User's Manual

EasyLAN 100i
Ethernet Interface Board

Intermec
Technologies Corporation

A **UNOVA** Company

1. Introduction

Contents

Information in this manual is subject to change without prior notice and does not represent a commitment on the part of Intermec Printer AB.

The word Intermec, the Intermec logo, EasyCoder, EasyLAN, Fingerprint, and PrintSet are either trademarks or registered trademarks of Intermec Technologies Corp.

DOS, Ethernet, HP, JetAdmin, LAN Manager, LAN Server, NDPS, Novell NetWare, OS/2, Unix, Windows, and AXIS NetPilot are registered trademarks of the respective holders.

Throughout this manual, trademarked names may be used. Rather than put a trademark (™ or ®) symbol in every occurrence of the trademarked name, we state that we are using the names only in an editorial fashion, and to the benefit of the trademarked owner, with no intention of infringement.

Links in this manual:
Red text indicates an internal link inside this document.
Blue text indicates an external link that requires an internet connection and a web browser.

Description

The Intermec EasyLAN 100i Ethernet interface board is an optional device for EasyCoder 501 XP, EasyCoder 601 XP, EasyCoder F2, and EasyCoder F4 which provides these printers with a 10baseT Ethernet or 100baseTX Fast Ethernet network connection. The Easy-LAN 100i pcb may either be factory-installed in your printer, or can be fitted later using the EasyLAN 100i kit as described in the Intermec EasyLAN 100i Installation Instructions booklet.

The EasyLAN 100i has been developed by Intermec Technologies Corporation in cooperation with Axis Communications, Sweden, and utilizes standard software from Axis for installation and con-figuration.

In this manual, the EasyLAN 100i interface board is regularly re-ferred to as a **print server**.

Where to use it

Printer Firmware
The printer must be fitted with Intermec Fingerprint v. 7.31 or later. The Ethernet port is addressed as device "net1:".

Supported Environments
EasyLAN 100i supports the following computer systems and envi-ronments;
- NetWare
- Unix
- Windows (3.1x, WfW, 95, 98 & NT versions)
- Windows clients connected to LANtastic networks
- OS/2
- Internet/Intranet via any standard Web browser.

How to use it

Installation and Integration
The logical installation of the EasyLAN 100i and its integration into the network is performed using the appropriate Axis client soft-ware, provided on the CD delivered with the EasyLAN 100i inter-face board.

Configuration and Management
As the EasyLAN 100i comprises a built-in Web server, it can be configured and managed directly from its internal Web pages, us-ing HTTP over TCP/IP. Access to the EasyLAN 100i via any stan-dard Web browser offers you a platform-independent management tool that is suitable for all supported network environments.

Features and Benefits

Reliability

The EasyLAN 100i provides high performance and reliability. The electronic circuits are based on the improved AXIS ETRAX 100 chip, which comprises an integrated 32 bit RISC processor and associated network controllers.

Flexibility

It supports printing in all the major computer systems and environments, including a number of different print methods in the TCP/IP environment.

Speed

The AXIS ETRAX 100 chip has been specifically designed for LAN products and benefits users with a faster throughput than a direct PC-to- printer connection. With a sustained data throughput of more than 1 Mbyte per second, the EasyLAN 100i is fast.

Easy to Install

You can install the EasyLAN 100i in your network in several ways:
• Setting the IP address using the AXIS NetPilot installation software. Its Installation Wizard, combined with the *itinstall* script for UNIX workstations, allows installation into all supported networking environments. This method is intended for network administrators in a local area network and can be performed remotely.
• Setting the IP address, default router, and netmask by means of the printer's Setup Mode using the printer's own built-in keyboard. This method allows setting all network addresses for full access via the word wide web, but requires physical access to the printer.

After you have assigned an IP address to the EasyLAN 100i board, you can either use the various AXIS installation software products or the EasyLAN 100i home page to configure it further.

Security

You can assign passwords to restrict both login and printer access.

Features and Benefits, cont'd.

Monitoring

The internal EasyLAN 100i web pages allow you to continuously monitor printer status.

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

The EasyLAN 100i additionally supports SNMP for remote monitoring.

Futureproof

You can upgrade the EasyLAN 100i Flash memory over the network. This allows you to quickly update and enhance the operational features of your EasyLAN 100i when new print server software becomes available.

Supporting Material on CD

The CD that comes with the EasyLAN 100i contains the following programs, files, and manuals.

General and Specifications
- Navigation tool
- Product presentation
- Product profile

Documentation
- Intermec EasyLAN 100i Installation Instructions
- Intermec EasyLAN 100i User's Manual
- Intermec Fingerprint 7.xx Reference Manual

Firmware
- EasyLAN 100i firmware
- Intermec Fingerprint printer firmware
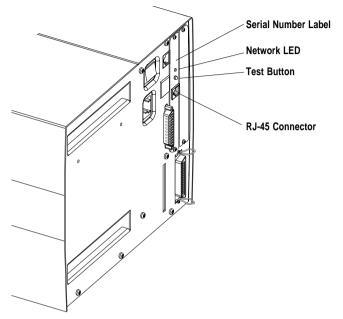
Software Utilities
- AXIS Thin Wizard for Windows 95/98
- AXIS Thin Wizard for Windows NT
- AXIS NetPilot
- AXIS Print Monitor for Windows 95/98 and NT
- Intermec InterDriver with ActiveX Controls
- Intermec PrintSet
- Intermec proprietary MIBs
- test.txt (test file)
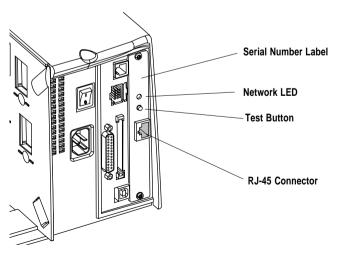
2. Product Overview

Physical Description

EasyCoder XP-Series

Serial Number Label
Network LED
Test Button
RJ-45 Connector

Serial Number Label
Network LED
Test Button
RJ-45 Connector

EasyCoder F-Series

Physical Description, cont'd.

Interface Board
The EasyLAN 100i is a printed circuit board for internal installation in an Intermec EasyCoder XP-series or F-Series printer. It comes either factory-installed or as a kit for field installation.

Network Connector
The EasyLAN 100i is designed for 10 Mbps Ethernet and 100 Mbps Fast Ethernet networks and connects to the network via a twisted pair category 5 cable (10baseT and 100baseTX) or better using RJ-45 connectors. The EasyLAN 100i is equipped with an autosensing function that detects the speed of the local network segment and varies the speed of its data communication accordingly, between 10 Mbps and 100 Mbps.

Test Button
The test button is used to enable the printing of special network test labels from the Test Label option in the Setup Mode and also to reset network parameters to default, see the Installation Instructions that comes with the EasyLAN 100i.

Network Indicator
The network indicator LED flashes to indicate network activity.

Serial Number Label
The serial number label on the rear plate of the EasyLAN 100i shows the unique serial number of the specific EasyLAN 100i device. The serial number is the basis for the hardware address (also called node address, Ethernet address, or MAC address) used for connecting the EasyLAN 100i to a network.

3. Basic Installation

Getting Started

Assuming that the EasyLAN 100i interface board is fitted in your printer, you are now ready to install your EasyLAN 100i in your network.

Follow the instructions below to install the EasyLAN 100i in your local area network using the Axis tools provided on the CD.

As an alternative, you can use the printer's Setup Mode to set the IP address, default router, and subnetmask as described in the Installation Instructions booklet, provided you have physical access to the printer. Then, you can use a web browser to open the EasyLAN 100i home page and configure the remaining parameters (see Chapter 8 *"Configuration & Management; Using a Web Browser"* and Appendix 1 *"EasyLAN 100i Home Page"*.

1. Start the procedure by connecting the EasyLAN 100i to your network and printer as described in *"Connecting the printer to the Ethernet Network"* below.

2. When the EasyLAN 100i is successfully connected, proceed to the *"Installation Guide"* on next page, where you will find further information about how to install and integrate the EasyLAN 100i in your network environments.

Connecting the Printer to the Ethernet Network

Note:
Each EasyLAN 100i unit is pre-configured with a unique node address that is based on the serial number.

Follow the instructions below to connect the printer to the network via the EasyLAN 100i interface board:

• Switch off the power to the printer.

• Using a category 5 twisted pair cable (10baseT or 100baseTX), connect the EasyLAN 100i interface board to your Local Area Network (LAN).

• Turn on the power to the printer.

• Select communication port "net1:" as the standard IN/OUT port, either by means of Intermec Shell (see the Installation & Operation manual of the printer) or via Web Shell (see Appendix 1 EasyLAN 100i Home Page; Configuration; 4. Web Shell).

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

Installation Guide

After connecting the EasyLAN 100i to your network, you are now ready to perform the basic setup procedures. The method of installation that you choose should be dictated by your printing requirements and the type of network into which you are integrating.

Installation Methods

Select the appropriate installation method from the table below:

Environment	Network Configuration	Action
NetWare	NDPS	See Chapter 4 *"Setting Up NetWare; Setup using NDPS"*
	NetWare	See Chapter 3 *"Basic Installation; Basic Setup with AXIS NetPilot"*
	NetWare – Advanced Config.	See Chapter 4 *"Setting Up NetWare; Advanced Installation using AXIS NetPilot"*
Windows	NetBIOS/NetBEUI	See Chapter 5 *"Setting Up - Windows"*
	TCP/IP	See Chapter 3 *"Basic Installation; Assigning an IP address"*.
		Proceed with Chapter 5 *"Setting Up - Windows"*
OS/2	NetBIOS/NetBEUI	See Chapter 6 *"Setting Up - OS/2"*
UNIX	TCP/IP	See Chapter 3 *"Basic Installation; Assigning an IP address"*.
		Proceed with Chapter 7 *"Setting Up - UNIX"*.

Installation Tools

The appropriate installation tools for the EasyLAN 100i are summarized in the following table. Always use the latest available version of the installation tools.

Environment	Operating System Protocols	Installation Tool
NetWare	IPX/SPX	AXIS NetPilot
Windows 95/98 & NT	NetBIOS/NetBEUI TCP/IP	AXIS Print Monitor AXIS Print Monitor
Windows 3.1/WfW	NetBIOS/NetBEUI TCP/IP	Axis Print Utility for Windows LPR Spooler[1]
OS/2	NetBIOS/NetBEUI	Axis Print Utility for OS/2
UNIX	TCP/IP	itinstall

[1]. A shareware LPR spooler is available for Windows for Workgroups at **http://www.axis.com/techsup/**.
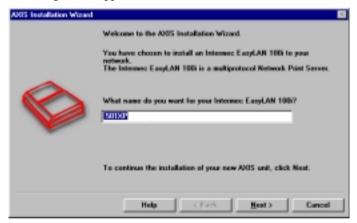
Basic Setup with AXIS NetPilot

Install the AXIS NetPilot software, which is included on the CD, on your computer. AXIS NetPilot runs on any of the Windows platforms; Windows 3.x, Windows 95, Windows 98, Windows NT, Windows for Workgroups, or in a WinOS/2 window under OS/2.

Starting the Installation

Follow the instructions below to install the EasyLAN 100i with AXIS NetPilot:

1. Start AXIS NetPilot by double-clicking the NetPilot icon, which is located in the folder where you installed AXIS NetPilot.

2. Locate the EasyLAN 100i in the 'New Axis Units' folder. Select it and click the **Install** button on the *AXIS NetPilot* toolbar. If your network is large, it could take a few seconds before the print server appears in the folder.

3. Choose the Installation Wizard option and click **OK**. The following screen appears:

The AXIS NetPilot Installation Wizard Main window

Basic Setup with AXIS NetPilot, cont'd.

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

> *Note:*
> *The number of options varies according to the number of environments you enable.*

Print Server Name

The default EasyLAN 100i print server name consists of the characters 'INTERMEC' followed by the last six digits of the serial number. If you want to change the print server name, just type the new name in the available text field.

Environments

Choose which networking environments you want to configure the EasyLAN 100i for, i.e. NetWare, TCP/IP, or Windows & OS/2. If your network comprises various different platforms, you can enable any combination of environments.

NetWare NDS

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

The IP address

Choose the method the EasyLAN 100i should employ for obtaining an IP address. DHCP, ARP, RARP, and BOOTP are supported. You can also choose to set the IP address manually. Refer to *"Assigning an IP address"* later in this chapter for further information about setting the IP address.

Print Queues

The EasyLAN 100i uses the print server name followed by the printer port as the default Print Queue name and print server port name. If you want to change the default printer queue names, just type the new names in the available text fields.

Environment	*Default Names*
NetWare	*INTERMEC_LPT1_Q*
Windows & OS/2	*INTERMEC.LP1*

Basic Setup with AXIS NetPilot, cont'd.

Test Page

The test page is only intended for laser printers and similar that support PostScript and will **not** work with the EasyLAN 100i.

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

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

Assigning an IP Address

To establish communication with the TCP/IP network, enabling TCP/IP printing and Web browser management, an IP address must be assigned to your EasyLAN 100i.

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

Ethernet address[1]
You need to know the Ethernet address of your EasyLAN 100i to perform the installation. The Ethernet address is based upon the serial number of your EasyLAN. This means, for example, that an EasyLAN 100i with the serial number of 001040003610, will have the corresponding Ethernet address of `00 10 40 00 36 10`. The couples of digits that make up the Ethernet address may be separated by spaces, dots, hyphens, or colons depending on application. The serial number is located on the label on the rear plate of the unit.

IP address
Unless you are downloading the IP address using DHCP, you must obtain an unused IP address from your network administrator.

