Community Name
SYS_CONT. :	System Contact
SYS_NAME. :	System Name
SYS_LOC. :	System Location
SNMP_AUT. : DISABLED	Authentication Failure Traps
TRAP_PRT. : DISABLED	Printer Traps

--- NETWORK MENU

```

NETW_ENB.      : YES
PS_NAME.       : AXIS480061
CONFSERV.      :
PS_POLL.       : 5
AUTO_SCAN.     : BOTH (OFF PSERVER RPRINTER BOTH)
FR_802_2.      : YES
FR_SNAP.       : YES
LOGIN1.        :
LOGIN2.        :
LOGIN3.        :
LOGIN4.        :
LOGIN5.        :
LOGIN6.        :
LOGIN7.        :
LOGIN8.        :
LOGIN9.        :
LOGIN10.       :
LOGIN11.       :
LOGIN12.       :
LOGIN13.       :
LOGIN14.       :
LOGIN15.       :
LOGIN16.       :
RPRINT1.      :
RPRINT2.      :
RPRINT3.      :
RPRINT4.      :
RPRINT5.      :
RPRINT6.      :
RPRINT7.      :
RPRINT8.      :

```

NetWare Protocol Enabled
Print Server Name (<i>480061 are the last six digits of the serial number</i>)
Configuration File Server Name
Print Server Poll Interval
Automatic NetWare Print Server/Remote Printer Login
IEEE 802.2 Frame Type Enabled
SNAP Frame Type Enabled
Print Server Queue Attachment 1
Print Server Queue Attachment 2
Print Server Queue Attachment 3
Print Server Queue Attachment 4
Print Server Queue Attachment 5
Print Server Queue Attachment 6
Print Server Queue Attachment 7
Print Server Queue Attachment 8
Print Server Queue Attachment 9
Print Server Queue Attachment 10
Print Server Queue Attachment 11
Print Server Queue Attachment 12
Print Server Queue Attachment 13
Print Server Queue Attachment 14
Print Server Queue Attachment 15
Print Server Queue Attachment 16
Remote Printer Attachment 1
Remote Printer Attachment 2
Remote Printer Attachment 3
Remote Printer Attachment 4
Remote Printer Attachment 5
Remote Printer Attachment 6
Remote Printer Attachment 7
Remote Printer Attachment 8

--- LAN SERVER/LAN MANAGER MENU

```

LSLM_ENB.      : YES
NB_FR_TYPE.    : FR_AUTO (FR_AUTO, FR_802_2, FR_DIX)
LPRINT_1.     : AX480061.LP1
LLOGIC_1.     : PR1
LPRINT_2.     : AX480061.LP2
LLOGIC_2.     : PR2
LPRINT_3.     : AX480061.CM1
LLOGIC_3.     : PR3
LPRINT_4.     :
LLOGIC_4.     : PR4
LPRINT_5.     :
LLOGIC_5.     : PR5
LPRINT_6.     :
LLOGIC_6.     : PR6
LPRINT_7.     :
LLOGIC_7.     : PR7
LPRINT_8.     :
LLOGIC_8.     : PR8

```

LAN Server/LAN Manager Protocol Enabled
Frame Type
Printer 1 Name (<i>480061 are the last six digits of the serial number</i>)
Printer 1 Logical Printer
Printer 2 Name (<i>480061 are the last six digits of the serial number</i>)
Printer 2 Logical Printer
Printer 3 Name (<i>480061 are the last six digits of the serial number</i>)
Printer 3 Logical Printer
Printer 4 Name
Printer 4 Logical Printer
Printer 5 Name
Printer 5 Logical Printer
Printer 6 Name
Printer 6 Logical Printer
Printer 7 Name
Printer 7 Logical Printer
Printer 8 Name
Printer 8 Logical Printer

Appendix A: The parameter list

--- PRINTER1 MENU

```

PR1_OUT.      : LPT1      (LPT1 COM1 LPT2)
PR1_SCND.     : PR1       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR1_WAIT.     : YES
PR1_IN.       : NONE      (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.     :

```

```

PR1 Physical Printer Port
PR1 Secondary Printer

PR1 Wait on Busy
PR1 Read-Back Port
PR1 String Before Print Job
PR1 String Substitutions
PR1 Character Set Conversion

PR1 Printer Language Translation
PR1 String After Print Job
PR1 Hex Dump Mode
PR1 PostScript Page Size
PR1 PostScript Page Orientation
PR1 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR1 PostScript Font (Courier when not specified)

