User's Guide

EasyLAN

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Document Change Record

This page records changes to this document. The document was originally released as version -00.

Version	Date	Description of Change
-00	5/2003	Original version for Fingerprint v8.00 and IPL v2.00
-01	9/2003	For Fingerprint v8.10 and IPL v2.10
-02	01/2005	For Fingerprint v8.40 and IPL v2.40. Enhanced wireless security, duplicate IP address handling and DDNS added. Japan added as regional setting for EasyLAN Wireless.

Contents

Global Services and Support

Warranty Information

To understand the warranty for your Intermec product, visit the Intermec web site at http://www.intermec.com and click Service & Support. The Intermec Global Sales & Service page appears. From the Service & Support menu, move your pointer over Support, and then click Warranty.

Web Support

Visit the Intermec web site at http://www.intermec.com to download our current documents in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Visit the Intermec technical knowledge base (Knowledge Central) at http://intermec.custhelp.com to review technical information or to request technical support for your Intermec product.

Telephone Support

Contact your local Intermec representative. To search for your local representative, from the Intermec web site, click **Contact**.

Who Should Read This Manual?

This manual provides you with information about the networking features of the EasyCoder PF, PM, or PX series printer equipped with an EasyLAN network interface, and how to configure, troubleshoot, and maintain the interface. You must be familiar with your Intermec products, your network, and networking terms, such as IP address.

Related Documents

The Intermec web site at http://www.intermec.com contains our current documents that you can download in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

1 Introduction

The Intermec EasyLAN interface is an optional device that provides the printer with a network connection. There are two types:

- EasyLAN Ethernet
- EasyLAN Wireless

The EasyLAN interface may either be factory installed in your printer, or can be fitted later as described in the Intermec EasyLAN, Installation Instructions booklets.

About This Manual

The purpose of this manual is to describe the EasyLAN network interface and the functions that it provides. This manual contains the following main sections.

Introduction

Introduction provides a short description of the EasyLAN network interface and the supporting material that is provided with it.

Scope

Here you will find information about this, and other manuals concerning the printer and the EasyLAN network interface.

Supporting Material on CD

This chapter describes the material on the shipped CD in detail.

Features and Functions

Here you will find a brief overview of the features and functions of the EasyLAN network interface card.

Setting Up the Printer in Windows

Setting up the printer describes how to install the printer in a Windows environment.

Setting Up the Printer in Unix and Linux

Setting up the printer describes how to install the printer in a Unix or Linux environment.

Using the EasyLAN Web Browser Interface

This chapter describes how to use the EasyLAN web browser interface to configure your network settings and upgrade the printer firmware.

Basic Operations (Fingerprint and IPL)

This chapter describes how to use FTP, SNMP and password protection regardless whether the printer runs Fingerprint or IPL.

Advanced Configuration

This chapter describes more advanced configuration procedures, including:

- accessing the printer through Telnet and FTP.
- using Fingerprint commands to configure the printer and customize the printer's web pages and interfaces
- protecting files and settings from unauthorized changes.

Troubleshooting

This chapter describes how to detect and correct problems related to the EasyLAN network interface.

Support and Help

Here you will find information about how to contact Intermec's help and support organization.

Appendix A – Glossary

Glossary of Terms contains explanations of the acronyms and abbreviations found in the manual.

Appendix B – Technical Specifications

Technical Specifications provides a technical overview of the EasyLAN network interface.

Document Conventions

The following conventions are used throughout the manual.

Product Name

EasyLAN is the product name for all Ethernet connectivity products, both wired and wireless.

Highlighted Words

In this manual there are several words highlighted to emphasize certain procedures or names.

Bold

Bold typeface is used to highlight buttons, menu names, and commands on menus and buttons.

Italic

Italic typeface is used to highlight notes and references.

Supporting Material on CD

The CD-ROM that comes with the EasyLAN contains the following programs, files, and manuals.

General and Specifications

- Navigation tool
- Product presentation
- Product profile

Documentation

- Intermec EasyLAN, Installation Instructions (Ethernet and Wireless)
- Intermec EasyLAN, User's Guide (this manual)
- Intermec EasyLAN Setup Wizard, User's Guide
- Intermec Fingerprint Programmer's Reference Manual
- Intermec IPL Programming Reference Manual

Firmware

- Intermec Fingerprint v8.40 and IPL v2.40 printer firmware

Software Utilities

- Intermec InterDriver with ActiveX Controls
- Intermec PrintSet
- Intermec Network Setup wizard
- Intermec proprietary MIBs
- dptest.txt (test file for DP/FP)
- ipltest.txt (test file for IPL)

Features and Functions

The EasyLAN network interface card not only provides a network interface but also has features such as security, FTP server, WEB server, and Alert handling.

Network Connector

The EasyLAN is designed for 10 Mbps Ethernet and 100 Mbps Fast Ethernet networks. The EasyLAN connects to the network with a twisted pair category 5 cable (10baseT and 100baseTX) or better using RJ-45 connectors, or through a wireless LAN interface using IEEE 802.11b and 802.11g. The EasyLAN is equipped with an auto sensing 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.

Raw TCP

Raw TCP allows a user to connect to printers on network. Using a network terminal protocol, such as Telnet, you can start a remote session by specifying an IP-address to connect to. When connected you can send commands to the printer from your remote computer.

Alerts

The EasyLAN can be configured to send alert notifications triggered by a number of events. You can easily select what alerts you should be notified of and what the messages should include. Alerts can either be distributed by e-mail or SNMP. For more information about Alerts, see Chapter 4.

FTP

The EasyLAN has a built-in FTP server, which allows you to transfer and store files such as pictures and fonts. You can also print files by sending them directly to the printer. FTP simplifies configuration when addressing multiple printers since you can send premade configuration files directly to the printers. You will find more information about FTP in Chapter 6.

Security

The use of the printer's internal accounts and passwords are made easier by the EasyLAN due to the possibilities to configure through a Web interface.

Web Server

The Web server gives you an optional way to configure the printer, through the easy to use Web Interface accessed by the printers IP address. For more information about configuring the printer through Web interface, see Chapter 4.

The Web server also gives you the possibility to write your own program and communicate with it through a Web interface. For more information about advanced use of the Web Server, please consult Chapter 6, "Advanced Configuration."

2 Setting Up the Printer in Windows

This section describes how to install the printer in a Windows environment either through generic TCP/IP port or through Intermec Printer Monitor.

Before you can set up the printer in your Windows environment you must connect the printer to your network as described in the installation guide provided with the network interface.

You will need the appropriate printer drivers included on the CD provided with your printer.

Windows 95, 98, and ME

Follow the procedure below to add the EasyCoder Printer to a computer running Windows 95, 98, or Windows ME

Prerequisites

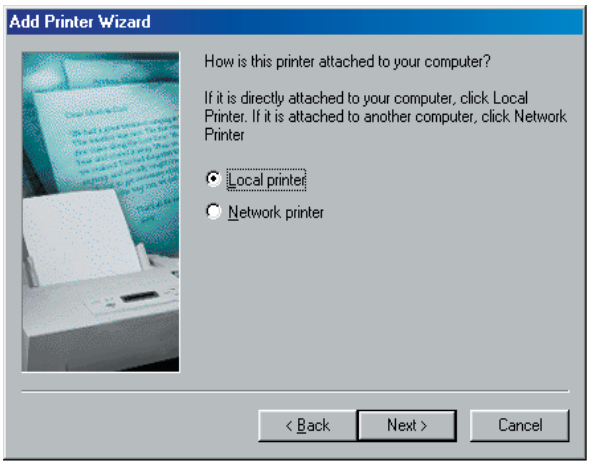
Intermec Print Monitor should be used for network printing in Windows 95, 98, and ME environments. Install the Intermec Print Monitor software now if you have not already done so. It is available on the CD provided with the printer. You will find it in the Software section on the CD.

Add a Printer

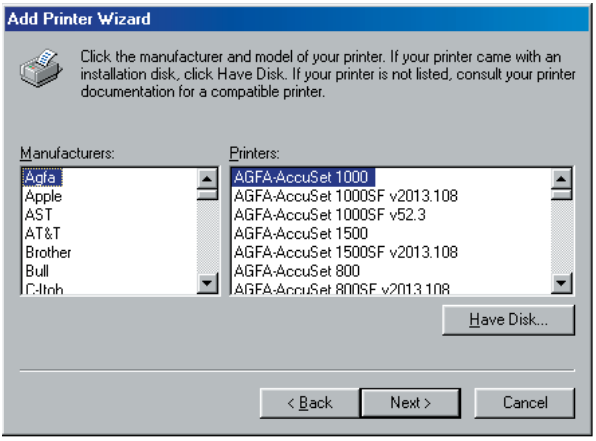
1 Select **Settings – Printers** from the start menu.

2 Double-click the **Add Printer** button and click **Next** to continue.

3 Select **Local Printer**, and click **Next** to continue.



4 Click the **Have Disk** button.



5 Insert the CD provided with your printer, and click the **Browse** button.

6 Select the drive corresponding to your CD-reader and browse to the folder \software\InterDrv\95 98 Me 2000 XP\. Click **OK**.

7 Select the printer from the window and click **Next**.

8 Select the **File** port (this will be changed later). Click **Next**.

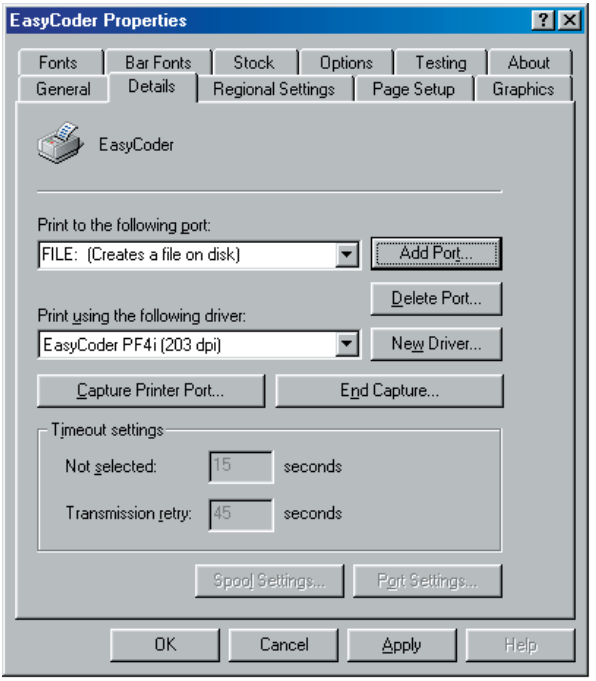
9 Enter an appropriate name for your printer and click **Finish**.