> *Important:*
> *DO NOT use the IP addresses shown in the following examples when installing your EasyLAN 100i. Always consult your network administrator before assigning an IP address to your EasyLAN 100i.*

Methods for downloading the IP Address
You can set the IP address using one of the following methods, depending on your network operating environment:

Method	Network environments
DHCP	Windows NT, UNIX
ARP	Windows 95/98/NT UNIX
RARP	UNIX
BOOTP	UNIX
Manual setting	Windows 95/98/NT, OS/2, NetWare
Setup Mode	All

> *Note:*
> *The ARP and RARP methods operate on single network segments only, i.e. they cannot be used over routers.*
> *DHCP assigns an IP address **temporarily** from a pool of addresses, which implies that the IP address can change unexpectedly.*

[1]*/. The Ethernet address is also called MAC address, node address, and hardware address, depending on application.*

Assigning an IP Address, cont'd.

Assigning a Host Name to the IP address

If you are using host names, you can map a unique host name to the obtained IP address. Refer to your system manuals or to your network administrator for instructions on how to perform name mapping on your system.

The EasyLAN 100i supports WINS (Windows Internet Name Service), which is recommended when you are using DHCP in a Windows NT network.

> *Note:*
> *If the host name has not been mapped to the IP address, you can still perform the following instructions on how to download the IP address. In this case, simply replace the host name entry with the IP address wherever required.*

Using DHCP

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

1. Edit or create a scope in the DHCP manager of the DHCP daemon. The entries included in this scope should contain the following parameters:
   - range of IP addresses
   - subnet mask
   - default router IP address
   - WINS server IP address(es)
   - lease duration
2. Activate the scope.
   The EasyLAN 100i automatically downloads the DHCP parameters.

If you are using WINS, you must include at least one WINS server IP address in the DHCP scope. Immediately after the IP address has been received, the EasyLAN 100i registers its host name and IP address on the WINS server.

The EasyLAN 100i can automatically download a customized config file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your DHCP scope. The config file is downloaded immediately after the EasyLAN 100i receives its IP address.

> *Note:*
> *You do not have to restart the EasyLAN 100i to download the IP address.*

Assigning an IP Address, cont'd.

Using ARP in Windows 95/98 and Windows NT
Follow the instructions below to set the IP address using ARP:

1. Start a DOS window.

2. Type the following commands:
```
arp -s <IP address> <Ethernet address>
ping <IP address>
arp -d <IP address>
```
Example:
```
arp -s 192.168.234.196 00-10-40-00-36-10
ping 192.168.234.196
arp -d 192.168.234.196
```

The host will return `Reply from 192.168.234.196 ...` or a similar message. This indicates that the address has been set and that communication is established.

> *Notes:*
> - *Enter the Ethernet address as couples of digits separated by **hyphen** signs as shown in the example above.*
> - *When using the Windows 95 implementation of ARP, change the first line to:*
>   `arp -s <IP address> <Ethernet address> <w95host IP address>`, *where* `<w95host IP address>` *is the IP address of your Windows 95 host.*
> - *When you execute the* `ping` *command for the first time, you will experience a significantly longer response time than is usual.*
> - *By using the* `arp -d` *command, the static entry in the arp table is removed from the host's cache memory.*
> - *If ARP does not work, check if RARP is disabled on the TCP/IP home page, see Appendix 1; Configuration; Network Interface; 1. TCP/IP. If so, change to enable.*

Assigning an IP Address, cont'd.

Using ARP in UNIX

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

Type the following commands:

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

Example:
```
arp -s npsname 00:10:40:00:36:10 temp
ping npsname
```

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

Notes:
- *Enter the Ethernet address as couples of digits separated by **colon** signs as shown in the example above.*
- *The ARP command varies between different UNIX systems. Some BSD type systems expect the host name and node address in reverse order. Furthermore IBM AIX systems will require the additional argument ether. For example:*
  `arp -s ether <host name> 00:10:40:00:36:10 temp`
- *When you execute the `ping` command for the first time, you may experience a significantly longer response time than is usual.*
- *If ARP does not work, check if RARP is disabled on the TCP/IP home page, see Appendix 1; Configuration; Network Interface; 1. TCP/IP. If so, change to enable.*

Assigning an IP Address, cont'd.

Using RARP in UNIX

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

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

   `<Ethernet address> <host name>`

   Example:
   `00:10:40:00:36:10 npsname`

2. Update, if necessary, your host table and alias name databases, as required by your system.

3. If it is not already running, start the RARP daemon. This is typically performed using the `rarpd -a` command.

4. Restart the EasyLAN 100i to download the IP address.

> *Note:*
> - *Enter the Ethernet address as couples of digits separated by **colon** signs as shown in the example above.*
> - *If you are a IBM AIX user, you will probably not have access to a RARP daemon. If this is the case, you can use either the ARP or BOOTP methods instead.*
> - *If RARP does not work, check if RARP is disabled on the TCP/IP home page, see Appendix 1; Configuration; Network Interface; 1. TCP/IP. If so, change to enable.*

Assigning an IP Address, cont'd.

Using BOOTP in UNIX

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

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

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

Example:
```
npsname:ht=ether:vm=rfc1048:\
:ha=001040003610:ip=192.168.234.196:\
:sm=255.255.255.0:gw=192.168.1.1
```

> *Notes:*
> - *Enter the Ethernet address **without any** separation signs as shown in the example above.*
> - *Enter the* `ht` *and* `vm` *fields exactly as shown in the example.*
> - *The* `ha` *field is the Ethernet address and the* `ip` *field is the IP address of your EasyLAN 100i.*
> - *The* `gw` *and* `sm` *fields correspond to the default router address and subnet mask.*

2. If necessary, update your host table and alias name databases, as required by your system.

3. If it is not already running, start the BOOTP daemon. This is typically performed using the `bootpd` command.

4. Restart the EasyLAN 100i to download the IP address, default router address, and subnet mask.

The EasyLAN 100i can automatically download a customized config file from a TFTP server. Just add the name of the config file and the TFTP server's IP address to your boot table. The config file is downloaded immediately after the EasyLAN 100i receives its IP address.

4. Setting Up – NetWare

Introduction

If you have performed the basic installations as described in Chapter 3 *"Basic Installation; Basic Setup with AXIS NetPilot"*, the EasyLAN 100i is now ready for communicating within the NetWare environment.

However, if you need a more advanced installation that is not covered by the AXIS NetPilot Installation Wizard, you are advised to perform the additional instructions presented in *"Advanced Installation using AXIS NetPilot"* later in this chapter.

If you want to install the EasyLAN 100i using NDPS, you should not use the AXIS NetPilot Installation Wizard at all. You should instead follow the instructions in *"Setup using NDPS"* later in this chapter.

If you intend to operate your EasyLAN 100i in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:
• Chapter 5 *"Setting Up - Windows"*
• Chapter 6 *"Setting Up - OS/2"*
• Chapter 7 *"Setting Up - UNIX"*

Setup using NDPS

The EasyLAN 100i supports Novell Distributed Print Services (NDPS), which is Novell's new generation architecture for printing and printer administration.

Before the EasyLAN 100i can be installed, you must install NDPS and an HP Gateway on your NetWare file server. The HP Gateway is included with the NDPS software and is automatically installed together with NDPS. The EasyLAN 100i uses the HP Gateway when communicating with an NDPS printer.

Please refer to the appropriate Novell and Hewlett Packard documentation for further details about NDPS and the HP Gateway.

Installing the EasyLAN 100i

You can select to install the connected printers as public or controlled printers. Follow the instructions below to install the EasyLAN 100i using NDPS:

Public Access

1. Make sure that the HP Gateway is configured to automatically create a public access printer, before you connect the EasyLAN 100i to the network.

2. Connect the EasyLAN 100i to the NetWare network.

As soon as the HP Gateway finds the EasyLAN 100i, it will automatically create a public access printer. All users have access to the public access printer, which is found with the Novell Printer Manager.

Controlled Access

1. Make sure that the HP Gateway is not configured to automatically create a public access printer, before you connect the EasyLAN 100i to the network.

2. Connect the EasyLAN 100i to the NetWare network.

3. Use the NetWare Administrator to create an NDPS printer as an object in the directory. As directory objects, access to them is controlled and they are no longer available as public access printers.

The controlled access printer is found in the Novell Printer Manager's NDS object list.

Advanced Installation using AXIS NetPilot
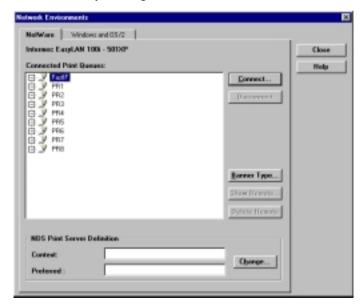
Having installed your EasyLAN 100i print server in accordance with the basic installation procedures described in Chapter 3 "Basic Installation; Basic Setup with AXIS NetPilot" your EasyLAN 100i print server should now feature in the 'Network Print Servers' folder located in the AXIS NetPilot main window.

NetWare Network Environment Window

The NetWare Network Environment window allows you to connect additional print queues to your EasyLAN 100i as well as create new ones.

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

1. Select the required Network Print Server from the 'Network Print Server' folder.

2. Choose **Network** from the Setup menu or click on the **Network** icon on the AXIS NetPilot's toolbar.

3. If you are not logged on to your NetWare file server, a dialog box will ask you to log on.

The AXIS NetPilot NetWare Network Environment window

Advanced Installation using AXIS NetPilot, cont'd.

The EasyLAN 100i periodically updates the configuration by scanning the NDS tree or, in the case of NetWare versions 3.x, the designated file servers.

Connecting Print Queues

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

1. Open the NetWare Network Environment window.

2. Select the print server port you want to connect.

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

The AXIS NetPilot Connect NetWare Print Queues window

4. Select the tree or server location of the print queue from the Resources box.

5. Select an existing print queue to connect to the server port, create a new print queue by clicking on **Create Queue...** If you have selected an existing queue, advance to step 8. Continue with step 6 only if you want to create a new queue.

6. Type the queue name in the Create Queue dialog window. If you want to create a queue in the NDS tree you must also enter the name of the volume where the queue will be located. Click **OK**.

Advanced Installation using AXIS NetPilot, cont'd.

7. Select the newly created queue from the queue list.

8. Select **Print Server Mode** or **Remote Printer Mode**. If you selected Print Server Mode, advance directly to step 11, otherwise continue with step 9. Please refer to Printing Methods on next page for further information about the two printing methods.

9. Select an appropriate NetWare Print Server name, that will be associated with the EasyLAN 100i print server, by using the **Browse...** button.

    Note: You cannot type or edit the name manually.

10. If you want to define a remote printer number slot manually, check the **Manual** box and type the desired number in the box.

11. Click the **OK** button to return to the Network Environments window.

Printing Methods

The following overview explains the advantages and limitations of the two supported NetWare printing methods.

Print Server Mode

The EasyLAN 100i logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the EasyLAN 100i emulates a NetWare print server, that is a workstation running PSERVER. It provides high printing speed with low network load and is the recommended mode for medium to large sized networks. Each print server in PSERVER mode takes one NetWare license.

Advantages
• High performance, typically up to 1 Mbyte/s.

Limitations
• In bindery mode, this printing method requires a NetWare user licence for each EasyLAN 100i to file server link.

Remote Printer Mode

The EasyLAN 100i connects to a PSERVER NetWare program running on the file server, or to a dedicated workstation running PSERVER.EXE. It then automatically receives print jobs from the file server. In this fashion, the EasyLAN 100i emulates a workstation running the NetWare remote printer software RPRINTER, or NPRINTER.

This mode is only recommended for small networks where the number of NetWare user licences is a major issue.

Advantages
• NetWare user licences are not required.

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

5. Setting Up – Windows

Introduction

Having connected the EasyLAN 100i to your network, this section describes how to use the AXIS Print Utilities for printing in the Windows environment.

If you intend to print directly from standard Windows applications, e.g. Microsoft Office, you should start by installing the appropriate Intermec InterDriver as a local printer on the host using the Installation Wizard. The Intermec InterDriver is included on the CD.

Then identify your Windows platform and choose the appropriate installing instructions from the list below.

Windows 95 and Windows 98, please refer to:
- Using the AXIS Print Monitor for Windows 95/98 and NT

Windows NT, please refer to:
- Using the AXIS Print Monitor for Windows 95/98 and NT

Windows 3.1 and Windows for Workgroups, please refer to:
- Using the AXIS Print Utility for Windows

Windows clients using LANtastic, please refer to:
- Windows Clients using LANtastic,

If you intend to use the EasyLAN 100i in a multiprotocol environment, you should also refer to the following sections:
- Chapter 4 *"Setting Up - NetWare"*
- Chapter 6 *"Setting Up - OS/2"*
- Chapter 7 *"Setting Up - UNIX"*

Using the AXIS Print Monitor for Windows 95/98 and NT

AXIS Print Monitor should be used for network printing in Windows 95, Windows 98 and Windows NT environments. It allows AXIS Network Print Servers to be connected in the same simple fashion as a local printer port and once installed, is automatically initialized upon system startup.

Install the AXIS Print Monitor software now if you have not already done so. It is available on the CD.

If you want to change the default name or amend any of the EasyLAN 100i default parameters, you can do so using the AXIS NetPilot, or any standard Web browser. Refer to Chapter 8 *"Configuration & Management"*.

About AXIS Print Monitor
AXIS Print Monitor is a Windows component that has been developed for peer-to-peer printing under Windows 95, Windows 98 and Windows NT that allows your print jobs to be sent directly to the print server.

Printing Environments
The AXIS Print Monitor supports printing over NetBIOS/NetBEUI and TCP/IP (LPR). To enable printing in these environments, please ensure that the desired printing protocol is running on your client.

Peer-to-Peer Printing
The AXIS Print Monitor needs to be installed on each workstation to perform peer-to-peer printing. Once installed, the AXIS Print Monitor allows you to access all network printers, just as if they were connected directly to your workstation. Peer-to-peer printing offers the following benefits:
- You can easily monitor the status of your printers by enabling error condition pop-up messages.
- You do not have to rely on a server.

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

User Dialog
Although the AXIS Print Monitor user dialog varies depending on which platform you are using, i.e. Windows 95, Windows 98, Windows NT 4.0 or Windows NT 3.5x, the functionality is exactly the same.