```

--- PRINTER2 MENU

```

PR2_OUT.      : LPT2      (LPT1 COM1 LPT2)
PR2_SCND.     : PR2       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR2_WAIT.     : YES
PR2_IN.       : NONE      (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.     :

```

```

PR2 Physical Printer Port
PR2 Secondary Printer

PR2 Wait on Busy
PR2 Read-Back Port
PR2 String Before Print Job
PR2 String Substitutions
PR2 Character Set Conversion

PR2 Printer Language Translation
PR2 String After Print Job
PR2 Hex Dump Mode
PR2 PostScript Page Size
PR2 PostScript Page Orientation
PR2 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR2 PostScript Font (Courier when not specified)

```

--- PRINTER3 MENU

```

PR3_OUT.      : COM1      (LPT1 COM1 LPT2)
PR3_SCND.     : PR3       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR3_WAIT.     : YES
PR3_IN.       : NONE      (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.     :

```

```

PR3 Physical Printer Port
PR3 Secondary Printer

PR3 Wait on Busy
PR3 Read-Back Port
PR3 String Before Print Job
PR3 String Substitutions
PR3 Character Set Conversion

PR3 Printer Language Translation
PR3 String After Print Job
PR3 Hex Dump Mode
PR3 PostScript Page Size
PR3 PostScript Page Orientation
PR3 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR3 PostScript Font (Courier when not specified)

```


--- PRINTER4 MENU

```

PR4_OUT.      : LPT1      (LPT1 COM1 LPT2)
PR4_SCND.     : PR4       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR4_WAIT.     : YES
PR4_IN.       : NONE      (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.     :

```

PR4 Physical Printer Port

PR4 Secondary Printer

PR4 Wait on Busy

PR4 Read-Back Port

PR4 String Before Print Job

PR4 String Substitutions

PR4 Character Set Conversion

PR4 Printer Language Translation

PR4 String After Print Job

PR4 Hex Dump Mode

PR4 PostScript Page Size

PR4 PostScript Page Orientation

PR4 PostScript Page Format (*MPL, MPP, CPI, LPI, LM, TM*)PR4 PostScript Font (*Courier when not specified*)

--- PRINTER5 MENU

```

PR5_OUT.      : LPT2      (LPT1 COM1 LPT2)
PR5_SCND.     : PR5       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR5_WAIT.     : YES
PR5_IN.       : NONE      (NONE COM1)
PR5_BEF.      :
PR5_STR.      : 010A020D0A
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.     :

```

PR5 Physical Printer Port

PR5 Secondary Printer

PR5 Wait on Busy

PR5 Read-Back Port

PR5 String Before Print Job

PR5 String Substitutions

PR5 Character Set Conversion

PR5 Printer Language Translation

PR5 String After Print Job

PR5 Hex Dump Mode

PR5 PostScript Page Size

PR5 PostScript Page Orientation

PR5 PostScript Page Format (*MPL, MPP, CPI, LPI, LM, TM*)PR5 PostScript Font (*Courier when not specified*)

--- PRINTER6 MENU

```

PR6_OUT.      : COM1      (LPT1 COM1 LPT2)
PR6_SCND.     : PR6       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR6_WAIT.     : YES
PR6_IN.       : NONE      (NONE COM1)
PR6_BEF.      :
PR6_STR.      : 010A020D0A
PR6_CSET.     : NONE      (NONE ISO>IBM 7UK>IBM 7SW>IBM
                          7GE>IBM 7FR>IBM 7ND>IBM DEC>IBM)
PR6_FILT.     : NONE      (NONE POSTSCR AUTO_PS)
PR6_AFT.      :
PR6_DUMP.     : NO
PR6_SIZE.     : A4        (A4 LETTER LEGAL EXECUT)
PR6_ORNT.     : PORTR     (PORTR LANDS R_PORTR R_LANDS)
PR6_FORM.     : 66 0 100 60 30 50
PR6_FONT.     :

```

PR6 Physical Printer Port

PR6 Secondary Printer

PR6 Wait on Busy

PR6 Read-Back Port

PR6 String Before Print Job

PR6 String Substitutions

PR6 Character Set Conversion

PR6 Printer Language Translation

PR6 String After Print Job

PR6 Hex Dump Mode

PR6 PostScript Page Size

PR6 PostScript Page Orientation

PR6 PostScript Page Format (*MPL, MPP, CPI, LPI, LM, TM*)PR6 PostScript Font (*Courier when not specified*)