Assigning the Printer to a Printer Port

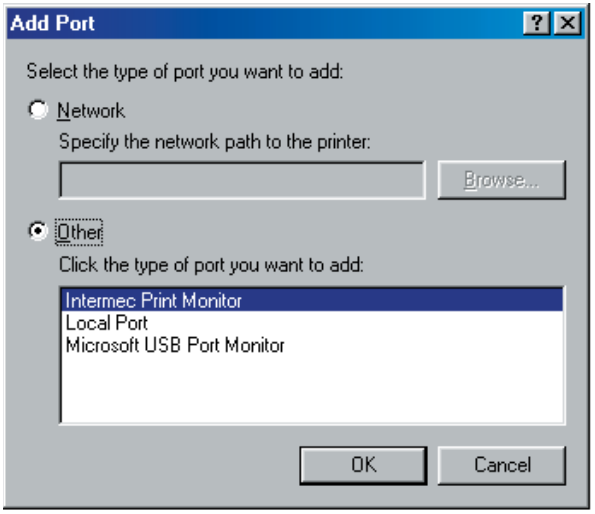
1 Select **Settings – Printers** from the **start** menu.

2 Right click on your printer and select **Properties.**

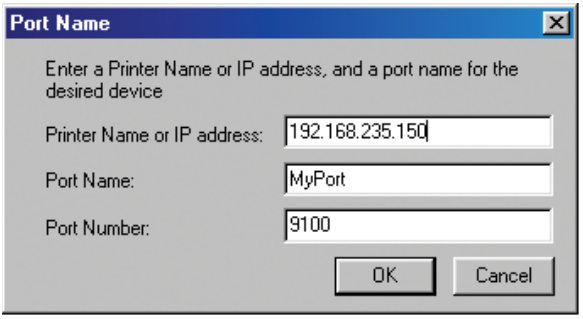
3 Click the **Details** tab, and then click **Add Port**.



4 Click **Other** and select **Intermec Print Monitor**, then click OK.



5 Enter the printers IP-address in the first field and type an appropriate name in the second field. Click **OK**.



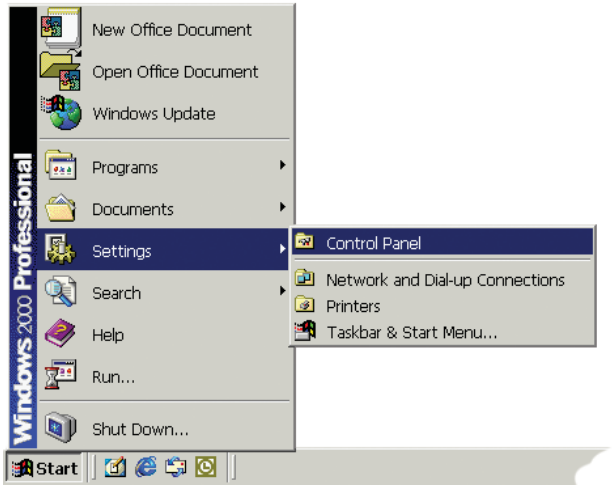
6 To verify that the port and printer are correctly installed, select new port in the "**Print to the following port**" list and click **OK**.

Windows 2000 and XP

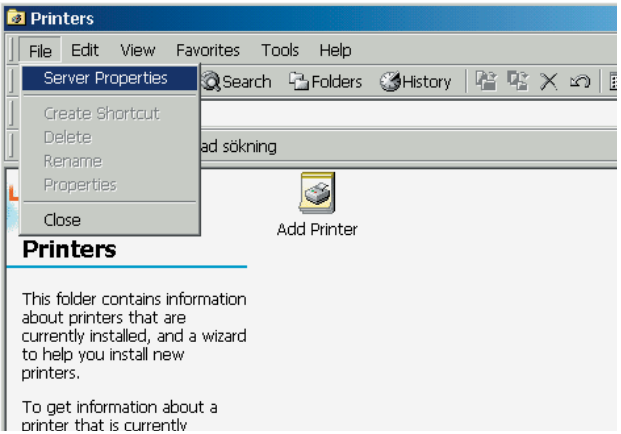
Follow the procedure below to add the EasyCoder Printer to a computer running Windows 2000 or Windows XP.

Add a Printer Port

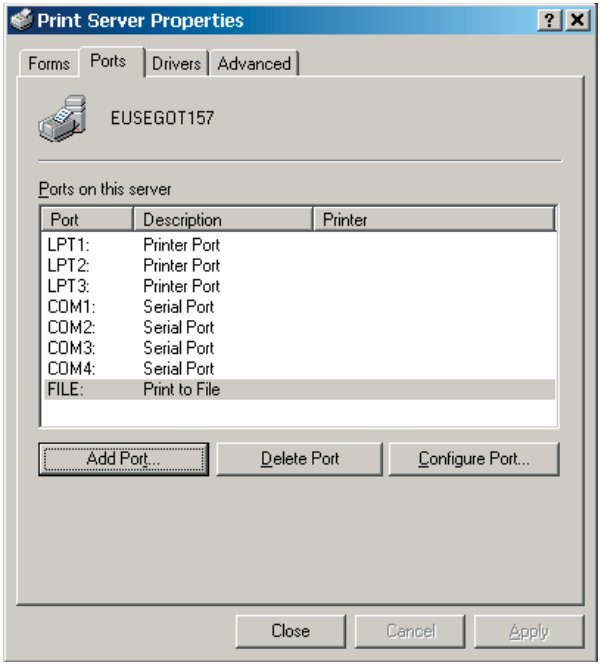
1 In Windows 2000 select **Settings – Printers** from the start menu. In Windows XP select **Control panel – Printers and faxes** from the start menu.



2 Select **Server Properties** under the **File** menu.

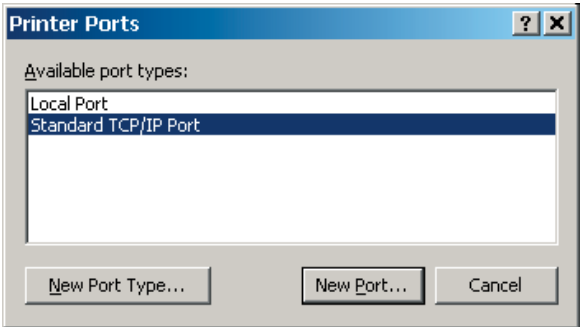


3 Click on the **ports** tab.

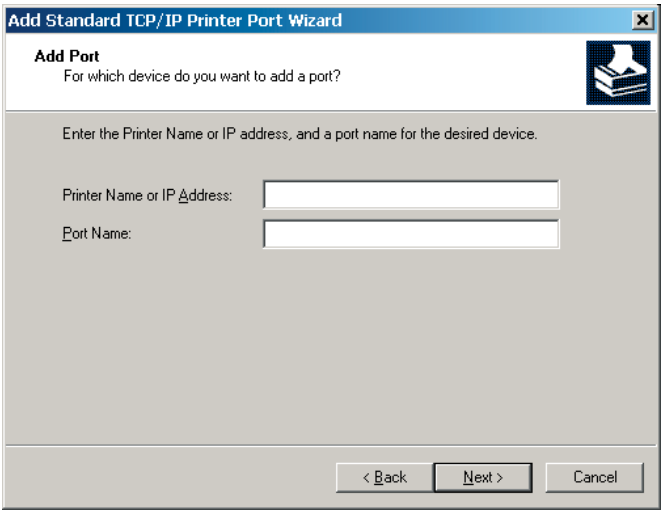


4 Select **Add port**, and click the **Add Port** button.

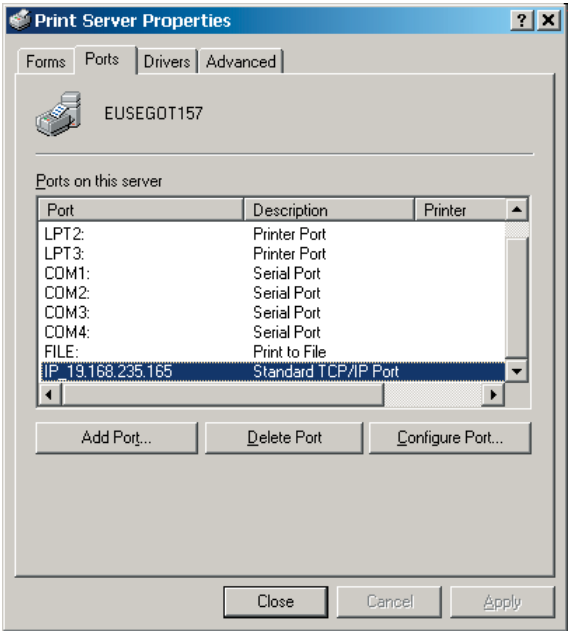
5 Select **Standard TCP/IP port** and then click **New Port**.



6 The "add TCP/IP Printer Wizard" will start, click on **Next** and enter IP number or Printer name. Click **Next**.

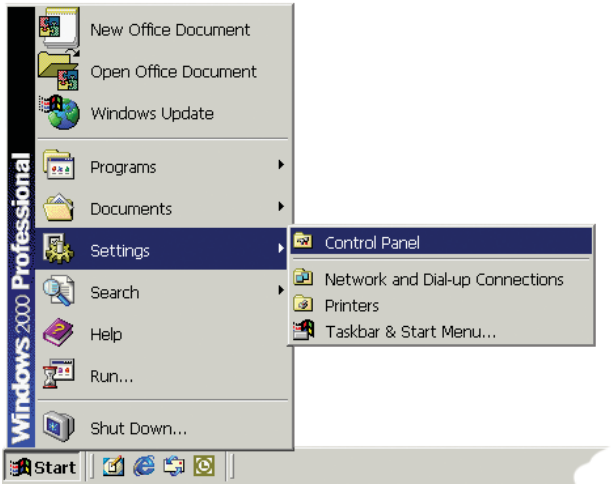


7 Select **Generic Network Card** from the **Standard** device type list. Click **Next**, **Finish**, and finally close the **Printer Ports** and **Printer Server Properties** windows.



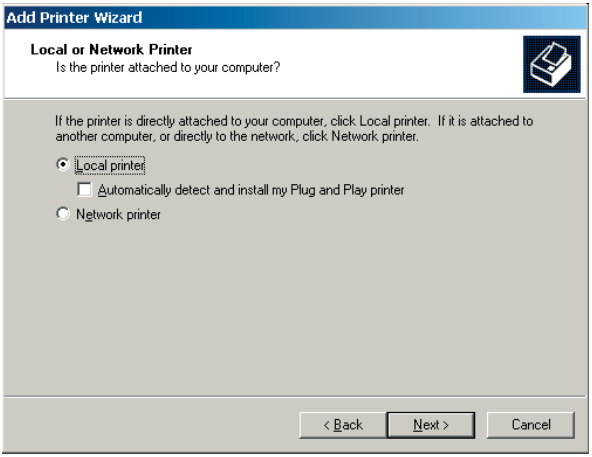
Add a Printer

1 In Windows 2000 select **Settings – Printers** from the start menu. In Windows XP select **Control panel – Printers and faxes** from the start menu.