Note:
The AXIS Print Monitor may be used for DOS printing when installed on Windows NT platforms. However, in Windows 95/ 98 this is only possible from a client workstation, in a client-server configuration. The AXIS Print Utility for Windows should be used if DOS peer-to-peer printing is performed on a Windows 95/98 platform. Please refer to "Using the AXIS Print Utility for Windows" later in this chapter.

Windows 95 and Windows 98

Using the AXIS Print Monitor with Windows 95/98

Follow the procedures below to install Axis printer ports from a Windows 95 or Windows 98 workstation:

NetBIOS/NetBEUI

1. To start the Add Printer Wizard, select **Settings - Printers** from the **Start** menu and double-click the **Add Printer** icon.

2. After clicking **Next>** in the first dialog, the Wizard asks you to select Local printer or Network printer. Select **Local printer** as the EasyLAN 100i emulates a local printer port. Click **Next>**.

3. Choose the Intermec printer driver in the displayed Manufacturers list, then select the appropriate printer from the Printers list and click **Next>** to proceed directly to step 6. It is only necessary to perform steps 4 –5 if your printer does not appear in the model list.

   Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

4. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

5. Select the printer driver in the ***:\Interdrv\DP** folder on the CD and click **Next>**.

6. Select the AXIS Printer Port from the Available Ports list. The port name appears as <name>.FIF, where <name> is ITC followed by the last six digits of the EasyLAN 100i serial number, e.g. ITC003610. Click the **Configure Port** button.

7. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS Printer Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **Next>**.

8. Enter an appropriate name for your printer and click **Finish**.

Windows 95 and Windows 98, cont'd.

TCP/IP (LPR)

To be able to print using LPR, you must have installed the EasyLAN 100i in the TCP/IP environment as described in Chapter 3 *"Basic Installation; Assigning an IP address"*.

1. To start the Add Printer Wizard, select **Settings - Printers** from the **Start** menu and double-click the **Add Printer** icon.

2. After clicking **Next>** in the first dialog, the Wizard asks you to select Local printer or Network printer. Select **Local printer** as the EasyLAN 100i emulates a local printer port. Click **Next>**.

3. Choose the Intermec printer driver in the displayed Manufacturers list, then select the appropriate printer from the Printers list and click **Next>** to proceed directly to step 6. It is only necessary to perform steps 4 –5 if your printer does not appear in the model list.

   Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

4. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

5. Select the printer driver in the ***:\Interdrv\DP** folder on the CD and click **Next>**.

6. Select the AXIS LPR Port you want to use and click **Next**. Available LPR ports appear as <port name>@<IP address> or <port name>@<host name>, e.g. PR1@192.36.254.101.
   - If you want to install a new LPR port, select the Printers@LPR port and perform all procedures defined in steps 10–18.
   - If the LPR already exists, proceed to step 7.

7. Click the **Configure Port** button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS LPR Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**. Click **Next>**.

8. Enter an appropriate name for your printer and click **Finish**.

   You should continue with the following steps only if you want to install a printer to a new LPR port and have chosen Printers@LPR port previously in step 6.

Windows 95 and Windows 98, cont'd.

TCP/IP (LPR), cont'd.

10. Click **Next.**

11. Enter an appropriate name for your printer and click **Finish**.

12. The printer you have defined is displayed in the 'Printers' folder. Right-click the printer object and select **Properties** from the **Context** menu.

13. Click the **details** tab in the Properties page and then click **Add Port** to display the available monitors.

14. Click the radio button "**other**". Select **AXIS Port** and click **OK**.

15. Select **LPR (TCP/IP)** as your choice of network protocol and click **OK**.

16. Enter the IP address or the host name of your print server and set the Logical Printer to "**PR1**". Click **OK**.

17. The LPR port will then be added automatically to the list of available ports. Click **OK**.

18. You may now configure the port, as described in step 7.

Shared printer from a Windows 95 client

Follow the following step-by-step instructions if you are using a shared printer from a Windows 95 client:

1. Open the **Control Panel**.

2. Open the 'Printers' folder.

3. Click **Add Printer**.

4. Select **Network Print Server** and then go to **Next**.

5. Enter the path for the network printer or browse the network to find and select it.

6. Go to **Next** and then **Finish**.

Windows NT

Using the AXIS Print Monitor with Windows NT 4.0

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

NetBIOS/NetBEUI

1. To start the Add Printer Wizard, select **Settings - Printers** from the **Start** menu and double-click the **Add Printer** icon.

2. The Wizard asks you to select My Computer or Network printer server. Select **My Computer**, as the EasyLAN 100i emulates a local printer port.

3. Click **Add Port...** in the Available ports dialog, select **AXIS Port** and click **New Port...**

4. Select **NetBIOS/NetBEUI** as your choice of network protocol and click **OK**.

5. Select the AXIS Port you want to add. The port appears as <name>.FIF, where <name> is ITC followed by the last six digits of the EasyLAN 100i serial number, e.g. ITC003610. Click **OK**.

6. Close the Printer Ports window.

7. Click the **Configure Port...** button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**. Continue the installation by clicking **Next>**.

8. Choose the appropriate printer driver for your printer. Click **Next>** and proceed directly to step 11. It is only necessary to perform steps 9-10 if your printer does not appear in the list.

    Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

9. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

10. Select the printer driver in the ***:\Interdrv\DP** folder on the CD and click **Next>**.

11. Enter an appropriate name for your printer and click **Next>**.

12. Choose whether you want to share the printer with other network users and click **Finish**.

Windows NT, cont'd.

TCP/IP (LPR)

To be able to print using LPR, you must have installed the EasyLAN 100i in the TCP/IP environment as described in Chapter 3 *"Basic Installation; Assigning an IP address"*.

1. To start the Add Printer Wizard, select **Settings - Printers** from the Start menu and double-click the **Add Printer** icon.

2. The Wizard asks you to select My Computer or Network printer server. Select **My Computer**, as the EasyLAN 100i emulates a local printer port. Click **Next>**.

3. If the LPR Printer port you want to use already appears in the available ports list, you may proceed directly to step 8. If not, click **Add Port** and continue with step 4.

4. Select **AXIS port** from the list of available monitors in the Printer Port dialog. Click the **New Port...** button.

5. Select LPR (TCP/IP) and click **OK**.

6. From the Add AXIS LPR Port dialog, enter the IP address or host name of your print server and define the logical printer name as **PR1**. Click **OK**.

7. Click **OK** to return to the Printer Ports dialog. Click **Close**.

8. Select an AXIS LPR Port you wish to use and then click **OK**. Available LPR ports appear as <port name>@<IP address> or <port name>@<host name>, e.g. PR1@192.36.254.101.

9. Click **Configure Port...** and choose whether error condition pop-up messages are to be displayed by checking the box in the Configure LPR Port dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK**.

10. Having selected and configured the chosen port, click **Next>**.

11. Choose an appropriate printer driver for your printer. If the desired print driver already appears in the displayed Manufacturers and Printer Models list dialog, highlight your selection, click Next> and proceed directly to step 14. It is only necessary to perform steps 12–13 if your printer does not appear in the list.

   Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

12. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

Windows NT, cont'd.

TCP/IP (LPR) , cont'd.

13. Select the printer driver in the ***:\Interdrv\DP** folder on the CD and click **Next>**.

14. Enter an appropriate name for your printer and click **Next>**.

15. Choose whether you want to share the printer with other network users and click **Finish**.

Using the AXIS Print Monitor with Windows NT 3.5x

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

NetBIOS/NetBEUI

1. Open the Print Manager and select **Create Printer** from the Printer menu.

2. Enter an appropriate name in the Printer Name field.

3. Choose an appropriate printer driver for your printer from the Manufacturers and Printer Models list and then proceed directly to step 6. Please note that it is only necessary to perform steps 4–5 if your printer does not appear in the model list.

   Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

4. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

5. Select a printer driver (see note) and click **Next>**.

6. Select **Other...** in the "Print to" list box.

7. Select **Axis Port** in the list of available Print Monitors and click **OK**.

8. Select the AXIS Port you wish to add and then click **OK**. The port appears as <name>.FIF, where <name> is ITC followed by the last six digits of the EasyLAN 100i serial number, e.g. ITC003610.

9. Click on **Settings**. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure Axis Ports dialog. Click **OK**.

10. Click **OK**.

> *Note:*
> *Presently, the Intermec Inter-Driver does not support Windows NT 3.5x, but a generic printer driver could be used.*

Windows NT, cont'd.

TCP/IP (LPR)

To be able to print using LPR, you must have installed the EasyLAN 100i in the TCP/IP environment as described in Chapter 3 *"Basic Installation; Assigning an IP address"*.

1. Open the Print Manager and select **Create Printer** from the **Printer** menu.

2. Enter an appropriate name in the Printer Name field.

3. Choose an appropriate printer driver for your printer from the drop-down Driver list. If the desired printer driver already appears in the displayed Manufacturers and Printer Models list dialog, proceed directly to step 6. It is only necessary to perform steps 4–5 if your printer does not appear in the model list.

   Note: If you are not certain that the desired printer driver available in the Manufacturers and Printer Models list is the latest version, you are advised to use the printer driver provided on the CD delivered with the EasyLAN 100i.

4. Click the **Have Disk...** button. Insert the CD that was provided with your printer, select the CD drive and click **OK**.

5. Select a printer driver (see note) and click **Next>**.

6. Select **Other...** from the "Print to" drop-down list.

7. Select **AXIS Port** from the list of available Print Monitors in the Print Destination dialog. Click **OK**.

8. Select **LPR (TCP/IP)** as your choice of network protocol and click **OK**.

9. From the Add LPR port dialog, enter the IP address or host name of your print server and define the logical printer name as **PR1**. Click **OK** to return to the Create Printer dialog.

10. Select the AXIS LPR port you wish to use from the "Print to" drop-down list. The ports appear as <port name>@<IP address> or <port name>@<host name>, e.g. PR1@192.36.254.101.

11. Click the **Settings** button. Choose whether error condition pop-up messages are to be displayed by checking the box in the Configure AXIS LPR Ports dialog. Define the frequency at which the error messages should be displayed after retry. Click **OK** to return to the Create Printer dialog.

12. Having selected and configured the chosen port, click **Next>**.

13. Select whether you want to share the printer with other network users. Click **OK**.

Note:
Presently, the Intermec Inter-Driver does not support Windows NT 3.5x, but a generic printer driver could be used.

Windows NT, cont'd.

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

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

Using the Microsoft LPD monitor with Windows NT 4.0

This section describes how to set up a Windows NT Server v4.0 for LPR printing over the TCP/IP protocol, using the built-in Microsoft LPD monitor.

Basic Setup

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPD printing. These procedures are defined in Chapter 3 *"Basic Installation; Assigning an IP address"*.

Preparing for LPR/LPD printing

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

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

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

Installing a printer

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

1. Open the **Control Panel** and open the 'Printers' folder.
2. Click **Add Printer**, select **My Computer** and then go to **Next**.
3. Select **Add Port**. In Printer Ports, choose **LPR Port** and then click **New Port**.
4. In Add LPR compatible printer, enter the host name or IP address of the EasyLAN 100i as the print server to provide LPD.
5. Enter 'PR1', 'PR2', ... 'PR8' as the name of printer or print queue on that server.
6. Choose a suitable printer driver for your printer and go to **Next**.
7. Enter a printer name and go to **Next**.

Windows NT, cont'd.

Installing a printer, cont'd.

8. Select **Shared** if you want to share the printer over the network.

9. Enter a share name.

10. Click **Next** and then **Finish**.

Using the Microsoft LPD monitor with Window NT 3.5x

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

Basic Setup

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPD printing. These procedures are defined in Chapter 3 *"Basic Installation; Assigning an IP address"*.

Install the TCP/IP Protocol Stack

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

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

1. In the **Control Panel**, select **Network**.

2. Click **Add Software...**

3. Select "**TCP/IP Protocol and related components**" and then click **Continue**.

4. Check "**TCP/IP Network Printing Support**" and then click **Continue**.

5. Select path and then click **Continue**.

6. Click **OK** in the Network Settings dialog box.

Windows NT, cont'd.

Installing a Printer

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

1. In the **Control Panel**, click the **Print Manager**.

2. In the **Printer** menu, select **Create Printer**.

3. In the Printer Name field, type a name for your printer.

4. Choose a suitable printer driver for your printer.

5. In the Print to field, select **Other...**

6. In the Print Destinations dialog, choose **LPR Port** and then click **OK**. The Add LPR Compatible Printer dialog will now appear.

7. In the Name or Address field, type the IP address or the host name of your EasyLAN 100i. If you use an host name, this must be defined in the *hosts* file on your server prior to the installation. This file is normally located in */winnt35/system32/drivers/etc/hosts*.

8. In the Name of Printer on the Machine field, type the logical printer name you want to use, e.g. PR1. Click **OK**.

9. Click **OK** to complete the installation.

Using the AXIS Print Utility for Windows

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

AXIS Print Utility for Windows is supplied on CD that comes with EasyLAN 100i. Install this utility now if you have not already done so.

About AXIS Print Utility for Windows

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

- Install and maintain EasyLAN 100i printer ports as Windows printer ports.
- Capture and monitor print jobs directed to the EasyLAN 100i ports.

Print jobs are directed through a spool directory located on your local hard disk (peer-to-peer mode), or on the file server (client-server mode). The printer port status of your EasyLAN 100i can be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problem condition.

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

> *Notes:*
> - *Microsoft Network (NetBIOS/NetBEUI) must be running when using AXIS Print Utility for Windows.*
> - *AXIS Print Utility for Windows must be running when printing in peer-to-peer mode.*
> - *The AXIS Print Utility for Windows is not needed on the client platforms for client-server printing.*
> - *If you want to change the default name of your EasyLAN 100i or amend any of the default parameters, you can do so using the AXIS NetPilot, or any standard Web browser. Refer to Chapter 8 "Configuration & Management".*

Using the AXIS Print Utility for Windows, cont'd.