Appendix A: The parameter list

--- PRINTER7 MENU

```

PR7_OUT.      : LPT1      (LPT1 COM1 LPT2)
PR7_SCND.     : PR7       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR7_WAIT.     : YES
PR7_IN.       : NONE      (NONE COM1)
PR7_BEF.      :
PR7_STR.      : 010A020D0A
PR7_CSET.     : NONE      (NONE ISO>IBM 7UK>IBM 7SW>IBM
                          7GE>IBM 7FR>IBM 7ND>IBM DEC>IBM)
PR7_FILT.     : NONE      (NONE POSTSCR AUTO_PS)
PR7_AFT.      :
PR7_DUMP.     : NO
PR7_SIZE.     : A4        (A4 LETTER LEGAL EXECUT)
PR7_ORNT.     : PORTR     (PORTR LANDS R_PORTR R_LANDS)
PR7_FORM.     : 66 0 100 60 30 50
PR7_FONT.     :

```

PR7 Physical Printer Port
 PR7 Secondary Printer
 PR7 Wait on Busy
 PR7 Read-Back Port
 PR7 String Before Print Job
 PR7 String Substitutions
 PR7 Character Set Conversion
 PR7 Printer Language Translation
 PR7 String After Print Job
 PR7 Hex Dump Mode
 PR7 PostScript Page Size
 PR7 PostScript Page Orientation
 PR7 PostScript Page Format (*MPL, MPP, CPI, LPI, LM, TM*)
 PR7 PostScript Font (*Courier when not specified*)

--- PRINTER8 MENU

```

PR8_OUT.      : LPT1      (LPT1 COM1 LPT2)
PR8_SCND.     : PR8       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)

PR8_WAIT.     : YES
PR8_IN.       : NONE      (NONE COM1)
PR8_BEF.      :
PR8_STR.      : 010A020D0A
PR8_CSET.     : NONE      (NONE ISO>IBM 7UK>IBM 7SW>IBM
                          7GE>IBM 7FR>IBM 7ND>IBM DEC>IBM)
PR8_FILT.     : POSTSCR   (NONE POSTSCR AUTO_PS)
PR8_AFT.      :
PR8_DUMP.     : NO
PR8_SIZE.     : A4        (A4 LETTER LEGAL EXECUT)
PR8_ORNT.     : PORTR     (PORTR LANDS R_PORTR R_LANDS)
PR8_FORM.     : 66 0 100 60 30 50
PR8_FONT.     :

```

PR8 Physical Printer Port
 PR8 Secondary Printer
 PR8 Wait on Busy
 PR8 Read-Back Port
 PR8 String Before Print Job
 PR8 String Substitutions
 PR8 Character Set Conversion
 PR8 Printer Language Translation
 PR8 String After Print Job
 PR8 Hex Dump Mode
 PR8 PostScript Page Size
 PR8 PostScript Page Orientation
 PR8 PostScript Page Format (*MPL, MPP, CPI, LPI, LM, TM*)
 PR8 PostScript Font (*Courier when not specified*)

--- OUTPUT MENU

```

L1_CENTR.     : STNDRD    (IBM_PC STNDRD FAST HISPEED)
L1_BSYTM.     : 60
C1_READT.     : 3
C1_HNDSH.     : ROBUST-BOTH (NONE XON/XOFF ROBUST
                          RDY/BSY BOTH ROBUST-BOTH)
C1_BAUDR.     : 9600      (300 600 1200 2400 4800 9600
                          19200 38400 57600 115200)
C1_STOPB.     : 2         (1 2)
C1_PARIT.     : NONE      (NONE ODD EVEN)
C1_NBITS.     : 8         (7 8)
C1_BSYTM.     : 60
L2_CENTR.     : STNDRD    (IBM_PC STNDRD FAST HISPEED)
L2_BSYTM.     : 60

```

LPT1 Centronics Interface Timing
 LPT1 Busy Status Time-Out
 COM1 Printer Feedback Delay
 COM1 Handshake Protocol
 COM1 Baud Rate
 COM1 Stop Bits
 COM1 Parity
 COM1 Word Length
 COM1 Busy Status Time-Out
 LPT2 Centronics Interface Timing
 LPT2 Busy Status Time-Out

--- PANEL MENU

```

DEF_OUT.      : PR1       (PR1 PR2 PR3 PR4
                          PR5 PR6 PR7 PR8)
LOCK_KEY.     : NO

```

Internal Printout Destination
 Lock Test Button

Appendix B

Internal printouts

There are three different internal printouts that can be printed using the TEST button on the NPS 650 front panel:

The Test Page The test page shows the software revision and the basic configuration of the NPS 650.

To print the test page, press the TEST button until the STATUS indicator starts to flash, then release the button.

The Parameter List The parameter list (or the *config* file) shows the complete NPS 650 configuration. See Appendix A for a sample parameter list.