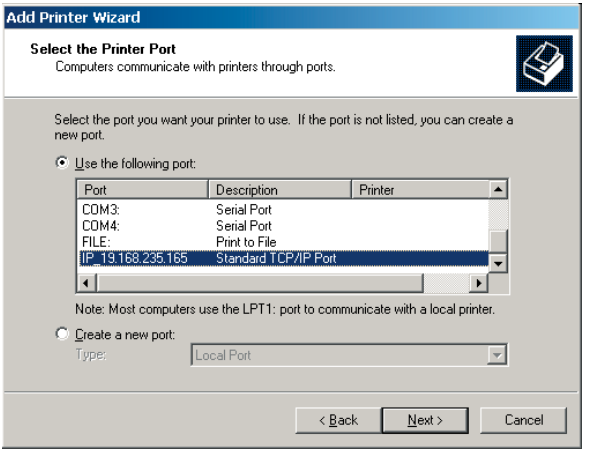


2 Double-click the **Add Printer** button and click **Next** to continue.

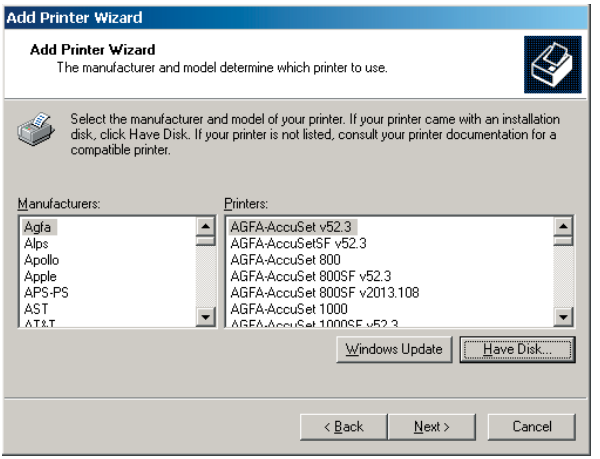
3 Select **Local Printer** and uncheck the **Automatically detect and install my Plug and Play printer**. Click **Next** to continue.



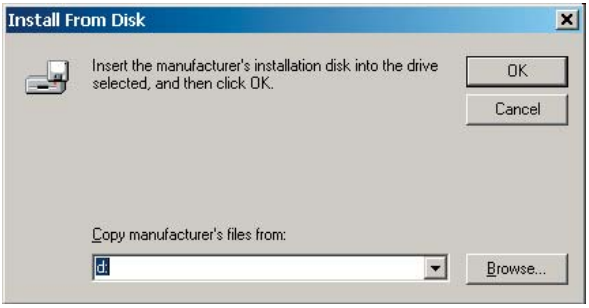
4 Scroll down and select the port named with the IP-address of the printer. Click **Next**.



5 Click the **Have Disk** button.



6 Insert the CD provided with your printer, select the CD-drive and click **OK**.



7 Select the printer from the list and click **Next**.

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

9 Select whether you want to share the printer with other network users and click **Next**.

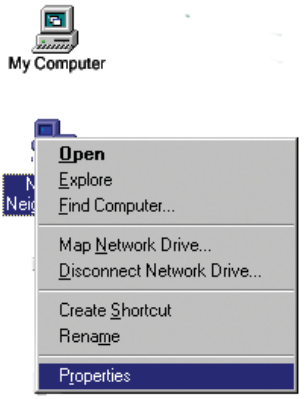
10 To verify that the printer and port are correctly installed, select **Yes** when asked to print a test page, click **Next**.

11 Click **Finish**.

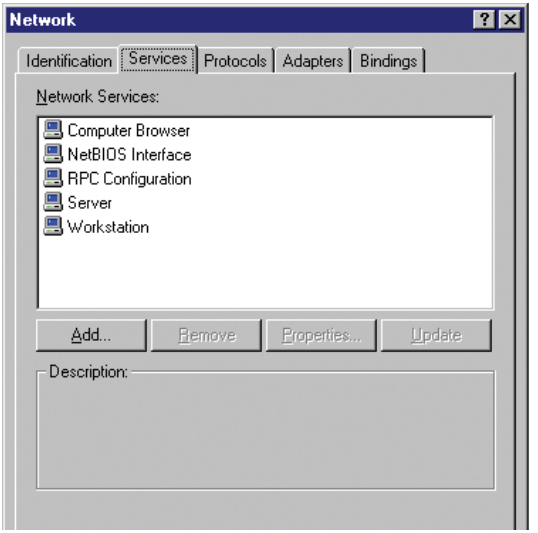
Windows NT 4.0

Add TCP/IP Printing Service

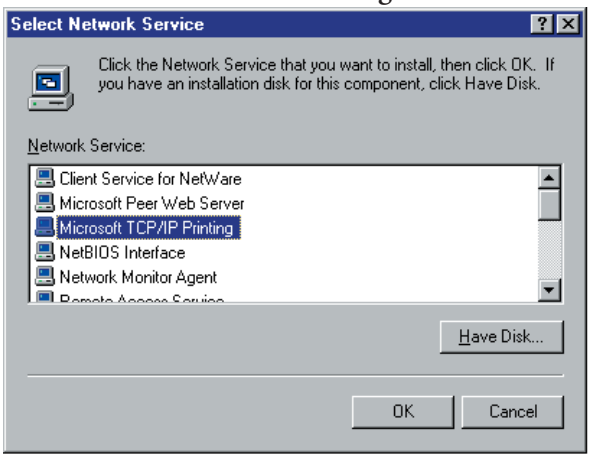
1 Right click **Network Neighbourhood** and click **Properties** from the menu.



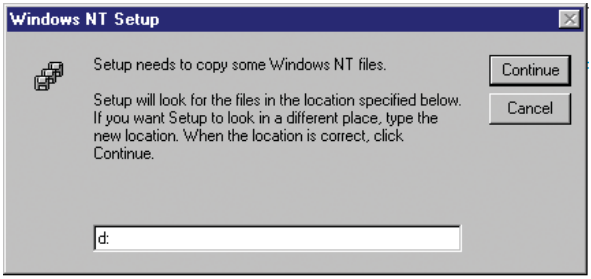
2 Click the **Services** tab. If the Microsoft TCP/IP Printing already is available in the list, continue to the **Add a printer port** section next, otherwise click **Add**.



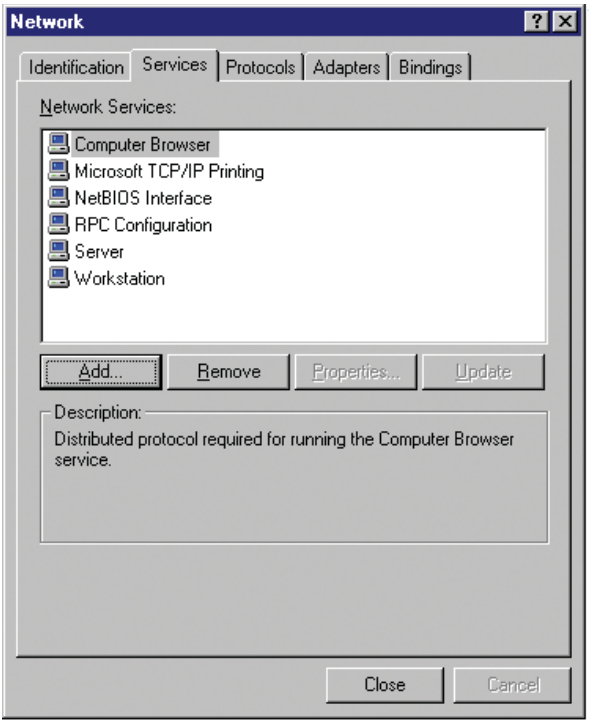
3 Click **Microsoft TCP/IP Printing** and then **OK**.



4 Specify the path to where the installation files can be found and click **Continue**.



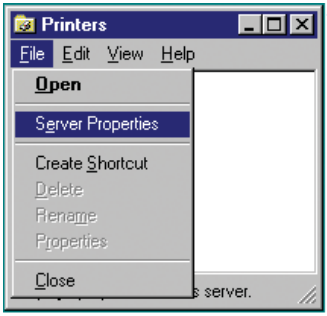
5 Click **Close**.



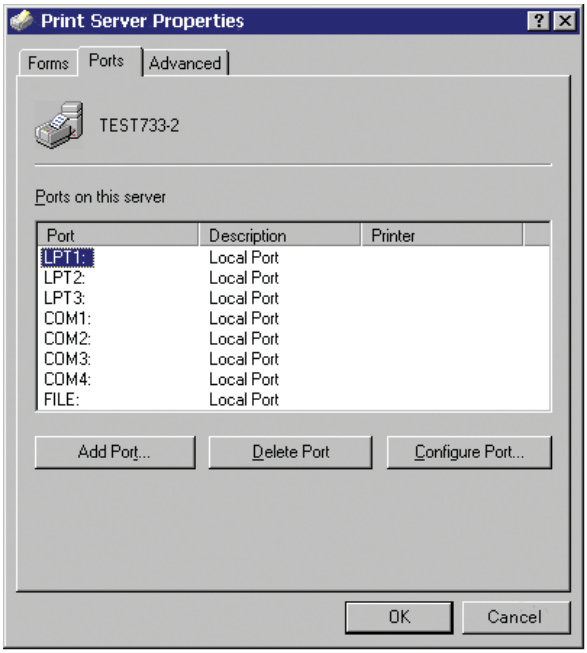
Add a Printer Port

1 Select **Settings – Printers** from the **Start** menu.

2 Select **Server Properties** under the **File** menu.

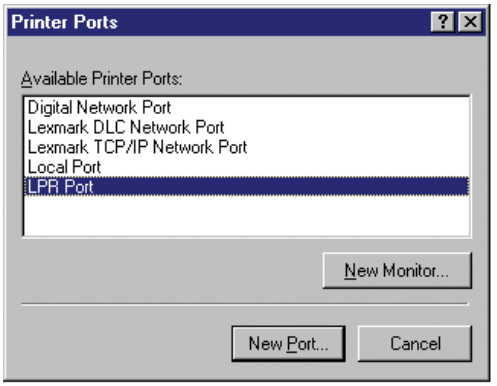


3 Click on the **Ports** tab.

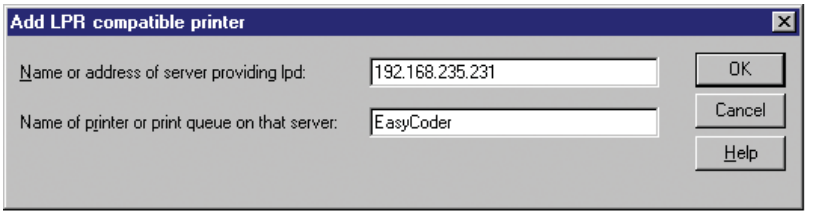


4 Select **Add port**, and click the in the **Printer Ports**, then click the **New Port** button.

5 Select **LPR Port** and then click **New Port**.



6 Enter the IP-address of the printer in the **name or address of server providing lpd** field.



7 Enter an appropriate name for the printer port in the **Name of printer or print queue on that server** field and click **OK**.