Peer-to-Peer vs. Client-Server Printing

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

Peer-to-peer printing offers the following benefits:
• You can monitor the printer status at all times and be notified when print job are completed.
• You do not have to rely on a server.

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

The client-server mode provides a way of maintaining queue ordering and job priority, but at a price. This is because:
• You cannot receive printer status or print job notification.
• The workstation, set up as the server, must be available at all times.

It must also have the capacity to handle the print jobs that pass through it.

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

Windows 3.1 and Windows for Workgroups

Windows 3.1

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

Windows for Workgroups
Peer-to-Peer Printing

Follow the instructions below to install your EasyLAN 100i 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 EasyLAN 100i port. The port appears as <name>.LP1, where <name> is INTERMEC followed by the last six digits of the EasyLAN 100i serial number, e.g. INTERMEC003610.

4. Accept or change the suggested Windows port name and type any required comment in the Description field. Make a note of the Windows port name as you will need this later, then click **OK** to install the Windows port.

5. In the **Port** menu, click **Connect...** to bring up the Windows Printers dialog.

6. Select a printer driver from the list of Installed Printers (or click Add>> to install a new driver), then click **Connect...**

7. Select the Windows port name from step 4 above (this name can be found at the bottom of the Ports list).

8. Click **OK** to close the Connect dialog, and **Close** to close Printers.

The setup is completed and you can now print through your EasyLAN 100i.

> **Note:**
> *AXIS Print Utility for Windows must be running when you print through your EasyLAN 100i. We strongly recommend that you copy the AXIS Print Utility icon into your StartUp folder.*

Windows 3.1 and Windows for Workgroups, cont'd.

Client-Server Printing – Server Setup

Follow the instructions below to install your EasyLAN 100i for client-server printing at a Windows for Workgroups server:

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

2. Open **Network Setup**, click **Sharing...**, check the **I want to be able to allow others to print to my printer(s)** box.

3. Install AXIS Print Utility for Windows on the server.

4. Set up your EasyLAN 100i as described under *"Peer-to-Peer Printing"*, on previous page.

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.

Note: The AXIS Print Utility for Windows must be running when you print through your EasyLAN 100i. We strongly recommend that you copy the AXIS Print Utility icon into your StartUp folder.

Client-Server Printing – Client Setup

Follow these steps to use your EasyLAN 100i for client-server printing at a Windows for Workgroups client:

1. In the **Control Panel**, select **Printers**.

2. Select a printer driver from the list of Installed Printers, or click **Add>>** to install a new driver. Click **Connect...**

3. Select **Network...** in the Device Name list, select a local port (LPT1 - LPT3) to redirect to your network printer.

4. In the **Show Shared Printers** on list, select the server from Server Setup above.

5. In the Shared Printers list, select the printer you want to use.

6. Click **OK**, **OK**, and **Close**.

7. Exit the Control Panel.

The client setup is completed and you can now print through your EasyLAN 100i.

Windows Clients using LANtastic

From any Windows client, the EasyLAN 100i can also be used for network printing in LANtastic environments.

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

- Refer to "Using the AXIS Print Utility for Windows" if you are using a Windows for Workgroups client.
- Refer to "Using the AXIS Print Monitor for Windows 95/98 and NT" if you are using a Windows 95, Windows 98 or Windows NT client.

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

6. Setting Up – OS/2

Introduction

Having connected the EasyLAN 100i to your network, this section now describes how to set up your EasyLAN 100i for printing in the OS/2 environment.

If you intend to operate your EasyLAN 100i in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:
• Chapter 4 *"Setting Up - NetWare"*
• Chapter 5 *"Setting Up - Windows"*
• Chapter 7 *"Setting Up - UNIX"*

Using the AXIS Print Utility for OS/2

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

AXIS Print Utility for OS/2 is not supplied on the CD that comes with EasyLAN 100i, but can be downloadedfrom AXIS home page **http://www.axis.com/glocal/products/software**. Download and install this utility now if you have not already done so.

If you want to change the default name or any of the EasyLAN 100i default parameters, you can do so using any standard Web browser or AXIS NetPilot from any Windows platform that is connected to your network, or WinOS/2 window under OS/2.

Refer to Chapter 8 *"Configuration & Management"* for more information.

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

Using the AXIS Print Utility for OS/2, cont'd.

About AXIS Print Utility for OS/2

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

- Install and maintain the EasyLAN 100i printer ports as OS/2 printer ports.
- Capture and monitor print jobs directed to the EasyLAN 100i ports.

Print jobs are directed through a spool directory located on your local hard disk (peer-to-peer mode), or on the file server (client-server mode). The printer port status of your EasyLAN 100i can be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problem condition.

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

Installing the EasyLAN 100i

1. When AXIS Print Utility for OS/2 is running, click Install to install your EasyLAN 100i. The port appears in the list as <name>.LP1, where <name> is INTERMEC followed by the last six digits of your print server serial number, for example INTERMEC003610.LP1.

2. Select the port that you want to install, then click Install.

Repeat this procedure for each server using the EasyLAN 100i.

> *Note:*
> *The AXIS Print Utility for OS/2 must be running in order to print using your EasyLAN 100i.*

Integrating your EasyLAN 100i into the OS/2 Environment

Creating a Print Queue (OS/2 version 1.x)

1. Double-click the **Print Manager** icon, click Setup, then select **Printers...**

2. Click **Add** to make a new printer definition, then type a name of your choice in the Name field.

3. Select \PIPE\<name>.LP1 from the Device list, then select a printer driver suitable for your printer.

4. Click **Add**, then click **OK** to confirm the printer definition.

5. Click **Setup**, then select **Queues...**

6. Click **Add** to create a print queue, and type a name in the Name field.

7. Click **Add**, then click **OK** to confirm the queue definition.

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

1. Double-click the **Templates** folder, then drag the **Printer** icon out to the Workplace Shell (or into a folder) while holding the right mouse button down.

2. Type a name of your choice in the Name field.

3. Select \PIPE\<name>.LP1 from the Port list, and select a printer driver suitable for your printer from the Standard Printer list.

4. Click **OK** to confirm the printer definition.

Integrating your EasyLAN 100i into the OS/2 Environment, cont'd.

Sharing the Print Queue

A print queue must be made a shared resource before it can be accessed from other computers (clients or other servers). Open an OS/2 window and issue the following command:

```
NET SHARE <queue_name> /PRINT
```
where `<queue_name>` is the name of the queue created above.

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

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

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

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

The setup is completed and you can now print through your EasyLAN 100i.

7. Setting Up – UNIX

Installation in the UNIX Environment

Having performed the basic TCP/IP setup procedures as defined in Chapter 3 *"Basic Installation; Assigning an IP address"*, you are now able to print in interactive mode using LPR, FTP or Reverse Telnet protocols.

However, should you require to integrate the EasyLAN 100i into your host spooler, you can use the automatic installation script *itinstall*. This utility software is resident in the flash memory of the EasyLAN 100i and can be downloaded to your host using FTP, so no disks are required. Having completed this operation, the printer connected to the EasyLAN 100i will appear as though they are directly connected to the host printer spooler.

If you intend to operate your EasyLAN 100i in a multiprotocol environment, you should also proceed according to one or more of the following sections, as appropriate to your network.
- Chapter 4 *"Setting Up - NetWare"*
- Chapter 5 *"Setting Up - Windows"*
- Chapter 6 *"Setting Up - OS/2"*

Installation in the UNIX Environment, cont'd.

Integration into the Host Printer Spooler

To integrate the EasyLAN 100i into the host printer spooler, you can use the auto installation script *itinstall*, resident in the EasyLAN 100i. Follow the instructions below to install this software onto your host using FTP:

1. Login to the EasyLAN 100i using the command:
   `ftp <host name>` or `ftp <IP address>`

2. Enter `root` as the user id and `pass` as the password.

3. Download the script using the command:
   `get itinstall`

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

```
> ftp npserver
connected to npserver.
220 Intermec EasyLAN 100i FTP Print Server V6.10
Mar 16 2000 ready.
Name (npsserver:thomas): root
331 User name ok, need password
Password: pass                          (not visible)
230 User logged in
ftp> get itinstall
200 PORT command successful.
150 Opening data connection for itinstall
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
local: itinstall remote: itinstall
61187 bytes received in 14 seconds (4.2 kbytes/s)
ftp> bye
221 Goodbye.
>
```

Typical FTP session for collecting the itinstall script

Installation in the UNIX Environment, cont'd.

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

```
sh itinstall
```

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

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

```
1....SunOS 4 (SUN BSD, Solaris 1.x)
2....SunOS 5 (SUN SYS V, Solaris 2.x)
3....AIX (IBM RS/6000, BULL DPX 20)
4....HP-UX (HP 9000)
5....BOS (BULL DPX 2)
6....DEC OSF/1 (Digital Equipment, Alpha)
7....ULTRIX (Digital Equipment, DEC)
8....IRIX (Silicon Graphics, SGI)
9....SCO UNIX (Santa Cruz Operation)
10...FreeBSD (Berkeley UNIX)
11...Generic BSD (Berkeley UNIX)
12...Generic SYS V R3 (UNIX System V Release 3)
13...Generic SYS V R4 (UNIX System V Release 4)
```

Systems supported by itinstall

Printing Methods on TCP/IP Networks

The EasyLAN 100i supports several different print methods in the TCP/IP environment. *itinstall* will suggest a print method suitable for your particular UNIX system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc).

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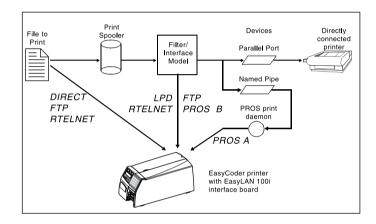
Illustration of different UNIX print methods

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

Advantages:
Easy to set up – install the EasyLAN 100i as a remote queue in System V, or add a remote printer to `/etc/printcap` using the `rm` and `rp` fields (BSD).

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

Printing Methods on TCP/IP Networks, cont'd.

FTP

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

Advantages:

Uses industry standard network software on the host.

Limitations:

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

PROS

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

PROS A
Advantages:

The EasyLAN 100i appears as a device to the system. This makes all filter and model options available. It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

Limitations:

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

PROS B
Advantages:

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

Limitations:

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

Printing Methods on TCP/IP Networks, cont'd.

Reverse Telnet

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

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

Limitations:
No status logging. Drivers are not supplied with the EasyLAN 100i. Existing drivers may be slow.

Other UNIX Systems

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

If the system has BSD socket type networking support, then `prosbsd` (in the `bsd` directory of the EasyLAN 100i) can be used as a starting point. It receives print data from `stdin`, and writes a log file to `stderr`. Nothing is written to `stdout`.

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

IBM MVS Systems

A sample JCL script, `jclex`, is available in the `mvs` directory of the EasyLAN 100i. It gives an example of how to print a file from an MVS mainframe to an EasyLAN 100i using FTP.

Using Logical Printers to Customize your Printing

The EasyLAN 100i has a powerful facility for altering the print data. This means that your desired print format can be realized on any type of printer. The following actions can be invoked from the EasyLAN 100i:
- Strings can be added before and after the print data
- Strings within the print data can be substituted

If any of these actions are required, a Logical Printer is used to change the print data before being sent to the printer port. There are eight logical printers (PR1-PR8) that can be set up to filter the print data.

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

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

Each logical printer can be set up using any standard Web browser or by directly editing the *config* file.

Notes:
- *The examples in this section describes how you can configure the available logical printers using a standard Web browser. If you want to set them directly by editing the config file, just enter the values for the corresponding parameters.*
- *The examples should only be viewed as suggestions how to configure the logical printers. Obviously, you should configure them according to the needs of your network.*
- *In Appendix 2 - "Parameter List", you can find a complete list of the EasyLAN 100i parameters.*
- *Refer to Chapter 8 "Configuration & Management" for more information about the available management tools.*

Using Logical Printers to Customize your Printing, cont'd.

Adding Strings Before and After Print Jobs

These string functions provide a way to send printer control commands before and after each print job. They may be specified individually for each logical printer. There must be a running Intermec Fingerprint or Direct Protocol application program in the printer that reads and executes the commands.

All strings are entered as hexadecimal byte values.

String Substitutions

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

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

Example 1:

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

Follow the instructions below to substitute command strings:

1. Select the **Printer1** Web page.

2. Enter the string **01 0A 02 0D 0A** in the **String Substitutions** text field.

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

3. Click the **Submit Printer1 settings** button.

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

Using Logical Printers to Customize your Printing, cont'd.

Example 2:

Assume that you want to replace the UNIX New Line (hex `0A`) with an ASCII NewLine (hex `0D 0A`), and the printer command ${}^E_C$G1 (hex `1B 47 31`) with ${}^E_C$Y (hex `1B 59`) for logical printer PR2.

Follow the instructions below to substitute command strings:

1. Select the **Printer2** Web page.

2. Enter the string **01 0A 02 0D 0A 03 1B 47 31 02 1B 59** in the **String Substitutions text** field.

Hex code	Explanation
01	Length of the UNIX New Line command
0A	The UNIX New Line command
02	Length of the ASCII New Line command
0D 0A	The ASCII New Line command
03	Length of the replaced printer command
1B 47 31	The replaced printer command
02	Length of the new printer command
1B 59	The new printer command

3. Click the **Submit Printer2 settings** button.

Note:
Extensive use of string substitutions will obviously decrease the throughput rate of the EasyLAN 100i.

8. Configuration & Management

Introduction

This section describes the methods you can use to configure and manage the EasyLAN 100i. The configuration and management tools that are supported by the EasyLAN 100i allows you to:

• Change the print server parameters, i.e. editing the config file
• Receive extended information about the print jobs
• Receive printer port status
• Monitor your printers

Configuration Methods

The configuration methods that are covered in this section are the following:

• Using a Web browser
• Using AXIS ThinWizard
• Using AXIS NetPilot
• Using FTP
• Using Telnet
• Using SNMP
• Using HP administration tools, e.g. HP JetAdmin
• Using Novell Utilities
• Using the printer's built-in keyboard in the Setup Mode (limited configuration only)

Configuration Overview

The method you should use to manage and configure your EasyLAN 100i is depending on the operating system protocols of your network. The table below displays which method to use for each supported environment.