To print the parameter list, press the TEST button until the STATUS indicator starts to flash, release the button, and press it once.

The read.me File The *read.me* file contains detailed instructions about how to integrate the NPS 650 for different TCP/IP environments and print methods. It also contains last-minute information not covered by the printed documentation, so you should always read this file before starting the integration.

To print the *read.me* file, press the TEST button until the STATUS indicator starts to flash, release the button, and press it twice.

Appendix C

Technical specifications

Network environments

- NetWare 3.11, 3.12, 4.0x and 4.10 using bindery emulation
- Windows for Workgroups, Windows 95, Windows NT ver. 3.5 and above
- LAN Server 1.3 and above
- LAN Manager 2.0c and above

Network attachments

- STP (Media Type 1) via 9-pin D-sub connector, 4 and 16 Mbps networks
- UTP (Media Type 3) via RJ-45 connector, 4 and 16 Mbps networks

Supported protocols

- Netware: IPX, RIP, NCP, SAP, SPX
- Windows: NetBIOS/NetBEUI, TCP/IP (Windows NT)
- TCP/IP: LPD, FTP, Reverse Telnet, PROS, BOOTP, ARP, ICMP, IP, RARP, TCP, Telnet, UDP
- OS/2: NetBIOS/NetBEUI

General features

- Easy installation
- High-speed printing (>250 kbytes/s)
- Eight logical printers (featuring Physical Printer Port, Character Set Conversion, Strings Before and After Print Jobs, String Substitutions, PostScript Functions, Action at Printer Busy, and Hex Dump Mode)
- Security functions
- Printout statistics logging
- Use of IEEE802.2 and SNAP frame types simultaneously

NetWare features

- Standard installation using PCONSOLE
- Print Server Mode for high-speed printing
- Remote Printer Mode for up to 16 printers per NetWare user licence
- Up to 96 print queues on 16 file servers
- Port Status monitoring

Windows features

- Automatic installation software (Axis Print Utility for Windows)
- Printing through Windows Print Manager
- Both peer-to-peer and client-server printing

OS/2 features

- Automatic installation software (Axis Print Utility for OS/2)
- Printing through OS/2 Print Manager
- Port Status monitoring

Unix features

- SNMP support: Axis private enterprise MIB and MIB-II

Printer attachments

- Two parallel Centronics ports (25 pin DSUB, throughput exceeding 250 kbytes/s, burst 1000 kbytes/s)
- One serial RS-232C port (9 pin DSUB, XON/XOFF or RTS/CTS, transfer rates up to 115,200 baud)

Hardware specifications

- Size: 7.7 × 1.3 × 5.2 inches / 195 × 32 × 133 mm
- Weight: 1.8 lb / 0.8 kg
- Power: 12 - 20 VDC or 9 - 18 VAC, min. 12 VA by external power supply

Approvals

- EMC: Limit A of FCC Rules and Regulations part 15 subpart B, class A (US).
Limit B of EN 55022/1987, EN 50082-1/1992 (Europe).
- Safety: EN 60950, UL

**Operating environments**

- Temperature: 40 - 105 °F / 5 - 40 °C
- Humidity: 10 - 95% non-condensing

All specifications are subject to change without prior notice

Appendix D

How to contact Axis

If you need technical support, please contact your dealer. If they can't help you, they will forward your request to us.

Axis on-line service

Use the Axis on-line service at any time to retrieve electronically distributed items. The material available include the NPS Print Server Technical Reference, the Adobe Acrobat Reader (required for all Axis on-line documentation), company and product presentations, etc. All items are available on Internet by a WWW browser or ftp file transfer, and on the Axis Bulletin Board by modem.

Internet and World Wide Web

If you are connected to Internet, have a look at the Axis WWW Home Page at <http://www.axis.se>. Here you can find information about the company and our products. You can also down-load online manuals, tools such as the Acrobat Reader for different platforms, and the latest versions of the NPS utilities.

You can also get files and information through anonymous ftp at <ftp://ftp.axis.se>.

If you want to receive regular information about new products and product updates by e-mail, send an e-mail to Majordomo@axis.se with

SUBSCRIBE AXIS-NEWS
in the message body.

The Axis Bulletin Board

The third way to access the Axis archive is the Axis BBS. You will need a high-speed modem, a VT100 or VT220 terminal emulator, and a Kermit or ZModem compatible software. Dial **+46 46 12 06 32** or **+46 46 211 94 53** and log in as **guest** (no password required).

The Axis offices

If you want to contact an Axis office, choose the one nearest to your region:

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