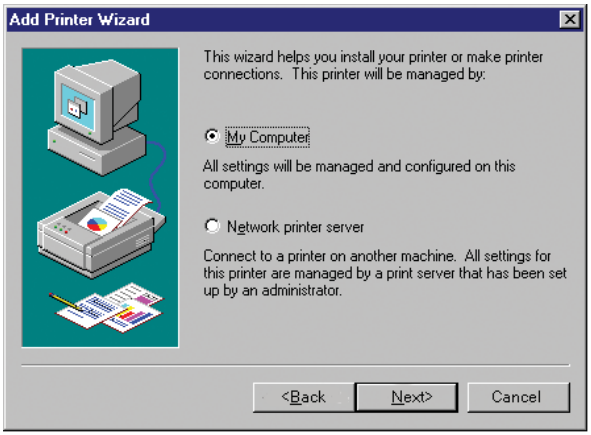
8 Click **Close** and then **Close**.

Add a Printer

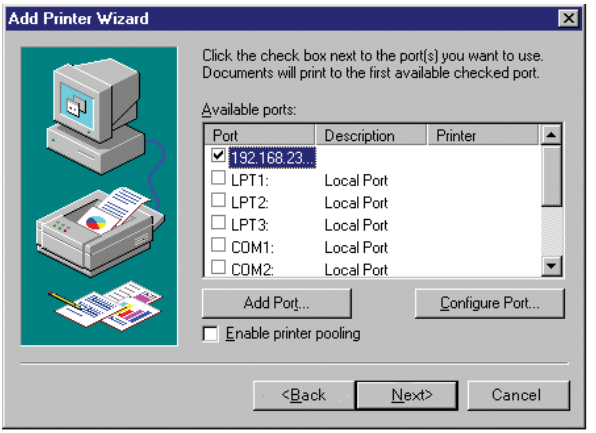
1 Select **Settings – Printers** from the **Start** menu.

2 Click **Add Printer**.

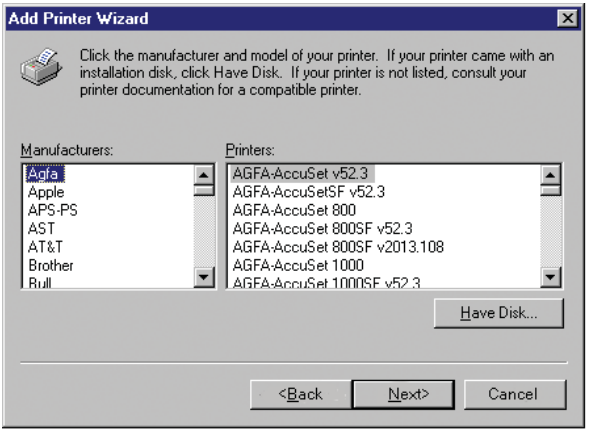
3 Select **My Computer** and click **Next**.



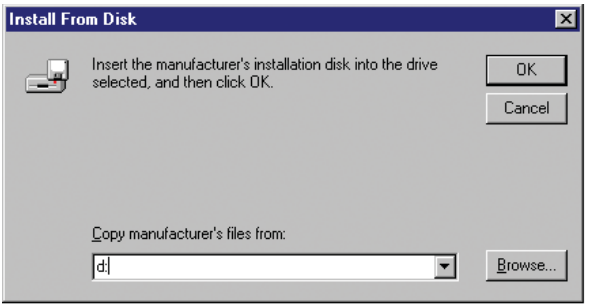
4 Select the port named with the IP-address of the printer and click **Next**.



5 Click the **Have Disk** button.

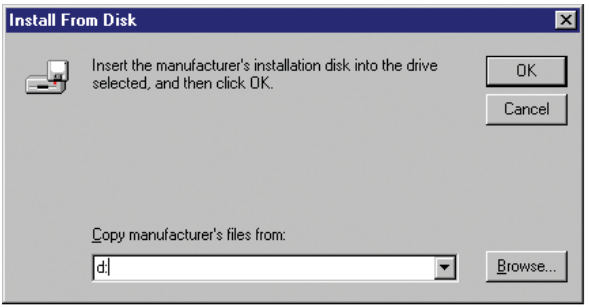


6 Insert the CD provided with your printer, type the drive letter of the CD-drive and click **OK**.

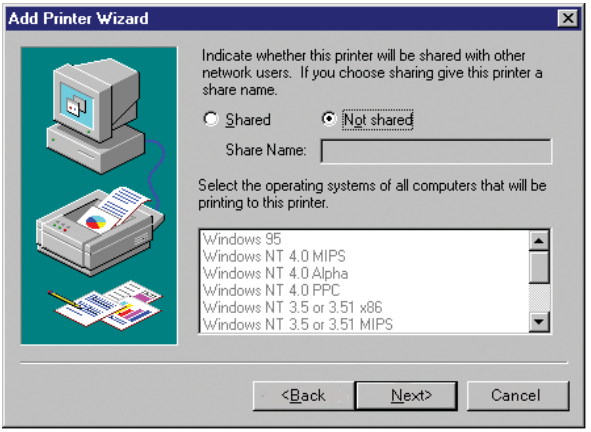


7 Select the printer from the list and click **Next**.

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



9 Select whether you want to share the printer with other network Users and click Next.



10 To verify that the printer and port are correctly installed, select **Yes** when asked to print a test page, click **Finish**.

3 Setting Up the Printer in Unix and Linux

This section describes how to install the printer in the UNIX and Linux environment.

Before you can set up the printer in your UNIX or Linux environment you must install the printer to your network as described in the installation guide provided with the network interface.

Setting Up the Printer in Unix

The example below shows how to set up an EasyCoder PF4i printer in a SunOS 5.7 environment.

1 Login as **root**.

2 Verify that the printer is online.

```
# ping <internet address>
<internet address> is alive
```

3 Edit the printer configfuration file on your system.

```
# vi /etc/printers.conf

#     If you hand edit this file, comments and
#     structure may change.
#     The preferred method of modifying this file
#     is through the use of
#     lpset(1M) or fncraete_printer(1M)
#
pr1:\
:bsdaddr=<internet address>,raw:
```

4 Stop and start the Print services.

```
# /etc/init.d/lp stop
#/etc/init.d/lp start
```

5 Check the status of the printer.

```
# lpstat pr1
EasyCoder PF4i LPD
Status idle
```

6 Print out a test label.

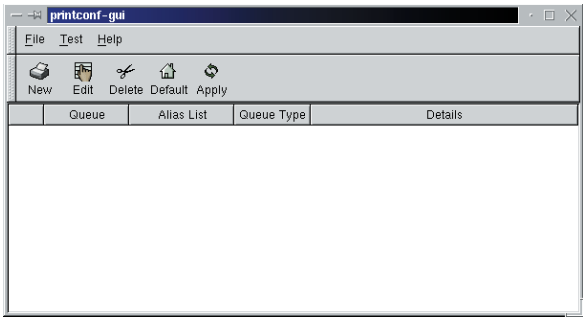
```
# lp -d pr1 ./fptest.txt
request id is pr1-1 (1 file)

# lpstat -a pr1
pr1 accepting request since <date & time>
```

Setting Up the Printer in Linux

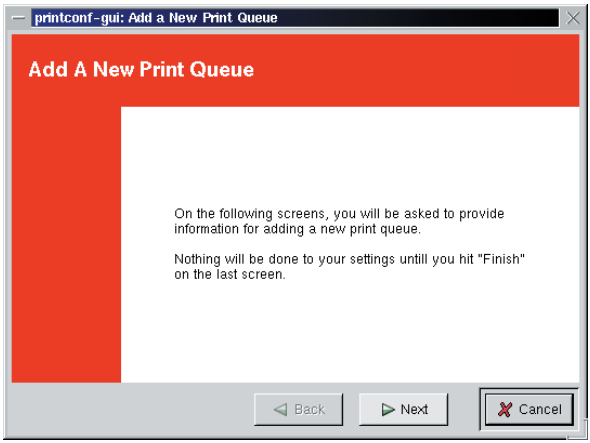
The example below shows how to set up an EasyCoder PF4i printer in a RedHat Linux environment.

1 Become root on the machine.

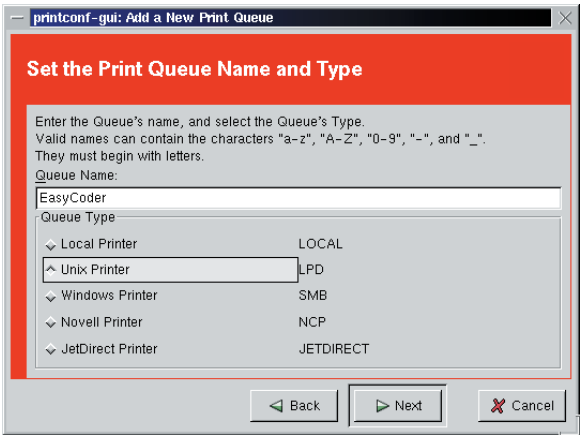
2 Start your printer configuration tool. In this example RedHat's "printtool" is used.



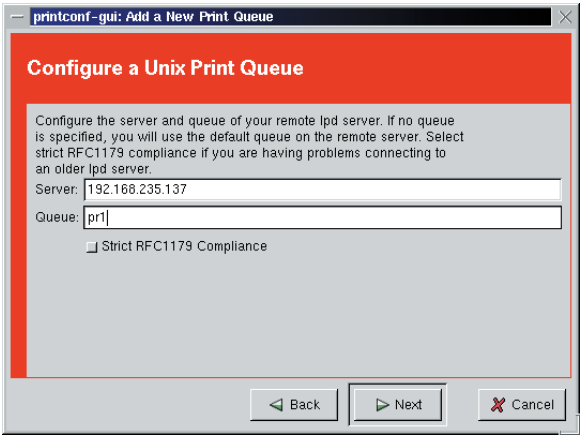
3 Add a new print queue by clicking **New**.



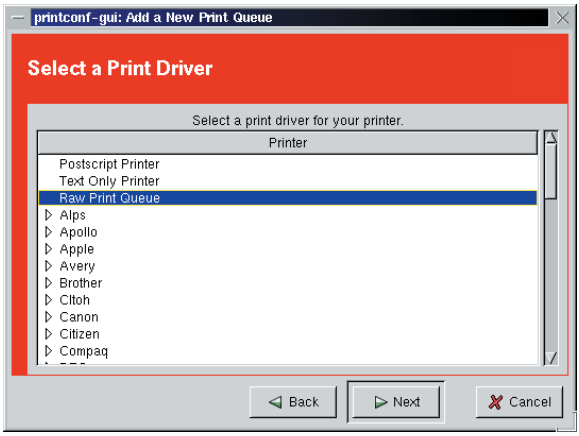
Click **Next**.