Operating System Protocols	Configuration/Management methods
IPX/SPX (NetWare)	AXIS NetPilot, HP JetAdmin, Novell Utilities
TCP/IP (UNIX, Windows 95/98/NT, Windows 3.1/WfW)	AXIS ThinWizard[1], FTP, Telnet, SNMP, HP Web JetAdmin
NetBIOS/NetBEUI (Windows 95/98/NT, Windows 3.1/WfW, OS/2)	AXIS NetPilot
All	Web Browser
[1]. The AXIS ThinWizard server cannot run in Windows 3.1 or Windows for Workgroups environments.	

Using a Web Browser

Once you have established the EasyLAN 100i in the TCP/IP environment, either as described in Chapter 3 *"Basic Installation; Assigning an IP address"* or in the printer's Setup Mode via the printer's built-in keyboard, you are free to access the EasyLAN 100i Web pages from any standard Web browser.

Accessing the Web Pages

Follow the steps below to access the internal home page of the EasyLAN 100i.

1. Start your Web browser.

2. Type the host name or the IP address directly into the Web browser's Location text field.

The home page of your EasyLAN 100i appears in your browser, for example:

Refer to Appendix 1 *"EasyLAN 100i Home Page"* for a detailed description of the services available from the home page.

Using AXIS ThinWizard

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

The internal Web pages of Axis ThinServer products integrate directly into AXIS ThinWizard, giving you access to the services described in Appendix 1 *"EasyLAN 100i Home Page"*.

Once you have established the EasyLAN 100i in the TCP/IP environment, as described in Chapter 3 *"Basic Installation; Assigning an IP address"*, you are free to access the EasyLAN 100i from AXIS ThinWizard.

Installing AXIS ThinWizard

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

The AXIS ThinWizard software is available on the CD that comes with EasyLAN 100i.

Starting AXIS ThinWizard

Follow the instructions below to start the AXIS ThinWizard:

1. Make sure that the server where you installed AXIS ThinWizard is up and running on your network.

2. Start a Web browser from a client in your network.

3. Enter the IP address or the host name of the server where you installed AXIS ThinWizard. If the server is installed on another port than 80, you must enter the port name after the host name or the IP address.

4. The AXIS ThinWizard start page appears in the Web browser. Enter your user name and the password and click the **Log in** button.

5. The AXIS ThinWizard interface appears. Select a network group from the list. If the list is empty, you must first create a group.

Using AXIS ThinWizard, cont'd.

Creating a Network Group

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

You can create as many network groups as you want.

Follow the instructions below to create a network group:

1. Click the **Network Groups** button in the AXIS ThinWizard main menu.

2. Click the **Create** button.

3. The Create Network Group page opens. Type the name of the network group and identify the IP subnets and Axis server types that should be included. If you are only interested in managing print servers, deselect all options but the **Print Servers** option.

4. Click **OK** to create the network group.

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

Using AXIS ThinWizard, cont'd.

Managing the print servers

Follow the instructions below to access the EasyLAN 100i using AXIS ThinWizard:

1. Click the **Manage Network** button in the main menu.

2. Select the network group, including the EasyLAN 100i, from the drop-down list. All AXIS servers included in the network group appear in the window.

3. Click the link of the EasyLAN 100i to access its internal Web page.

You are now free to manage and configure the EasyLAN 100i as described in Appendix 1 *"EasyLAN 100i Home Page"*.

Upgrading Axis Servers

Refer to Chapter 9 *"Upgrading; Upgrading using AXIS Thin-Wizard"* for more information about upgrading Axis Servers using AXIS ThinWizard.

Additional Information

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

Using AXIS NetPilot

AXIS NetPilot is the recommended tool to use for configuring the EasyLAN 100i in networks that support communication via the IPX/SPX or the NetBIOS/NetBEUI protocols.

AXIS NetPilot allows you to:
- Change the EasyLAN 100i parameter values
- Modify network environment settings
- Monitor your printers on the network
- Create logical groups of print servers to simplify administration
- Upgrade the EasyLAN 100i

Starting AXIS NetPilot

Start AXIS NetPilot by clicking the AXIS NetPilot icon, which resides in the folder where you installed AXIS NetPilot.

The main window of AXIS NetPilot

Using AXIS NetPilot, cont'd.

Changing the parameter values

AXIS NetPilot provides you with two useful tools for changing parameter values:

- Property pages:
  Use the Property pages if you have little experience in editing config files and need a user-friendly interface.
- Parameter List Editor:
  Use this fast and efficient tool if you have considerable experience in editing config files.

The Property Pages

The Property pages provide an easy way to view and change the parameters. Each property page comprises a set of selection tabs that are appropriate to your operating environments. Each parameter can be edited by selecting the relevant box.

Follow the instructions below to open and edit an arbitrary Property Page:

1. Select the EasyLAN 100i from the 'Network Print Servers' folder.

2. Click the **Properties** button on the AXIS NetPilot toolbar or choose **Properties** from the **Setup** menu.

3. Select the tab that includes the parameter you want to change.

4. Change the value.

5. Click **Apply** to save the change to the print server. (If you select **OK** instead, the Property pages closes automatically after the change has been saved).

The Parameter List Editor

The Parameter List Editor is a simple editor that enables you to:
- edit the EasyLAN 100i *config* file.
- save customized *config* files to your hard disk.
- configure several network print servers simultaneously.

Using AXIS NetPilot, cont'd.

Follow the instructions below to use the Parameter List Editor:

1. Choose **Edit Parameter List** from the **Setup** menu.

2. Download a *config* file from a print server or from your hard disk by selecting **from File** or **from Print Server**.

3. Click the **Load** button and the *config* file opens in the editor.

4. Edit the *config* file.

5. Select the appropriate radio button, **To File** or **To Print Server**.

6. Click **Save** after you have made your choice, to save the modified *config* file.

Modifying the network environments
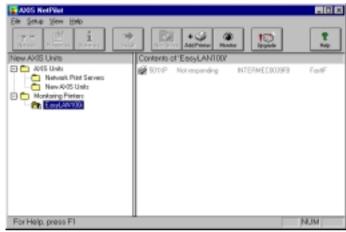
From the Network Environment window you can modify the network settings for each supported network environment.

To gain access to the Network Environment window, follow the instructions below:

1. Select the EasyLAN 100i from the 'Network Print Servers' folder.

2. Click on the **Network** button on the toolbar or select **Network** from the **Setup** menu.

3. Select the tab corresponding to the environment that you want to modify.

Using AXIS NetPilot, cont'd.

Monitoring Printers

To simplify printer monitoring, you can create logical groups of printers. The printer status of each printer is displayed in the AXIS NetPilot window.

AXIS NetPilot's Monitoring Window

Creating a printer group

Follow the instructions below to create a printer group:

1. Select the 'Monitoring Printers' folder.

2. Click on the **New Group** button on the toolbar or select **New Printer Group** from the **File** menu.

3. Type a printer group name in the text field and click **OK**.

You can create as many printer groups as you want.

Adding a printer to a printer group

Follow the instructions below to add a printer to a printer group:

1. Select the printer group folder, located in the 'Monitoring Printers' folder.

2. Click on the **Add Printer** button on the toolbar or select **Add Printer** from the **File** menu.

3. The **Add Printer** window appears. Double-click the printer name to which the desired printer is connected and select the printer type. Click **OK**.

    Note! If there are more than one unit of the same type, each must have a dedicated name that differs from the others in some way.

Using AXIS NetPilot, cont'd.

Examining printers

Follow the instructions below to monitor the printers:

1. Select the printer group folder, located in the 'Monitoring Print-ers' folder. The printer status appear in the right-hand frame of AXIS NetPilot.

2. If you want the status to appear in a new window, click the **Monitoring** button on the AXIS NetPilot toolbar.

Grouping logically connected Print Servers together

AXIS NetPilot allows you to create logical groups of print servers in order to simplify administration. Installed print servers are dis-played in the 'Network Print Servers' folder and shortcuts to these print servers can be added to the print server groups. Management operations performed on the shortcuts affects the functionality of the print servers.

Creating a Print Server Group

Follow the instructions below to create a print server group:

1. Select the 'AXIS Units' folder.

2. Click on the **New Group** button on the toolbar or select **New Print Server Group** from the **File** menu.

3. Type a print server group name in the text field and click **OK**. You can create as many print server groups as you want, but you cannot include a print server in more than one group.

Adding a Print Server to a Print Server Group

Follow the instructions below to add a print server to a print server group:

1. Select the print server group folder, located in the 'AXIS Units' folder.

2. Click on the **Add PS** button on the toolbar or select **Add Print Server** from the **File** menu.

3. The Add Network Print Server window appears. Select the print server and click **OK**.

Examining Print Servers
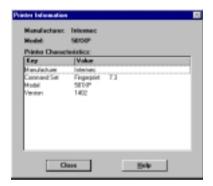
Follow the instructions below to monitor the print servers:

1. Select the print server group folder, located in the 'AXIS Units' folder.

2. Select the print server.

Using AXIS NetPilot, cont'd.

Printer Information

Follow the instructions below to obtain rich printer information from printers appearing in the monitoring window:

1. Select the desired printer folder, located in the 'Monitoring Printers' folder.

2. Click the desired printer icon and choose **Printer Information** from the **File** menu.

AXIS NetPilot Printer Information window

You can also view the rich printer information in the Summary window.

AXIS NetPilot Summary window

Using AXIS NetPilot, cont'd.

Upgrading the Print Server
You can use the AXIS NetPilot Upgrade Wizard to upgrade the EasyLAN 100i software. Please refer to Chapter 9 *"Upgrading"* for details.

Additional information
Refer to the AXIS NetPilot on-line help for further information about this tool.

Using FTP

Having assigned an IP address to your EasyLAN 100i, as described in Chapter 3 *"Basic Installation; Assigning an IP address"*, you can change the EasyLAN 100i parameter settings using the File Transport Protocol (FTP).

Editing the config file

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

1. Create a directory on the hard disk in a DOS window (Windows and OS/2) or in a UNIX shell window, e.g.:
   ```
   c:/md <directory name>
   ```

2. Select this directory to receive data via ftp, e.g.:
   ```
   c:/cd <directory name>
   c:/<directory name>ftp
   ```

3. Log in to the EasyLAN 100i by typing:
   ```
   ftp <host name> or ftp <IP address>
   ```

4. Enter the user id and the password. (The default entries are root and pass.)

5. Download the *config* file to your host by typing:
   ```
   get config
   ```

6. Edit the file using your preferred text editor.

7. Save the *config* file to the EasyLAN 100i by typing:
   ```
   put config CONFIG
   ```

> *Notes:*
> *It is important that the destination file is specified in capital letters. Otherwise the edits are temporary and will be lost once the EasyLAN 100i has been powered down.*

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

Using FTP, cont'd.

Example

```
> ftp npserver
connected to npserver.
220 Intermec EasyLAN 100i FTP Print Server V6.10
Mar 16 2000 ready.
ready.
Name (npserver:thomas): root
331 User name ok, need password
Password: pass                              (not visible)
230 User logged in
ftp> get config
200 PORT command successful.
150 Opening data connection for config
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.24 seconds (35.63 kbytes/s)
ftp> put config CONFIG
200 PORT command successful.
150 Opening data connection for CONFIG
(192,36,253,4,13,223), (mode ascii).
226 Transfer complete.
8588 bytes received in 0.45 seconds (19.04 kbytes/s)
ftp> bye
221 Goodbye.
>
```

Using FTP, cont'd.

Viewing the Status File

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

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

1. Log in to the EasyLAN 100i by typing:
   `ftp <host name>` or `ftp <IP address>`
   in a DOS windows (Windows and OS/2) or in a UNIX shell window.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *status* file to your host by typing:
   `get status`
4. View the *status* file using your preferred text editor.

Viewing the Account File

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

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

1. Log in to the EasyLAN 100i by typing:
   `ftp <host name> or ftp <IP address>`
   in a DOS windows (Windows and OS/2) or in a UNIX shell window.
2. Enter the user id and the password. (The default entries are `root` and `pass`.)
3. Download the *account* file to your host by typing:
   `get account`
4. View the *account* file using your preferred text editor.

FTP Help

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

Using Telnet

Having assigned an IP address to your EasyLAN 100i, as described in Chapter 3 *"Basic Installation; Assigning an IP address"*, you can manage your EasyLAN 100i using the Telnet protocol.

Viewing the Account File

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

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

1. Log in to the EasyLAN 100i by typing:
   telnet <host name> or telnet <IP address>
   in a DOS window (Windows and OS/2) or in a UNIX shell window.

2. Enter the user id and the password. (The default entries are root and pass.)

3. View the *account* file by typing:
   account

The example below shows a typical session to view the *account* file using Telnet from a UNIX window.

Example

```
> telnet npserver
Trying 192.36.253.96...
Connected to npserver.
Escape character is '^]'.
220 Intermec EasyLAN 100i TELNET Print Server V6.10
Mar 16 2000 ready.
Intermec EasyLAN 100i network login: root
Password: pass                         (not visible)
220 Intermec EasyLAN 100i TELNET Print Server V6.10
Mar 16 2000 ready.
Root> account
Current account file:
JOB USER PROT PORT S BYTES ETIME
5 Thomas FTP pr2 P 1885 2
4 Joe LPT pr1 C 23074 4
3 RICHARD PSERVER pr2 C 43044 5
2 LSLM_userNetBIOS pr2 C 36995 3
1 patrick PROS pr5 C 83208 9
Root>
```

Using Telnet, cont'd.

Viewing the Status file

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

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

1. Log in to the EasyLAN 100i by typing:
   `telnet <host name>` or `telnet <IP address>`
   in a DOS windows (Windows and OS/2) or in a UNIX shell window.