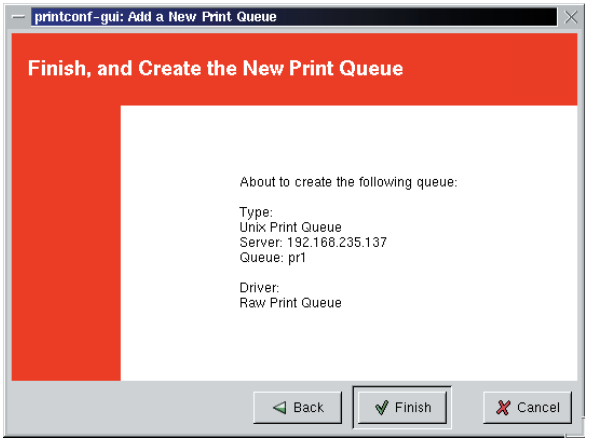
4 Enter a suitable name for the print queue, in this example it is "Easy-Coder." Select LPD as protocol ("Unix printer") and click **Next.**



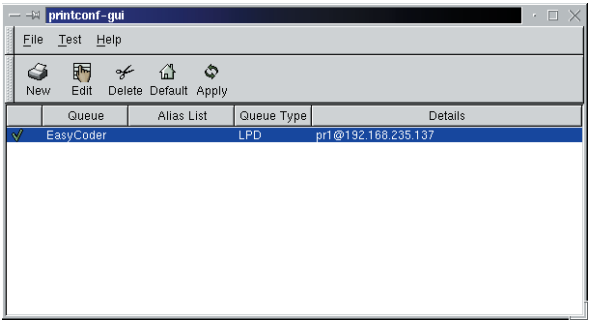
5 Enter the printer's IP address or DNS name (for example 192.168.235.137). Enter the printer's queue, "pr1" and click **Next**.



6 Select "Raw Print Queue." Click **Next**.



7 Review the settings. Click **Finish**.



8 Save changes (File -> Save Changes). Restart the queue by clicking **Apply**.

9 Check that the queue was correctly configured, by issuing the command **`lpq -PEasyCoder`** (or the name of your print queue, selected in step 4).

The response should be something like:

```
EasyCoder PF4i LPD
Status: Idle
```

4 Using the EasyLAN Web Browser Interface

This chapter explains how to use the EasyLAN web browser interface to view and change your network settings and upgrade the printer firmware.

Prerequisites

Make sure the printer is connected to the network and the printer has received an IP address as described in the *EasyLAN Installation Instructions*.

Web Browser

To access the internal homepage of the EasyLAN, start your web browser. Type the IP address of the printer into the browser's address field and press Enter. The EasyLAN home page for the printer appears.

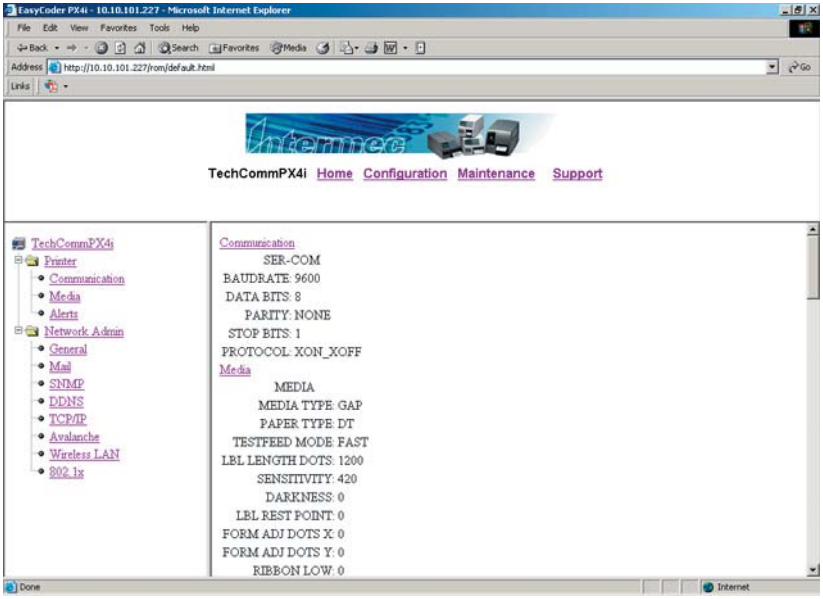
The home page shows the printer's assigned name, active command set, firmware version, MAC address, and IP address.

Click a link in the home page to do these tasks:

- Click Configuration to see the Configuration web page and change printer configuration settings. For more information, see the next section, “Configuration.”
- Click Maintenance to see the Firmware Upgrade page and upgrade the printer's firmware. For more information, see “Upgrading Firmware” on page 60.
- Click Support to see the Support page, which includes a list of Intermec links for technical support and customer service. For more information, see “Contacting Intermec Support” on page 61.

Configuration

This section shows the current configuration of the printer. To change settings, click a link in the left-hand pane to see that page and make changes.



For help with changing printer settings, see “Viewing and Changing Printer Settings” on page 38.

For help with changing network settings, see “Viewing and Changing Network Settings” on page 44.

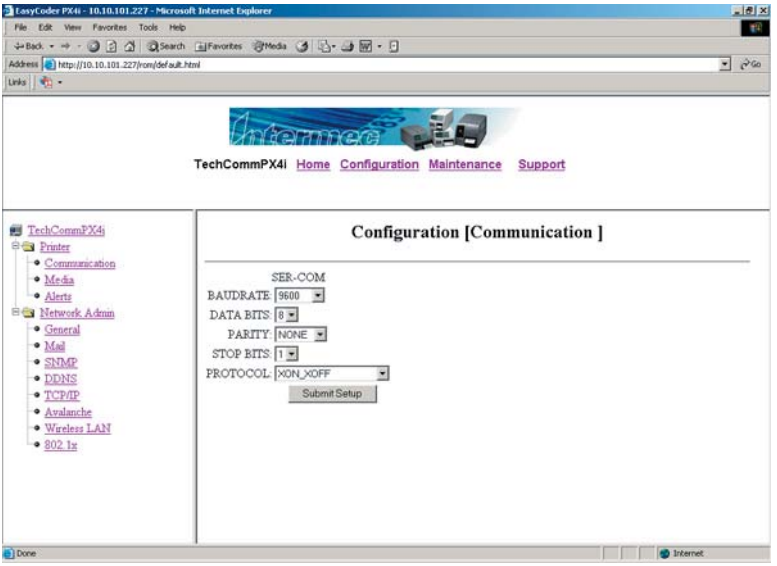
Note: You will be prompted to enter your user name and password. The default user name is **admin** and the default password is **pass**.

Viewing and Changing Printer Settings

To view and change printer settings, click the Printer folder in the left-hand pane. A list of printer settings categories appears.

Communication

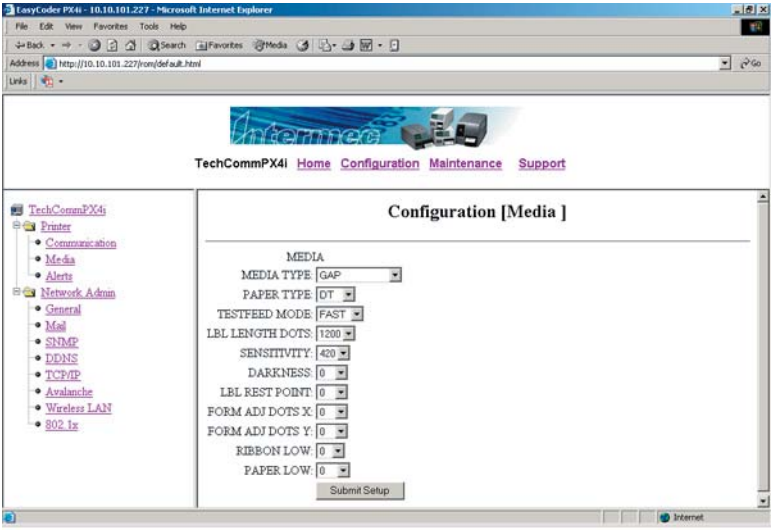
Click Communication to view and change the communication port settings. For more information on communication settings, see the user's guide for your printer.



Communication screen in the EasyLAN web browser interface

Media

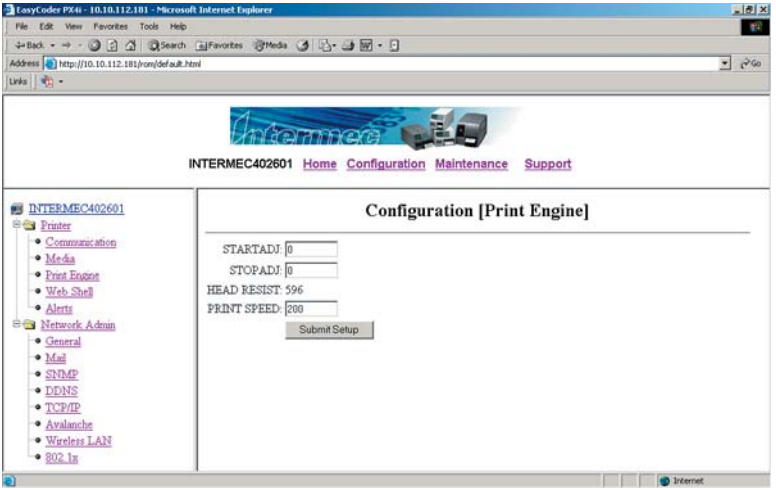
Click Media to view and change media settings such as the X-start position, media type and contrast. For more information, see the user's guide for your printer.



Media screen in the EasyLAN web browser interface

Print Engine (Fingerprint only)

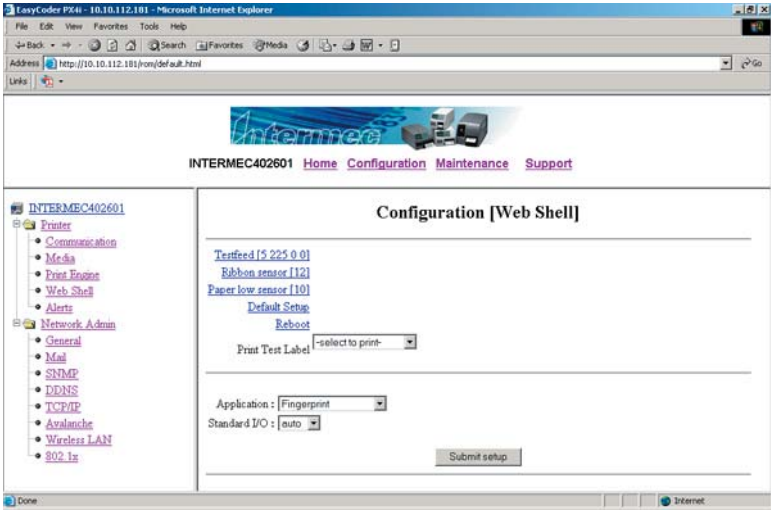
Click Print Engine to adjust the Start/Stop positions, and the print speed. The value of head resistance is read-only and is measured by the printer's firmware at startup. For more information, see the user's guide for your printer.



Print Engine screen in the EasyLAN web browser interface

Web Shell (Fingerprint only)

Click Web Shell to view and change a variety of test and default settings.



Web Shell screen in EasyLAN web browser interface

For more information on Web Shell settings, see the next table.

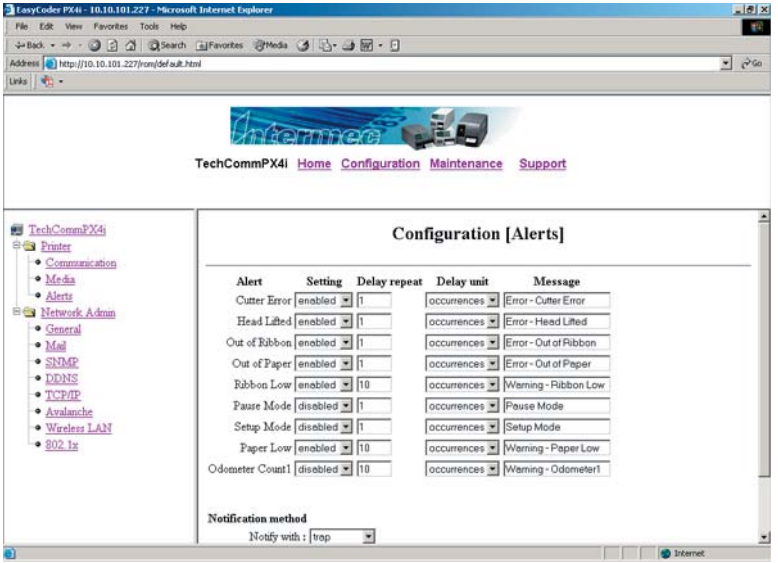
Web Shell Settings

Setting	Description
Testfeed [value]	Label Stop Sensor calibration and testfeed. This is equivalent to issuing the TESTFEED command on the printer.
Ribbon Sensor [value]	Calibration of the Ribbon Sensor. This will also be calibrated by the testfeed. Only shown if the sensor is installed.
Paper Sensor [value]	Calibration of the Paper Sensor (EasyCoder PM4i option; PX4/6i standard). The paper sensor will also be calibrated by a testfeed. Only shown if the sensor is installed.
Default Setup	Revert back to factory default printer settings (Reverts all configurations that can be done by using the EasyCoder internal keyboard) by setting the PRT section to default. Passwords, alerts, and selected application are not changed.
Reboot	Reboots the printer.
Print Test Label	Prints predefined test patterns.
Application	Defines the application to run as default on startup and takes effect after the printer is restarted.
Standard I/O	Defines the port the printer listens to and takes effect after the printer is restarted.

After you make changes in the Web Shell screen, click **Submit Changes** to send the changes to the printer.

Alerts

Click Alerts to view and change printer alert settings.



Alerts screen in EasyLAN web browser interface (IPL shown here)

To change alert settings:

- Choose **Enable** or **Disable** from the Setting drop-down list.
- Specify a **Delay Repeat** in the entry field.
- Select **seconds** or **occurrences** in the Delay Unit drop-down list.
- Enter a message in the **Message** entry field.

When you have made the necessary changes, click **Submit Settings** to send the changes to the printer. For more information on Alert settings, see the next table.

Note: Some alerts are supported by Fingerprint only.

Alert Settings

Alert Name	Sent When
Label Not Taken (Fingerprint only)	Printed label is not taken from the printer. This applies to label and ticket media types and requires an optional label taken sensor (LTS).
Cutter Error	Error related to the label cutter occurs.
Head Lifted	Printer job is sent to the printer while the printhead is lifted.
Out of Ribbon	Thermal transfer ribbon is selected and printer is out of ribbon.
Out of Paper	Printer is out of media.
Ribbon Low	The diameter of the remaining roll of ribbon is lower than a specified value. The value can be specified under the Media section.
Paper Low (PM4i option)	The diameter of the remaining roll of media is lower than a specified value. The value is specified in the Media page. Only shown if the sensor is installed.
Pause Mode	The diameter of the remaining roll of media is lower than a specified value. The value is specified in the Media page. Only shown if the sensor is installed.
Setup Mode	Printer has been placed in Setup Mode (for example, after you press the **Setup** key on the printer's internal keyboard).
Error Condition (Fingerprint only)	An error occurs in a running Fingerprint application. Error does not have to be critical to the print job for this alert.
Application Break (Fingerprint only)	A running Fingerprint application is interrupted manually or because of an error.
Print Job Complete (Fingerprint only)	Print job is successfully completed.
Odometer Count 1	The amount of media printed has reached a preset amount, measured in meters or in number of labels. The Delay setting represents how often the alert message will be sent when the preset value is reached. For more information, see Chapter 6, “Advanced Configuration.”
Notification Method	Method by which an alert message is sent. Choose from mail, SNMP-trap, or both.

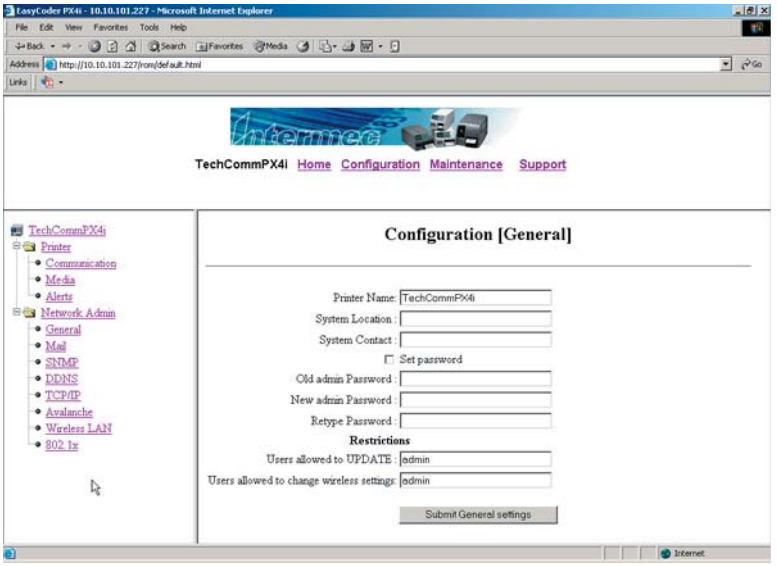
Some alerts are sent when the error occurs, but there are some alerts that are not sent until a PRINTFEED (PF in Fingerprint, or use Print command in IPL) is executed. The out-of-paper alert is one example of an error message that is sent only when the printer tries to execute a print job.

Viewing and Changing Network Settings

To view and change network settings, click the Network Admin folder in the left-hand pane. A list of network settings categories appears.

General

Click General in the left-hand pane to view the General Settings screen.



General Settings screen in EasyLAN web browser interface

To change general settings, enter information in the entry fields.

Note: To enter a new password, check the Set password box.

After you have made your changes, click **Submit General settings** to send the changes to the printer.

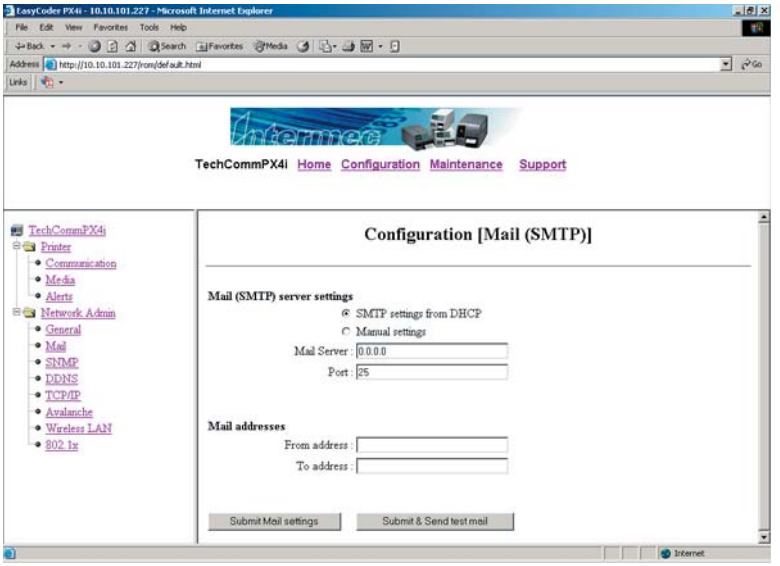
For more information on Gerneral Settings, see the next table.

General Settings

Setting	Description
Printer Name	Network identification name (WINS name). The default is INTERMEC followed by the last six positions of the MAC address. For example, IPNM (Intermec Printer Network Manager) uses the printer name to identify individual printers in a network.
System Location	(Optional) Printer location.
System Contact	(Optional) Printer administrator.
Set Password	Must be checked when you want to change the admin password.
Old Admin Password	Old password. Required when changing to a new password.
New Admin Password	New password.
Restrictions	Sets restrictions on who is allowed to upgrade the printer firmware or view and change certain network settings. Note that "admin" cannot be removed from the list of authorized users. **Users allowed to update:** Defines who may perform a firmware upgrade via FTP, PrintSet, or IFAB. Has no effect when upgrading from a Compact Flash card. **Users allowed to read/write protected LAN1 settings:** (Fingerprint only) Defines who may read/write settings in the LAN1 section. For more information, see Chapter 6, "Advanced Configuration." **Users allowed to change network settings:** (Fingerprint only) Defines who may change the network node in the setup. Not supported when setting up the printer from its internal keyboard. **Users allowed to change wireless settings:** Defines who may change WLAN or 802.1x settings. For more information, see Chapter 6, "Advanced Configuration."

Mail

Click Mail in the left-hand pane to view and change Email (SMTP) server settings.



Mail screen in EasyLAN web browser interface

To change mail settings:

- Click an option button to choose a Mail (SMTP) setting.
- Enter addresses in the entry fields.
- Click **Submit Mail Settings** to send the changes to the printer. Or, click **Submit & Send test mail** to send the changes to the printer and test your new settings.

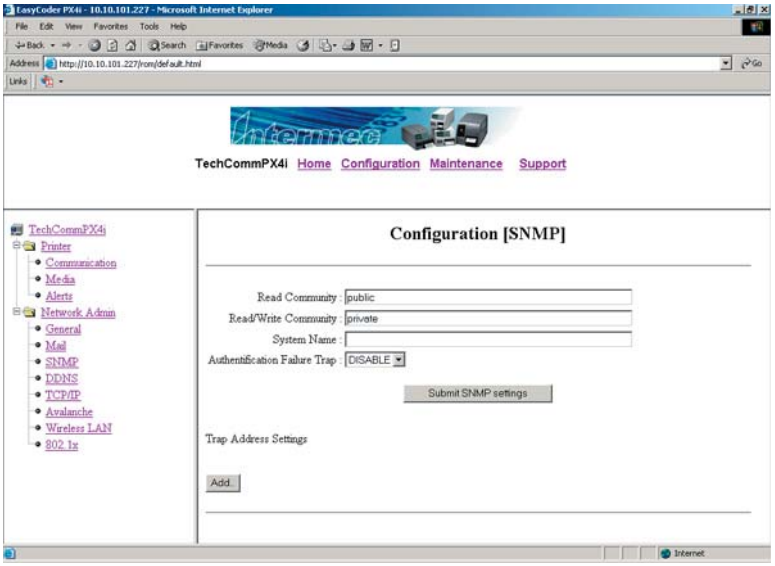
For more information on Mail settings, see the next table.