2. Enter the user id and the password. (The default entries are `root` and `pass`.)

3. View the *status* file by typing:
   `status`

Telnet Help

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

Using SNMP

You can use SNMP (Simple Network Management Protocol) for remotely monitoring and configuring of the EasyLAN 100i. All major functions for print servers are supported.

General Information SNMP refers to a set of standards for network management, including a protocol, a database structure specification, and a set of data objects. The EasyLAN 100i SNMP implementation runs in the TCP/IP environment.

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

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

The EasyLAN 100i supports all relevant parts of MIB-II and also includes private AXIS and Intermec MIBs.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the EasyLAN 100i SNMP support:
- NMS software that allows you to install private enterprise MIBs.
- A host, supporting FTP, on which to run the NMS software.

Adding AXIS and Intermec MIBs to NMS Software

1. Log in to the EasyLAN 100i using FTP.

2. Download the AXIS MIB fileto the NMS host.
   snmp/intermec.mib   Printserver items.

3. Copy the Intermec MIB files from the CD-ROM that came with the EasyLAN 100i interface board to the NMS host.

intermec.mib	MIB module top tree defining objects in Intermec products
itcnetwork.mib	TCP/IP and WINS settings
itcports.mib	Communication ports settings
itcsnmp.mib	SNMP communities and trap destinations
prtcmmn.mib	Printer-specific items regarding system, media, memory, print mechanism etc.
prtitp.mib	Programming language version.

4. Install the MIBs according to instructions in your NMS software documentation. For technical details, you can view a MIB file with any text editor.

Using HP Administration Tools

The EasyLAN 100i is fully compatible with the HP JetAdmin and the HP Web JetAdmin printer management software. You can use either tool to install and configure your printer devices, and monitor the current status of your EasyLAN 100i and other HP JetAdmin- or HP Web JetAdmin-compatible devices on your network.

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

> *Notes:*
> - *You can disable the HP JetAdmin and the HP Web JetAdmin support, by setting the HP_JETADMIN parameter to NO.*
> - *It is not possible to upgrade the EasyLAN 100i Flash Memory from the HP JetAdmin.*
> - *If the EasyLAN 100i has been configured with HP JetAdmin or HP Web JetAdmin, you cannot configure it with AXIS NetPilot unless you first reset it to the factory default settings.*

Using Novell Utilities

After installing the EasyLAN 100i into the NetWare environment using AXIS NetPilot, you can manage your EasyLAN 100i, using either Novell's NetWare Administrator, or PCONSOLE.

NetWare Administration

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

Printer Status

The Printer Status menu, detailed below, shows the status of an active print job serviced by an EasyLAN 100i network print server. It displays detailed information concerning the active job including, Print Queue, print job description, size of print file, percentage of job completed, etc. You can also abort or pause the print job from this menu.

Notification

You can use the NetWare Administrator to enable or disable status notification messages for printers connected to the EasyLAN 100i, e.g. Busy, Off-line, Out of paper, Paper jam, etc. You can also add or remove print job owners and administrators from the list of persons to be notified.
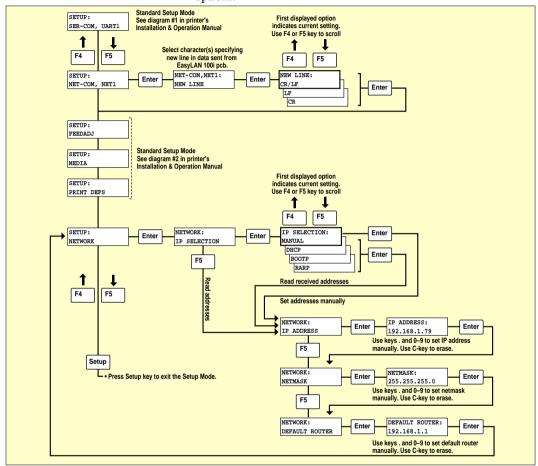
Print Layout

You can view installed EasyLAN 100i Network Print Servers and their relative print queues for any NetWare Organizational Unit. You can also display summary information by right-clicking on the printer object you want to examine.

Using Setup Mode

When an EasyLAN 100i interface board is installed, a few extra options will appear in the display when you enter the Setup Mode. Using the printer's built-in keyboard, you can navigate through theses options and change them if necessary.

The diagram below illustrates the hierarchy of the additional setup options.

The Setup Mode provides a convenient way of setting up the printer's network addresses, provided you have physical access to the printer. Once the network connection has been established, you can use the EasyLAN 100i home page to further configure both the printer and the EasyLAN 100i print server. Refer to the EasyLAN 100i Installation Instructions for explanations in greater detail.

9. Upgrading

Introduction

The following firmware and software can be upgraded:

Firmware
- The EasyLAN 100i print server firmware held in Flash Memory
- The printer's firmware (Intermec Fingerprint)

Software
- AXIS NetPilot configuration software
- AXIS ThinWizard
- AXIS Print Monitor for Windows 95/98 and Windows NT
- AXIS Print Utility for Windows (not included on CD)
- AXIS Print Utility for OS/2 (not included on CD)

Obtaining the Updated Software

You can obtain all the print server and printer firmware as well as the software utilities from the following locations:
- The EasyLAN 100i CD-ROM.
- Anonymous ftp by logging in to *ftp.axis.com* and accessing the folder */pub/axis/* (AXIS software only).
- Over the Internet, by accessing the Intermec Printer Support home page at **http://printer.intermec.com**. Click on the "Software" link and locate the relevant firmware or software to download under the appropriate link. If you are a first time visitor to this site, you need to fill in a form to get a password.
- Your local Intermec dealer.

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

Upgrading the EasyLAN 100i Firmware

You can upgrade the EasyLAN 100i Flash memory using one of the following softwares or methods:
- AXIS ThinWizard (TCP/IP)
- FTP (TCP/IP)
- AXIS NetPilot Upgrade Wizard (IPX/SPX)

Upgrading the EasyLAN 100i Firmware, cont'd.

Upgrading using AXIS ThinWizard

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

You must assign the EasyLAN 100i with an IP address, as described in Chapter 3 *"Basic Installation; Assigning an IP address"*, before you can use this upgrading method.

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

1. Click the **Manage Network** button in the AXIS ThinWizard main menu.

2. Select a network group from the drop-down list. You can only update the servers that are included in the selected network group.

3. All AXIS servers included in the network group appear. Click the **Firmware** button to start the Upgrade Wizard.

4. Follow the instructions that are presented to you to complete the installation.

Refer to Chapter 8 *"Configuration & Management; Using AXIS ThinWizard"* for more information about AXIS ThinWizard.

Upgrading the EasyLAN 100i Firmware, cont'd.

Upgrading over the Network using FTP

To upgrade over the network using FTP you will need the file with the new print server software. The name of this file is in the form `product_version.bin`. You can use any of the previously mentioned methods to obtain the new file.

You must assign the EasyLAN 100i with an IP address, as described in Chapter 3 *"Basic Installation; Assigning an IP address"* before you can use this upgrading method.

Follow the procedures below to upgrade the EasyLAN 100i:

> *Caution!*
> *Be careful not to interrupt the file transfer. If the transfer is inter-rupted, the EasyLAN 100i may have to be re-initialized by your dealer.*

1. Log in to the EasyLAN 100i with the command:
   `ftp <host name>`, or `ftp <IP address>`

2. You will be prompted for user id and password. Use the user id `root`, which has the default password `pass`.

3. Type the command `binary` to change to binary transfer mode.

4. Type the command `put <software name> flash`, where `<software name>` is the name of the new print server software.

5. Wait for the Flash loading operation to finish. This normally takes 1 to 4 minutes. The unit automatically restarts with the new print server software.

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

> *Note:*
> *Should you encounter any problem that prevents a successful upgrade over your network, it may become necessary to perform the flash loading operation via the parallel port, LPT1. In this case, you are advised to contact your dealer.*

Upgrading the EasyLAN 100i Firmware, cont'd.

Upgrading using AXIS NetPilot

This method is recommended for upgrading the flash memory in NetWare networks. An Upgrade Wizard is available to guide you through the necessary procedures.

Follow the instructions below to upgrade your print servers:

1. Obtain the firmware file, using one of the methods presented at the start of this chapter.

2. Put the file in the AXIS NetPilot 'Upgrade' folder. This folder resides in the same folder as the AXIS NetPilot program and was created when AXIS NetPilot was installed on your client.

3. Start the Upgrade Wizard by clicking on the **Upgrade** icon on the AXIS NetPilot toolbar.

4. Proceed the installation by following the instructions that are presented to you in the Upgrade Wizard.

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

Upgrading the Printer's Firmware

The printer's firmware, i.e. the Fingerprint kernel, the standard fonts, and other files stored in the printer's flash memory, can be upgraded in several ways. The same methods can be used for downloading non-standard fonts:

• By means of a flash memory card (Firmware Card/Font Install Card) inserted in the printer's memory card slot (see the printer's Service Manual).
• From the CD over a serial channel using PrintSet.
• From a file in the host over a serial channel using PrintSet.
• Directly over Ethernet using FTP.

10. Printing

Creating a Label File

In order to test if the printer has been correctly installed and configured, you could print a simple label file. The file listed below is created using the Intermec Direct Protocol.

First, create a label layout file in a simple text editor (you can also find this file (*testfile.txt*) on the CD that comes with EasyLAN 100i:

```
INPUT ON ↵                              (start direct protocol mode)
BF ON ↵                              (enable bar code interpretation)
BF "Swiss 721 BT",6↵                          (select bar code font)
PP 10,10 ↵                           (insertion point for box field)
PX 430,340,15↵                                     (create a box)
PP 30,30 ↵                         (insertion point for image field)
PM "GLOBE.1"↵                                      (select image)
PP 75,270 ↵                     (insertion point for bar code field)
BT "CODE39"↵                                  (select bar code type)
PB "ABC" ↵                           (input data to bar code field)
PP 75,220↵                          (insertion point for text field)
FT "Swiss 721 BT",6 ↵                             (select text font)
PT "My FIRST label" ↵                      (input data to text field)
PF ↵                                            (print one copy)
```

Save the file under a suitable name, e.g. `testfile.txt`

Printing using FTP

Use the following instructions to print a sample from the following environments:

- Windows 3.1x
- Windows for Workgroups
- Windows 95
- Windows NT
- OS/2
- Unix

You will need to know the name or IP address of the printer you want to print to. Also, make sure that the printer is set to use "net1:" as standard IN/OUT channel (see Chapter 5 Basic Installation; Connecting the Printer to the Ethernet Network).

1. Start an FTP application connected to the printer:
   ```
   ftp 192.168.234.196
   ```

2. Log on using your user name and password.

3. Send the test file to the printer, e.g.:
   ```
   put test.txt pr1
   ```

4. If the printing has succeeded, the application returns transfer complete and other useful information. The printed label should look like this:

> *Note:*
> *The Intermec InterDriver, included on the CD that comes with the EasyLAN 100i, allows you to print directly from most applications running under various Windows versions.*

Printing From UNIX

Choose the print instruction appropriate for your type of system:

System	Instructions
BSD	`lpr -P printername filename`

where:

printername	is the name of the printer you want to print to.
filename	is the name of the file you want to print.

System	Instructions
System V	`pr -d printername filename`

where:

printername	is the name of the printer you want to print to.
filename	is the name of the file you want to print.

System	Instructions
AIX	`qprt -P printername filename`

where:

printername	is the name of the printer you want to print to.
filename	is the name of the file you want to print.

Your network administrator will be able to supply you with the name of a suitable printer for the file you wish to print.

If you have specified "test.txt" as filename, the following label will be printed.

Appendix 1: EasyLAN 100i Home Page

Description

The EasyLAN 100i comes with a home page for the World Wide Web (www) allowing the user to communicate directly with an EasyLAN 100i-equipped printer anywhere in the world over the web. The default home page is stored in the printer's firmware ("rom:") starting with Intermec Fingerprint 7.31. This means that the home page files are there regardless if the printer is fitted with an EasyLAN 100i interface board or not, but can only be accessed via that board.

The advanced user can modify or replace the default home page as described in the EasyLAN 100 i Programmer's Guide.

The home pages contains the following main subjects:

We recommend Microsoft Internet Explorer ≥ 4.0 or Netscape Communicator ≥ 4.0 with Java and stylesheets enabled for accessing the EasyLAN 100i home page.

• **Status**
  View the status of the printer ports

• **Configuration**
  Set up the *printer* in regard of...
  - *Serial and Ethernet communication*
  - *Media characteristics*
  - *Start/stop adjust and print speed*
  - *Perform testfeed, return to default setup, reboot, select application and select standard I/O port.*

  Set up the *print server*...
  - *General setup*
  - *Netware setup*
  - *NETBIOS/NETBEUI setup*
  - *Setup for printer 1 – 8*

  Set up the *network interface* in regard of...
  - *TCP/IP configuration*
  - *SNMP configuration*

• **Management**
  Read various information on the EasyLAN 100i interface.

• **Diagnostics**
  View the job history monitor.

• **Support**

• **Help**

Status

The status page shows information for the nine logical printers. Even if all logical printers represent a single physical printer, each logical printer can be set separately in regard of a number of characteristics, see *"Configuration/Print Server/Printer 1–8"* later in this chapter. By selecting the logical printer set up according to your immediate requirements, you can control how the printer will interpret and handle the data sent to it.

For each logical printer you can see:
- Logical Printer designation (1–8 and -) ["-" represents the direct printer port bypassing the logical printers]
- Port (always FastIF)
- Status (Available, Occupied, or Printing)
- Number of bytes printed
- Comments

Configuration

The Configuration part consists of three subparts:
• Printer
• Print Server
• Network Interface

Printer

There are four different pages in the Printer subpart:
1. Communication
2. Media
3. Print Engine
4. Web Shell

Refer to the Installation & Operation manual for the printer model in question for detailed information on the various setup parameters.

1. Communication

Here you can set up the communication parameters for the printer's standard serial communication channel "uart1:" and the network communication channel "net1:".

Use the boxes to enter and select the appropriate values and choices, then press the *Submit Setup* button.

2. Media

In this page you can specify the size of the print window, select the media type and set up the printer for the paper/ribbon type in use. You can also adjust the printer's printout contrast.

Use the boxes to enter and select the appropriate values and choices, then press the *Submit Setup* button.

3. Print Engine

In this page you can set the start and stop adjust values, read the printhead resistance, and set the print speed.

Use the boxes to enter and select the appropriate values and choices, then press the *Submit Setup* button.

4. Web shell

In the upper part of this page you can perform a test feed, reset the printer to its default setup values, print test labels, and execute a reboot.

Important!
Do NOT use the AUTO option in the Standard I/O drop-down list box (intended for future development only).

In the lower part, you can use the boxes to select an application and to choose the standard IN/OUT channel, similar to Intermec Shell. Then press the *Submit Setup button* and **execute a reboot**.

Configuration, cont'd.

Print Server

There are 11 different pages in the Print Server subpart:
1. General
2. NetWare
3. NetBIOS/NetBEUI
4. Printer 1
...
...
11. Printer 8

1. General

The following parameters can be set.

- **Node Address**
  This is the unique address[1] hardcoded into each EasyLAN 100i interface board (read-only). It is based on the serial number printed on the label on the rear plate of the interface board.

- **Root Password**
  Enter a password here to password-protect the configuration and management home pages. When trying to use a link to a configuration or management page, a password box will appear. Always Enter **root** as user. The password is **pass** unless you have specified another password here. After having given the correct password, you can link to any configuration or management page as long as your browser is on.

- **User and Printer Access List**
  Restrict access via FTP. Set name and password according to the following syntax:
  u:<name$_1$>: p:<password$_1$>:u:<name$_2$>: p:<password$_2$>:.......

- **Base URL**
  State the www address for your Base URL.

- **HP JetAdmin Support**
  State if you want HP JetAdmin Support by selecting YES or NO in the drop-down list box. Normally select NO.

- **Internal Printout Destination**
  In the drop-down list box, select the logical printer (PR1 –PR8 or FastIF) you want to use by default.

- **System Location**
  State where your system is located. (Used for SNMP).

- **System Contact**
  State the e-mail address of the contact person for your system. (Used for SNMP).

[1]. Also called Ethernet address, hardware address, or MAC address.

Configuration, cont'd.

Print Server, cont'd.

2. NetWare

The following parameters can be set.

- **Netware Enabled**
  Click a radio button to specify NetWare enabled or disabled.

- **Print Server Name**
  Specify the name of the print server. It should consist of the characters INTERMEC plus the six (6) last digits in the serial number of the EasyLAN 100i interface board (see the rear plate of the board).

- **Job Check Delay**
  Set the print server queue polling interval. Default value is 5 seconds.

- **Configuration Check Delay**
  Set the interval between automatic configuration checks. Default value is 300 seconds.

- **IEEE 802.3 Frame Type Enabled**
  Use the radio buttons to enable or disable this option.

- **Ethernet II Frame Type Enabled**
  Use the radio buttons to enable or disable this option.

- **IEEE 802.2 Frame Type Enabled**
  Use the radio buttons to enable or disable this option.

- **SNAP Frame Type Enabled**
  Use the radio buttons to enable or disable this option.

- **NCP Burst Mode Enabled**
  Use the radio buttons to enable or disable this option.

- **PSERVER NDS**
  Enter the name of NDS (NetWare Directory Services) file server and name of print server including context.

- **PSERVER Bindery 1 – 16**
  Enter the name of the bindery file server. See Chapter 4 *"Setting Up – Netware; Printing Methods"*.

- **NPRINTER/RPRINTER 1 – 8**
  Enter the print server name and slot number. See Chapter 4 *"Setting Up – Netware; Printing Methods"*.

After having entered the appropriate information and selected the desired options, press the *Submit NetWare settings* button.

Configuration, cont'd.

Print Server, cont'd.

3. NetBIOS/NetBEUI

The following parameters can be set:

- **NetBIOS/NetBEUI Enabled**
  Click a radio button to specify NetBIOS/NetBEUI enabled or disabled.

- **NetBIOS Frame Type**
  Use the click-down list box to select FR_AUTO, FR_802_2, or FR_DIX.

- **Name Printer 1 (–8)**
  Enter the name of the printer as `ITCnnnnnn.FIF`, where nnnnnn are the six (6) last digits in the serial number of the EasyLAN 100i interface board (see the label on the rear plate). `FIF` stand for Fast Interface.

- **Printer 1 (–8) Connected to**
  Use the click-down list box to select PR1 – PR8 or FastIF.

After having entered the appropriate information and selected the desired options, press the *Submit NetBIOS/NetBEUI settings* button.

Configuration, cont'd.

Print Server, cont'd.

4. Printer 1 (– 8)

The following parameters can be set:

- **Read Back Port**
  Not used. Select NONE.

- **String Before Print Job**
  Here you can e.g. type Direct Protocol instructions that are to be executed before the printing starts. Enter as hexadecimal byte value. Max. 256 characters.

- **String Substitutions**
  Here you can e.g. type Direct Protocol instructions that are to be executed after the printing is completed. Enter as hexadecimal byte value. Max. 256 characters.

- **String after Print Job**
  Enter as hexadecimal byte value.

After having entered the appropriate information and selected the desired options, press the *Submit Printer settings* button.

Configuration, cont'd.

Network Interface

There are two different pages in the Network Interface subpart:
1. TCP/IP
2. SNMP

1. TCP/IP

The following parameters can be set:

- **TCP/IP Printing Enabled**
  Click a radio button to specify enabled or disabled. Normally, select Enable.

- **IP Address**
  Shows the IP address of the printer as entered in the Setup Mode or by means of an Axis software. If the field is empty, enter the desired IP address of the printer.

- **Default Router**
  Shows the IP address of the default router as entered in the Setup Mode or by means of an Axis software. If the field is empty, enter the desired IP address of the default router.

- **Subnet Mask**
  Shows the address of the subnet mask as entered in the Setup Mode or by means of an Axis software. If the field is empty, enter the desired address of the subnet mask.

- **PROS Password**
  Enter the PROS password (Unix only, see Chapter 7 *"Setting Up – Unix; Printing Methods on TCP/IP Networks"*.

- **PROS TCP Port Number**
  Enter the PROS TCP port number (Unix only, see Chapter 7 *"Setting Up – Unix; Printing Methods on TCP/IP Networks"*.

- **LPD Banner Page Mode**
  Not used. Select the OFF option.

- **DHCP Enabled**
  Click a radio button to specify enabled or disabled.

- **BOOTP Enabled**
  Click a radio button to specify enabled or disabled (Unix only).

- **RARP Enabled**
  Click a radio button to specify enabled or disabled (Unix only).

- **WINS Enabled**
  Click a radio button to specify enabled or disabled (Windows only).

Disabling DHCP here makes an IP address orginally assigned by DHCP permanent. However, since this is not the correct way of using DHCP, we recommend setting a permanent IP address manually instead.

Configuration, cont'd.

Network Interface, cont'd.

1. TCP/IP, cont'd.

• **Primary WINS Server**
  When using DHCP, this setting is done automatically. Do not
  set manually unless you know what you are doing.

• **Secondary WINS Server**
  When using DHCP, this setting is done automatically. Do not
  set manually unless you know what you are doing.

• **NBT Scope ID**
  Defines the NetBIOS scope to be used with WINS name regis-
  tration. When using DHCP, this setting is done automatically.
  Do not set manually unless you know what you are doing.

• **Reverse Telnet Option Enabled**
  Click a radio button to specify enabled or disabled. Recommended
  setting: Disabled.

• **PR1 (–PR8) TCP Port Number**
  Enter the TCP port numbers of printer PR1 – PR8 (enter 0 if you
  do not use a port).

After having entered the appropriate information and selected the
desired options, press the *Submit TCP/IP settings* button.

Configuration, cont'd.

Network Interface, cont'd.

2. SNMP
The following parameters can be set:

- **Read Community**
  Enter the desired community name required for reading the printer's settings.

- **Read/Write Community**
  Enter the desired community name required for reading or changing the printer's settings.

- **Trap Address**
  Enter the IP address of the unit to which the printer should send trap messages.

- **Trap Community**
  Enter a string that identifies the printer when it sends trap messages.

- **System Name**
  Enter a name for the printer.

- **Authentication Failure Trap**
  There are two options:
  - ENABLE
  - DISABLE

  If you want to use failure traps, enable both the Authentification Failure Trap and the Printer Failure Trap.

- **Printer Failure Trap**
  There are two options:
  - ENABLE
  - DISABLE

  If you want to use failure traps, enable both the Authentification Failure Trap and the Printer Failure Trap.

After having entered the appropriate information and selected the desired options, press the *Submit SNMP settings* button.

Management

The Management page has five functions...

- to summarize some important information on the EasyLAN 100i interface (this information is also scattered among other pages):
  - Serial Number of the board
  - Hardware address
  - Software version
  - WINS Name
  - WINS Status
  - Base URL
  - TCP/IP enabled/disabled
  - NetWare enabled/disabled
  - NetBIOS/NetBEUI enabled/disabled
- to link to the following pages where you can enable/disable the respective function:
  - Configuration TCP/IP
  - Configuration NetWare
  - Configuration NetBIOS/NetBEUI
- to perform a soft reset of the NetServer's software, i.e. return to original settings,
- to perfom a hard reset of the NetServer's hardware (corresponds to a reboot), or
- to rest the parameters of the NetServer to default values.

Diagnostics

The diagnostics link on the main home page leads to a page where you find a single link, namely to the Job History Monitor.

Job History Monitor

The job history monitor shows the Account page where you can view the performed print jobs since last reboot. The following information is shown:

- **Job**   (Internal job number)
- **User**   (User name)
- **Prot**   (Protocol)
- **Port**   (Logical printer)
- **S**   (Status; Completed/Off-line/Printing)
- **Bytes**   (Number of bytes received by the NetServer)
- **Etime**   (Elapsed time, i.e. number of seconds the channel has been open)

Support and Help

These two links leads to the same page with links to various Intermec sites where you can find more information about Intermec Printers and the Intermec Technologies Corporation.

Appendix 2. Parameter List

This appendix provides an overview of the EasyLAN 100i parameters (also see Appendix 1 *"EasyLAN 100i Home Page"*). Please refer to the AXIS Network Print Server Technical Reference for a complete description of the parameters. It is available on the Axis WWW Home Page at **http://www.axis.com**, where you also can download the latest technical information.

The Config File

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

After you have changed them, most parameters take effect for the next print job. If *Requires Restart* appears in a parameter description, you must reboot the EasyLAN 100i printer, before the new setting for that parameter takes effect.

Please refer to Chapter 8 *"Configuration & Management"*, for more information about how to change the parameters.

> *Note:*
> *The password parameters, ROOT_PWD and PROS_PWD only appear when you are logged in to the EasyLAN 100i using root. The password parameters will not be printed when you are printing the parameter list using the test button.*

— GENERAL MENU

NODE_ADDR.	: 00 40 8C 10 00 86	Node Address
ROOT_PWD.	: pass	Root Password
USERS.	:	User and Printer Access List
BASE URL.	: www.intermec.com/printers	Base URL
DEF_OUT.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Internal Printout Destination
SYS_LOC.	:	System Location
SYS_CONT.	:	System Contact

— TCP/IP MENU

TCP_ENB.	: YES	TCP/IP Enabled
INT_ADDR.	: 0 0 0 0	Internet Address
DEF_ROUT.	: 0 0 0 0	Default Router Address (0.0.0.0 for no router)
NET_MASK.	: 0 0 0 0	Net Mask (e.g. 255.255.255.0 for class C, 0.0.0.0 for auto-sense)
PROS_PWD.	: netprinter	PROS Password
PROS_PRT.	: 35	PROS TCP Port Number
LPD_BANN.	: NO	LPD Banner Page Mode
DHCP_ENB.	: YES	DHCP Enabled
BOOTP_ENB.	: YES	BOOTP Enabled
RARP_ENB.	: YES	RARP Enabled
WINS_ENB.	: YES	WINS Enabled
WINS_ADDR1.	: 0 0 0 0	Primary WINS server Address
WINS_ADDR2.	: 0 0 0 0	Secondary WINS server Address
NBT_SCOPE ID.	:	NBT Scope ID (Defines the NetBIOS scope to be used with WINS name registration)
RTN_OPT.	: YES	Reverse Telnet Options Enabled
RTEL_PR1.	: 0	PR1 Reverse Telnet Port Number
RTEL_PR2.	: 0	PR2 Reverse Telnet Port Number
RTEL_PR3.	: 0	PR3 Reverse Telnet Port Number
RTEL_PR4.	: 0	PR4 Reverse Telnet Port Number
RTEL_PR5.	: 0	PR5 Reverse Telnet Port Number
RTEL_PR6.	: 0	PR6 Reverse Telnet Port Number
RTEL_PR7.	: 0	PR7 Reverse Telnet Port Number
RTEL_PR8.	: 0	PR8 Reverse Telnet Port Number