Mail Settings

Setting	Description
Mail (SMTP) Server	Choose a configuration method for your mail server settings: • **SMTP settings from DHCP:** Choose this setting if you want the printer to receive settings automatically from your DHCP server. This requires that you have chosen to use DHCP as IP Selection in the TCP/IP section. • **Manual settings:** Choose this option to manually configure the Mail Server address and port. The default port is 25.
Mail addresses	Defines the Email addresses to use when the printer sends alert messages: • **From address:** The address displayed as the sender of alert messages. Email will be returned to this address if the recipient is unreachable (for example, when a message bounces). To prevent Email bounces when the recipient is unreachable, leave this field empty. • **To address:** Recipient of alert messages. To enter several addresses, separate them with a comma (,) or semicolon (;).

SNMP

Click SNMP in the left-hand pane to view and change SNMP settings.



SNMP screen in EasyLAN web browser interface

To change SNMP settings:

- Enter information in the entry fields.
- Click **Add** to add trap settings. You can enable up to four authentication failure traps.

  After you add a trap, it appears in the Trap Address Settings list. To edit or delete a trap, click the Edit/Delete button for that trap in the list, and then click **Edit** to change settings for that trap, or click **Delete** to delete the trap.

Click **Submit SNMP Settings** to send the changes to the printer. For more information on SNMP settings, see the next table.

SNMP Settings

Setting	Description
Read Community	Community with rights to read the SNMP MIBs.
Read/Write Community	Community with rights to read and write SNMP MIBs.
System Name	Administrative name for the SNMP node.
Authentification Failure Trap	Defines if a trap is sent when an unauthorized SNMP request (for example, a request from an unauthorized community) tries to access the printer. Choose Enable to send the trap.
Trap Address Settings	Click **Add...** to specify trap address settings: • **Trap Address:** IP address to the receiver of SNMP traps. You can specify up to four trap addresses. • **Trap Port:** Port to which SNMP traps are sent. The default is 162. • **Trap Community:** Defines the community to which SNMP traps will be sent. • **Friendly Name:** User-specified string identifying the trap. • **Trap Enable Status:** Defines if the specified trap is enabled.

DDNS

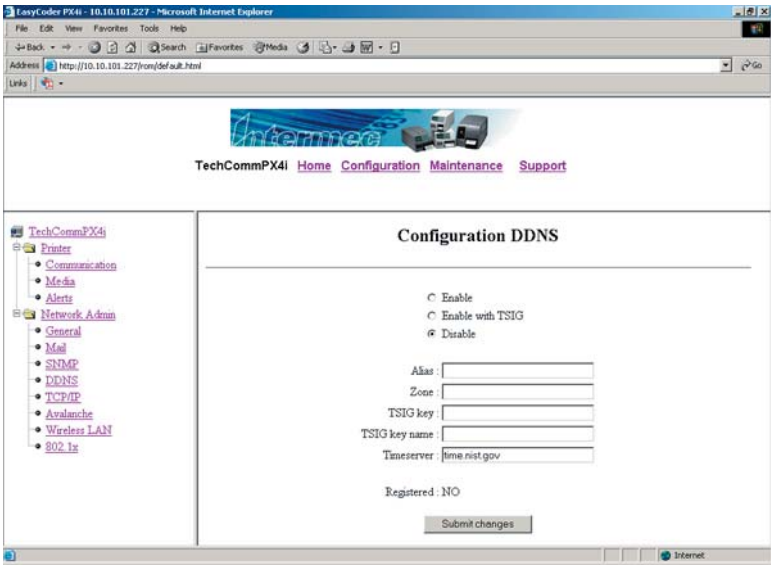
To use DDNS, BIND 9 or a compatible name server is recommended.

As a security mechanism, DDNS uses the symmetric transaction authentication method TSIG. TSIG uses the current UTC time to sign messages. If the time is incorrect, the name server rejects updates.

The only record types supported by DDNS are A (host-to-address) and PTR (address-to-host).

Every IP address belongs to one zone. An IP appearing in different zones will cause unpredictable behavior.

Click DDNS to view and change Dynamic DNS settings.



DDNS screen in EasyLAN web browser interface

To change DDNS settings, enter information in the entry fields and click **Submit changes** to send the changes to the printer.

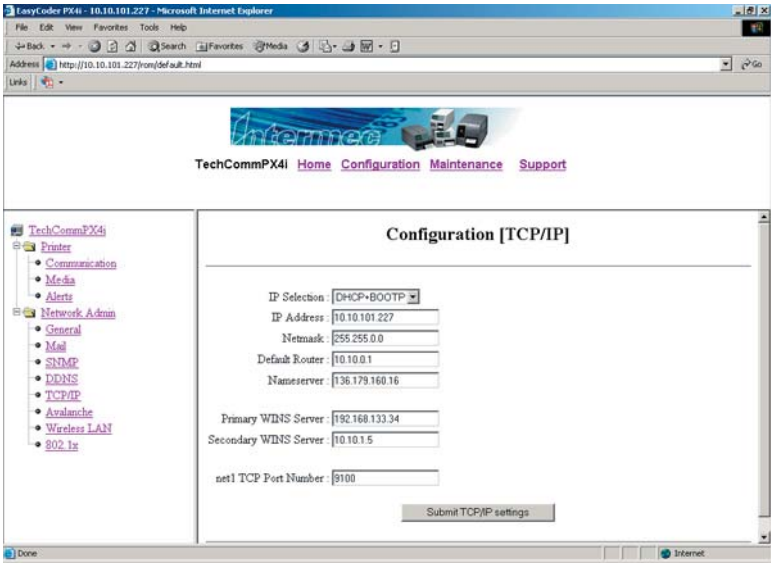
For more information on DDNS settings, see the next table.

DDNS Settings

Setting	Description
Enable	Click to enable DDNS.
Enable with TSIG	Click to enable DDNS using a transaction signature (TSIG).
Disable	Click to disable DDNS.
Alias	DNS name of the printer (maximum 63 characters). Default is “”.
Zone	Zone in which the printer will add/delete records. Default is “”.
TSIG key	Shared, secret key used when encrypting with TSIG (base 64 coded value). Default is “”.
TSIG key name	Name of the TSIG encryption key. Default is “”.
Timeserver	Timeserver IP or host name from which to retrieve the time. Default is “time.nist.gov”.
Registered	Indicates whether the DNS contains records about the printer, indicating that the printer is active.

TCP/IP

Click TCP/IP to view and change TCP/IP network settings.



TCP/IP screen in EasyLAN web browser interface

To change TCP/IP settings, choose an IP selection method from the drop-down list and enter information in the entry fields. Click **Submit TCP/IP settings** to send the new settings to the printer.

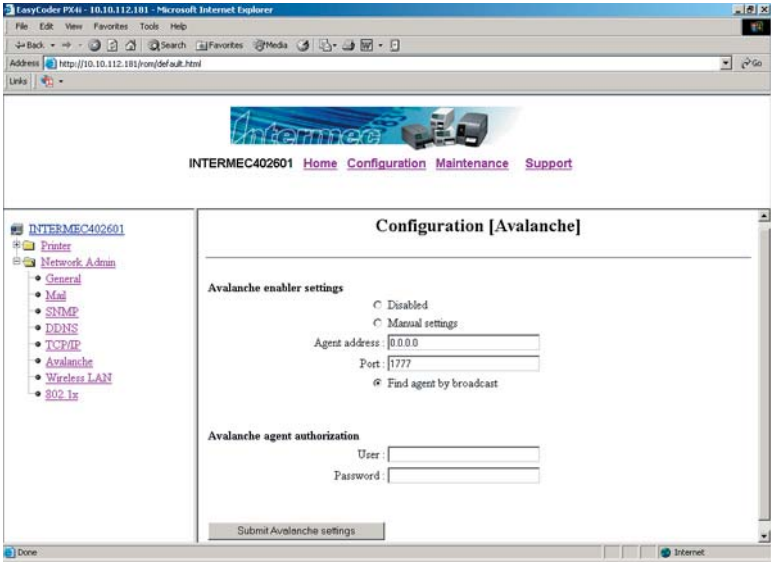
For more information on TCP/IP settings, see the next table.

TCP/IP Settings

Setting	Description
IP Selection	Method by which an IP address will be assigned to the printer. Choose DHCP, BOOTP, DHCP+BOOTP, or MANUAL. If you choose DHCP, BOOTP, or DHCP+BOOTP, the currently assigned network values appear in the entry fields. If you choose MANUAL, you need to enter network information in the entry fields as follows: • **IP Address:** Manually assigned IP address for the printer. • **Netmask:** Manually assigned netmask for the printer. • **Default router:** IP address of the default router. • **Nameserver:** Manually assigned name server address. This field must be set to use names instead of IP addresses when setting up Email communication. • **Primary and Secondary WINS Server:** IP address of primary and secondary WINS servers. If you chose DHCP or BOOTP as the IP Selection method, the currently assigned WINS IP addresses may appear here depending on how your DHCP server is configured. • **net1 TCP Port Number:** Port number for raw TCP. The default is 9100.

Avalanche

Click Avalanche to view and change Wavelink Avalanche settings.



Avalanche screen in EasyLAN web browser interface

To change Avalanche settings, enter information in the entry fields and click **Submit Avalanche settings** to send the changes to the printer.

For more information on Avalanche settings, see the next table.

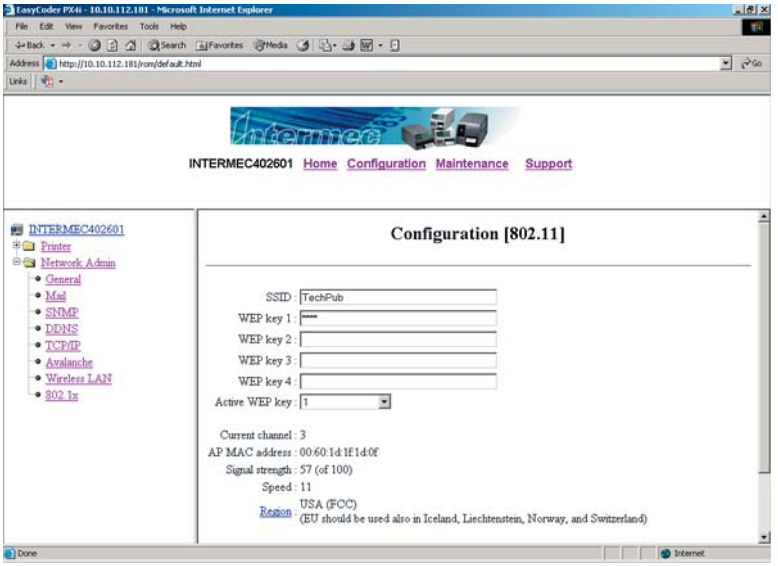
Avalanche Settings

Setting	Description
Avalanche enabler settings	Click an option button: • **Disable:** Disables Avalanche. • **Manual settings:** Enables Avalanche. You need to enter the Agent Address and Port in the entry fields. • **Find agent by broadcast:** Enables Avalanche. EasyLAN broadcasts to find the agent.
Avalanche agent authorization	Enter your user name and password in the entry fields.