— SNMP MENU

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

— **NETWARE MENU**			
NETW_ENB.	:	YES	NetWare Enabled
PS_NAME.	:	INTERMECnnnnnn	Print Server Name (nnnnnn are the last six digits of the serial number)
JOB_CHECK_DELAY.	:	5	Job Check Delay (Print Server queue polling interval)
CONF_CHECK_DELAY.	:	300	Configuration Check Delay (Interval between automatic configuration checks)
FR_802_3.	:	YES	IEEE 802.3 Frame Type Enabled
FR_ETH_2.	:	YES	Ethernet II Frame Type Enabled
FR_802_2.	:	YES	IEEE 802.2 Frame Type Enabled
FR_SNAP.	:	YES	SNAP Frame Type Enabled
NCP_BURST_MODE.	:	YES	NCP Burst Mode Enabled *(Requires Restart)*
PSERVER_NDS.	:		PSERVER NDS (File server & Name of print server, including context)
PSERVER_BINDERY1.	:		PSERVER Bindery 1 (Bindery file server name)
PSERVER_BINDERY2.	:		PSERVER Bindery 2 (Bindery file server name)
PSERVER_BINDERY3.	:		PSERVER Bindery 3 (Bindery file server name)
PSERVER_BINDERY4.	:		PSERVER Bindery 4 (Bindery file server name)
PSERVER_BINDERY5.	:		PSERVER Bindery 5 (Bindery file server name)
PSERVER_BINDERY6.	:		PSERVER Bindery 6 (Bindery file server name)
PSERVER_BINDERY7.	:		PSERVER Bindery 7 (Bindery file server name)
PSERVER_BINDERY8.	:		PSERVER Bindery 8 (Bindery file server name)
PSERVER_BINDERY9.	:		PSERVER Bindery 9 (Bindery file server name)
PSERVER_BINDERY10.	:		PSERVER Bindery 10 (Bindery file server name)
PSERVER_BINDERY11.	:		PSERVER Bindery 11 (Bindery file server name)
PSERVER_BINDERY12.	:		PSERVER Bindery 12 (Bindery file server name)
PSERVER_BINDERY13.	:		PSERVER Bindery 13 (Bindery file server name)
PSERVER_BINDERY14.	:		PSERVER Bindery 14 (Bindery file server name)
PSERVER_BINDERY15.	:		PSERVER Bindery 15 (Bindery file server name)
PSERVER_BINDERY16.	:		PSERVER Bindery 16 (Bindery file server name)
NPRINTER1.	:		NPRINTER/RPRINTER 1 (Print Server name and slot number)
NPRINTER2.	:		NPRINTER/RPRINTER 2 (Print Server name and slot number)
NPRINTER3.	:		NPRINTER/RPRINTER 3 (Print Server name and slot number)
NPRINTER4.	:		NPRINTER/RPRINTER 4 (Print Server name and slot number)
NPRINTER5.	:		NPRINTER/RPRINTER 5 (Print Server name and slot number)
NPRINTER6.	:		NPRINTER/RPRINTER 6 (Print Server name and slot number)
NPRINTER7.	:		NPRINTER/RPRINTER 7 (Print Server name and slot number)
NPRINTER8.	:		NPRINTER/RPRINTER 8 (Print Server name and slot number)

— **NetBIOS/NetBEUI MENU**

LSLM_ENB.	: YES	NetBIOS/NetBEUI Enabled
NB_FR_TYPE.	: FR_AUTO (FR_AUTO, FR_802_2, FR_DIX)	NetBIOS Frame Type *(Requires Restart)*
LPRINT_1.	: ITCnnnnnn.FIF	LP1 Name Printer 1 (nnnnnn are the last six characters of the serial number)
LLOGIC_1.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 1
LPRINT_2.	:	Name Printer 2
LLOGIC_2.	: PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 2
LPRINT_3.	:	Name Printer 3
LLOGIC_3.	: PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 3
LPRINT_4.	: Name	Name Printer 4
LLOGIC_4.	: PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 4
LPRINT_5.	:	Name Printer 5
LLOGIC_5.	: PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 5
LPRINT_6.	:	Name Printer 6
LLOGIC_6.	: PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 6
LPRINT_7.	:	Name Printer 7
LLOGIC_7.	: PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 7
LPRINT_8.	:	Name Printer 8
LLOGIC_8.	: PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, FASTIF)	Logical Printer for Printer 8

— **PRINTER1→ PRINTER 8 MENUS**

PR1_IN.	: AUTO (NONE, AUTO)	Read Back Port (not used)
PR1_BEF.	:	String Before Print Job
PR1_STR.	:	String Substitutions
PR1_AFT.	:	String After Print Job

Appendix 3. Technical Specifications

General	10baseT/100baseTX Internal Ethernet Interface card
Model	Intermec EasyLAN® 100i
Supported Printer Models	EasyCoder 501 XP, 601 XP, F2, and F4
ETRAX System Processor	32-bit 100 MHz RISC Controller, 1 Mbyte Flash memory, 512 kbytes RAM

Printer Network Features

Interrogate Printer Status:
Printing, head lifted, out of labels, out of ribbon, etc.

Interrogate Job Status:
User, time submitted & time completed.

Dynamic Printer Alert Messaging:
SNMP

Supported Network Systems

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

Print Methods:
NDPS, RPRINTER/NPRINTER, PSERVER

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

IBM LAN Server:
LAN Server 1.3 and above, running under OS/2 ver 1.3 and above including OS/2 Warp, OS/2 Warp Connect

Microsoft Windows:
Windows NT ver. 3.5 and above, Windows for Workgroups, Windows 95, Windows 98

UNIX and Other Systems:
All computers supporting the TCP/IP suite of protocols including:

BSD systems:
BSD 4.2, 4.3, 4.4, SunOS4 (SOLARIS 1.x), DEC Ultrix etc. Linux

System V systems:
R3, R4, AT&T. Interactive, SCO, SUNOS5 (Solaris 2.x), HP-UX, Silicon Graphics IRIX, DEC Alpha OSF/1, IBM AIX, BULL (BOS, AIX)

Supported Network Systems, cont'd.   **Other systems:**
IBM (MVS,VM,VSE, OS/400), DEC VMS, guidelines for other systems

Print Methods:
LPD, FTP, PROS (named pipe & filtered), Reverse Telnet

WWW:
Netscape 3.0 or higher and MS Internet Explorer 3.0 or higher

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

Supported Protocols   Running simultaneously any combination of the following protocols:

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

LAN Manager/LAN Server:
NetBIOS/NetBEUI

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

TCP/IP:
LPD, FTP, Telnet, Reverse Telnet, PROS, BOOTP, RARP, DHCP, ICMP, IGMP, IP, TCP, UDP, HTTP, SNMP, TFTP, SLP

LANtastic:
NetBIOS/NetBEUI

Interface Network Management   SNMP-MIB II compliant (over UDP/IP and IPX), private enterprise MIB included. Print server/job/printer status presentation and management via NWAdmin/PCONSOLE

Logical Network Connection   **Ethernet:**
Use of IEEE802.2, IEEE802.3, SNAP and Ethernet II frame types simultaneously.

Fast Ethernet:
Supports NWay that provides auto-detection of network speed. Use of IEEE 802.2, IEEE 802.3, SNAP and Ethernet II frame types simultaneously

Network Attachments   **Ethernet:**
RJ-45 connector (Category 5 unshielded twisted pair cable) for 10baseT Ethernet or 100baseTX Fast Ethernet

Security	**UNIX:** Root password, User access list and printer access
	NetWare: Encrypted passwords
Logical Printers	The logical printer ports can be programmed to perform string before and after job, string substitution, alternative output and character set conversion
User Interface	1 LED network activity indicator. Test button for interface card diagnostics (presently not supported)).

Appendix 4. Glossary

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

ARP
Address Resolution Protocol. A protocol within TCP/IP networks that allows a host to find the physical address of a node on the same network. It is available in UNIX, Windows 95, Windows 98, and Windows NT. ARP cannot be used across routers.

BINDERY
A Novell Netware database that allows the network administrator to organize an operating environment based on the individual requirements of, for example, users, groups, and workgroups,

BOOTP
BOOT Protocol. A TCP/IP protocol, used for downloading startup information such as the IP address to hosts on the network. It is only available in UNIX. BOOTP requires a BOOTP daemon on your system. A request made to an active BOOTP daemon initiates a search of the Boot Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.

BSD
Berkeley Software Distribution. The University of California, Berkeley additions to the UNIX operating system.

Client-Server printing
One or several workstations shares a common printer via a network. Print jobs are spooled on a server (e.g. one of the workstations).

Config file
This is a file that resides in the print server's memory and contains all the parameters that determine the EasyLAN 100i functionality. By editing the config file (changing the parameter settings), you can configure the EasyLAN 100i to meet the printing needs of your network.

Daemon
Disk And Execution MONitor. A program that lies dormant waiting for some condition to occur.

DHCP
Dynamic Host Configuration Protocol. DHCP is available in Windows NT and UNIX systems, and allows for the automatic but temporary assignment of IP addresses from a central pool. DHCP causes the selected host to automatically allocate and download an unused IP address to the requesting print server. It also provides validation data that defines how long the IP addresses will remain valid. To fully benefit from this method, the EasyLAN 100i also supports the WINS host name resolution protocol, which is available in Windows NT networks.

Direct Protocol	A subset of Intermec Fingerprint programming language. Refer to Intermec Direct Protocol ≥7.31 Programmer's Guide.
DNS	Domain Name Service. Reflects the server names and addresses within a network.
Ethernet address	See MAC address.
FastIF	A channel inside the EasyLAN 100i that bypasses the logical printers, i.e. no settings affect the print data.
Fingerprint	A programming language developed by Intermec for controlling some of its high-end EasyCoder printer ranges. Refer to Intermec Fingerprint ≥7.31 Reference Manual and Programmer's Guide.
Flash Memory	The print server software is stored in Flash Memory. This memory is provided by a silicon chip that like any other ROM device, retains data content even after power is removed. However, Flash Memory is unique because it allows its data to be erased and re-written. This means that you can install software updates for your server as soon as they become available, without having to replace any parts. The new software is simply loaded into the server over the network.
FTP	File Transfer Protocol. A TCP/IP protocol used for logging into a network and transferring files.
Hardware Address	Se MAC address.
HTML	Hypertext Markup Language. A standard hypertext language used for creating World Wide Web pages and other hypertext documents.
HTTP	Hypertext Transfer Protocol. The TCP/IP protocol for Web based communication.
InterDriver	Printer driver for use with various versions of Microsoft Windows developed by Intermec. ActiveX support. Freeware (**http://printer.intermec.com**).
IP	Internet Protocol. The TCP/IP session-layer protocol that regulates packet forwarding by tracking IP addresses, routing outgoing messages and recognizing incoming messages.
IPX	Internetwork Packet Exchange, a network protocol from Novell used in connection with Novell NetWare.
JCL	Job Control Language, a language used in connection with the MVS operating system from IBM.
LAN	Local Area Network.
LED	Light Emitting Diode.

Logical Printer	A logical printer acts as a filter between the network and the physical printer. It appears to the user as a normal printer with additional characteristics. For example a UNIX workstation may only send a line feed (LF) to a shared printer that needs carriage return (CR) and LF. The logical printer can solve this problem by adding a CR.
LPD	Line Printer Daemon.
LPR	Line Printer.
MAC address	Media Access Control address. Also called hardware address, Ethernet address, and node address. Based on the unique serial number of a NIC (Network Interface Card). The serial number is usually organised in couples of digits with space, hyphen, or colon characters between each couple. *Do not confuse with Mac as in Macintosh!*
MIB	Management Information Base. A database of network configuration information used by SNMP and CMIP to monitor or change network settings.
MVS	Multiple Virtual Storage, an operating system installed on most of IBM's mainframe computers.
NBT	NetBIOS over TCP/IP protocol.
NCP	NetWare Core Protocol. Network clients use the NCP to request services of servers, and servers use NCP to provide services, such as file and print services.
NDS	NetWare Directory Services. Manages network resources such as NetWare servers and volumes.
NetBEUI	NetBEUI is an acronym for NetBIOS Extended User Interface. A transport protocol for NetBIOS used e.g. by all of Microsoft's network systems.
NetBIOS	BIOS stands for Basic Input/Output System. An application programming interface for network operations on PCs running under Microsoft's DOS.
NetWare	NetWare is a proprietary network operating system from Novell, Inc. It supports e.g. MS-DOS, Microsoft Windows, OS/2, and Unix clients using IPX/SPX, NetBEUI, or TCP/IP protocols.
Node address	See Mac address.
Peer-to-peer printing	Printing from a host computer on a printer without involving any file server.

PrintSet	PrintSet is an easy to use software developed by Intermec and running under Windows 95/98 or NT 4.0. It is used for setting up various Intermec EasyCoder printers and for printing test labels. PrintSet helps you to create and maintain printer configurations, fine tune printer performance, improve print quality, and download fonts, graphics, and formats. Some EasyCoder models can also be upgraded in regard of firmware by means of PrintSet.
PROS	A protocol developed by Axis Communications AB, which comes in two versions: PROS A (named pipe) and PROS B (filter). Used in Unix.
RARP	Reverse Address Resolution Protocol. A TCP/IP protocol used for downloading IP addresses in UNIX networks. It requires a RARP daemon on your system, and only operates within a single network segment. A request made to an active RARP daemon initiates a search of the Ethernet Address Table for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon downloads the IP address to the print server.
RISC	Reduced Instruction Set Computing. A processor that recognizes only a limited number of assembly-language instructions.
SAP	Service Advertising Protocol. A network name advertising service that e.g. file servers can use for advertising their existence to network clients.
Setup Mode	A mode in Intermec Fingerprint for setting up EasyCoder printers in regard of e.g. communication, media, and printing characteristics. Refer to the printer's Installation & Operation manual for comprehensive information.
SNMP	Simple Network Management Protocol. A TCP/IP protocol for managing and monitoring nodes on a network.
SPX	Sequenced Packet Exchange. A packet sequencing protocol used by Novell NetWare.
TCP	Transmission Control Protocol. The connection-oriented, transport-level protocol used in the TCP/IP suite of protocols.
TELNET	A program that acts as a terminal emulator and can login remotely over the internet.
TFTP	Trivial File Transport Protocol. A simpler version of the FTP protocol.
UNIX	A 32-bit multi-tasking, multi-user operating system originally developed by AT&T.

URL	Uniform Resource Locator. A way of specifying the location of publicly available information on the Internet.
WAN	Wide Area Network. A network dispersed over a geographical defined area, e.g. a state or county. A WAN usually comprises a large number of local area networks (LAN).
WINS	Windows Internet Name Service. A NetBIOS Name Server that maps NetBIOS names to dynamically assigned IP addresses.
Wizard	A special form of user assistance that automates a task through a dialog with the user. Wizards help the user to accomplish tasks that are complex and require experience, and even for the experienced user can help to speed up an operation.