Wireless LAN

Note: These settings are available only if your printer has an installed EasyLAN Wireless interface and is using Fingerprint 8.10 or later.

Click Wireless LAN to view and change 802.11 settings.



Wireless LAN screen in EasyLAN web browser interface

To change 802.11 settings, enter information in the entry fields and click **Submit 802.11 settings** to send the changes to the printer.

For more information on Wireless LAN settings, see the next table.

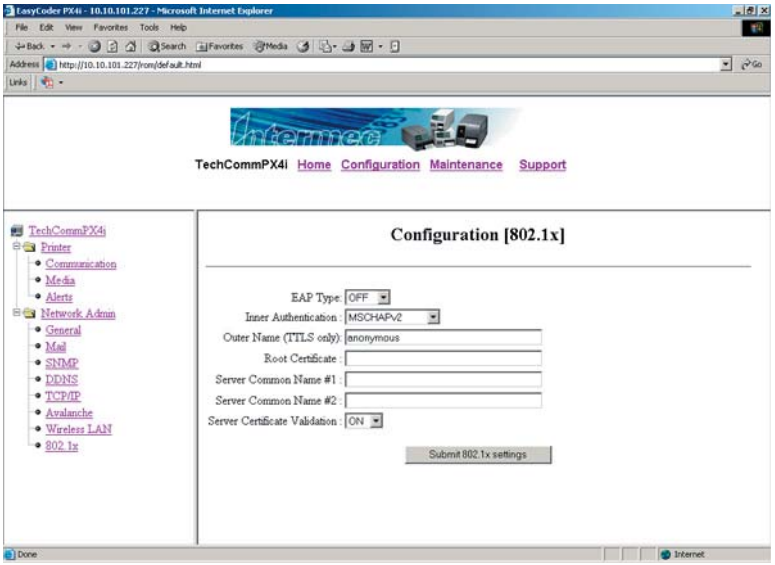
Wireless LAN Settings

Setting	Description
SSID	Network name.
WEP Key 1, WEP Key 2, WEP Key 3, WEP Key 4	Values for up to 4 WEP keys.
Active WEP key	Choose an active WEP key.
Current channel	(Read-only) Current active channel.
AP MAC Address	(Read-only) MAC address of the access point to which the printer is connected.
Signal strength	(Read-only) Radio signal strength of the access point.
Speed	(Read-only) Speed of the current connection.
Region	Shows the currently selected region or country. Click to see the Region/Country screen and choose a different region/country. You need the unlock code to select certain regions.

802.1x

Note: These settings are available only if your printer has an installed EasyLAN Wireless interface and is using Fingerprint 8.40 or later.

Click 802.1x to view and change 802.1x security settings.



802.1x screen in EasyLAN web browser interface

To change 802.1x security settings, choose options from the drop-down lists or enter information in the entry fields. Click **Submit 802.1x settings** to send the changes to the printer.

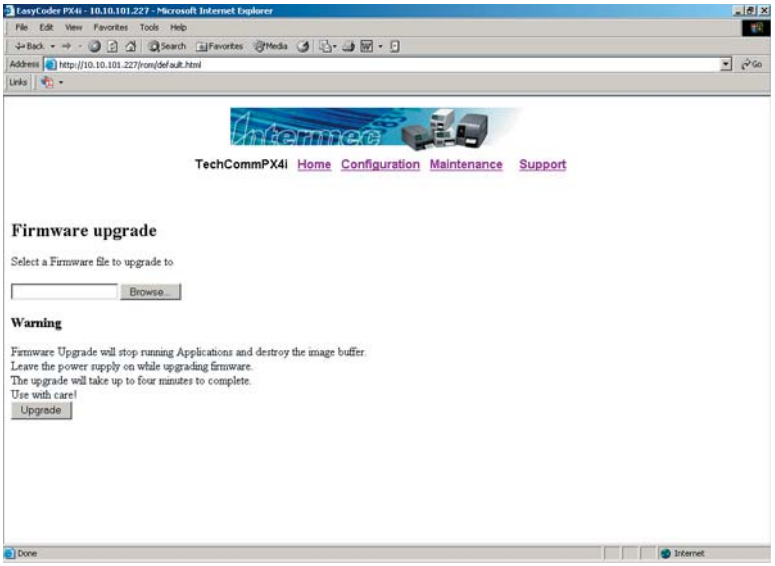
For more information on 802.1x security settings, see the next table.

802.1x Settings

Setting	Description
EAP Type	Choose the Extensible Authentication Protocol type: • TTLS (default) • LEAP, • PEAP • OFF (disables 802.1x security)
Inner authentication (TTLS and PEAP only)	Choose the inner authentication method: • PAP (TTLS only) • MSCHAPv2 • EAP/MSCHAPv2 • EAP/MD5 • EAP/GTC
Outer name (TTLS only)	Specify the EAP identity passed in the clear. The default is "anonymous."
Root Certificate	The common name of the installed root CA certificate. You can also specify a different certificate (provided that it has already been installed on the printer) by entering the path to the new certificate in this field. If a pass phrase is required, add it to the end of the path in the form of "@passphrase".
Server Common Name #1, Server Common Name #2 (TTLS and PEAP only)	Specify common names. If you specify one common name, the server certificate common name must match this name for authentication. If you specify two common names, the server certificate common name must match at least one of them. The default is "" (any common name).
Server Certificate Validation (TTLS and PEAP only)	Enables certificate validation. Specifies whether or not to check if the installed CA certificate is the root of the server certificate.

Upgrading Firmware

Click Maintenance at the top of the screen. The Firmware Upgrade screen appears.

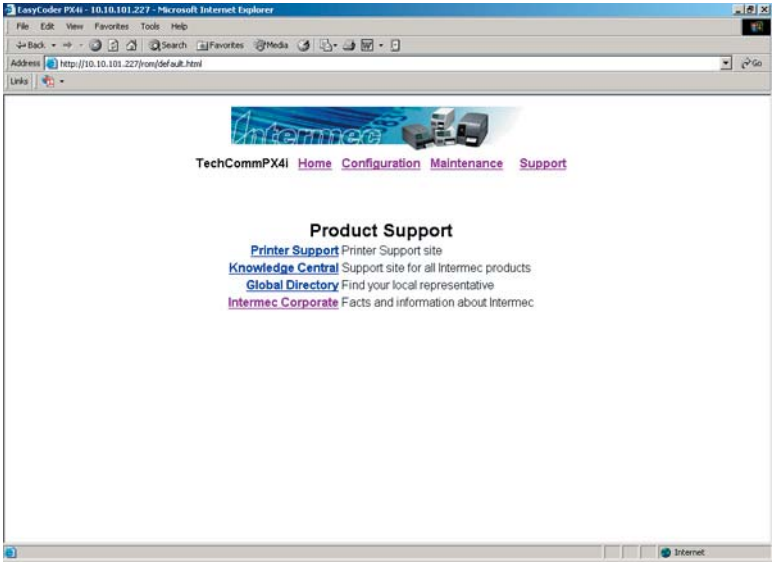


Firmware Update screen in EasyLAN web browser interface

Enter the path to the firmware upgrade file in the entry field, or click **Browse** to browse to the location of the upgrade file. Double-click the file and then click **Upgrade**. The printer firmware is upgraded.

Contacting Intermec Support

Click Support at the top of the screen. The Product Support page appears.



The web page includes links to the main Intermec web site. You need an Internet connection to view the links.

- Click Printer Support to view the Intermec Printer Support Page.
- Click Intermec Corporate to view the Intermec Technologies Corporation home page.
- Click Knowledge Central to view the Intermec Knowledge Central home page. Here you can find information to help you resolve problems with your printer.
- Click Global Directory to view information about contacting different Intermec offices and finding your local representative.

5 Basic Operations (Fingerprint and IPL)

This chapter gives you a summary of the basic operations you can use to configure and monitor an EasyCoder printer running either Fingerprint or IPL through an Ethernet or Wireless network connection.

Using the EasyLAN FTP Server

The EasyLAN has a built-in FTP server, which allows you to up- and download files such as pictures and fonts. You can also print by sending a file of printer commands directly to the printer's command interpreter ("net1:" in Fingerprint) by storing the file as pr1 on the FTP server. The printer then executes the commands, and performs the print job.

The EasyLAN FTP server supports most of the common FTP functionalities and clients. To connect to the server use the assigned IP-address and standard FTP port (21).

Timeout

For security reasons the printers internal FTP server has an idle time limit to ensure that a connection is not left active. The timer will close the FTP connection after 15 minutes of idle time.

User Access Control

There are two default accounts on the printer—admin and user. The user account is default permitted to send files to the printer port, create directories and files on the server. The admin has the same permissions as the user account but as admin you can also change Network settings, LAN settings and upgrade the printer's software.

Note: When you log in as **admin** on the FTP server, the current user in Fingerprint or IPL is not automatically changed.

For more information about accounts, see "Restrict Functionality" on page 94.

Printing Labels (Fingerprint)

Creating a Label File

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

First, create a label layout file in a text editor, such as Windows Notepad.

Example:

```
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, for example **`dptest.txt`**.

Printing a Label File

Use the following instructions to print a sample of the label described on the previous page:

You will need to know the name or IP address of the printer you want to print to. Make sure that the printer is set to use "net1:" or "auto" as standard IN channel.

1. Start an FTP application connected to the printer:
   `ftp xxx.xxx.xxx.xxx`
2. Log on using the user account name and password.
3. Send the test file to the printer, for example:
   `put dptest.txt pr1`
4. If the printing has been successful, the application returns “transfer complete” and other information.

The printed label should look like this:

Printing Labels (IPL)

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 a text file containing IPL commands and created in a text editor, such as Windows Notepad.

For further information regarding IPL and IPL commands, please consult the *IPL Programming Reference Manual*.

```
<STX><ESC>C<ETX>                                    Select Advanced mode
<STX><ESC>P<ETX>                                    Enter Program mode
<STX>E4;F4;<ETX>                                    Erase format 4, create format 4
<STX>H0;o102,51;f0;c25;h20;w20;d0,30;<ETX>
                                                    Edit/create human-readable field 0
<STX>L1;o102,102;f0;l575;w5;<ETX>                   Edit/create line field 1
<STX>B2;o203,153;c0,0;h100;w2;i1;d0,10;<ETX>
                Edit/create Code 39 bar code field 2 with interpretive field enabled
<STX>I2;h1;w1;c20;<ETX>                             Create interpretive field
                                                    to go with bar code field 2
<STX>R;<ETX>                                        Save format and exit to Print mode
<STX><ESC>E4<ETX>                                   Access format 4
<STX><CAN><ETX>                                     Erase all data
<STX>THIS IS THE SAMPLE LABEL<CR><ETX>              Data for
                                                    human-readable field 0
<STX>SAMPLE<ETX>                                    Data for bar code field 2
<STX><ETB><ETX>                                     Print
```

Note: The line breaks in the preceding example are shown for formatting purposes only and do not necessarily represent carriage returns.

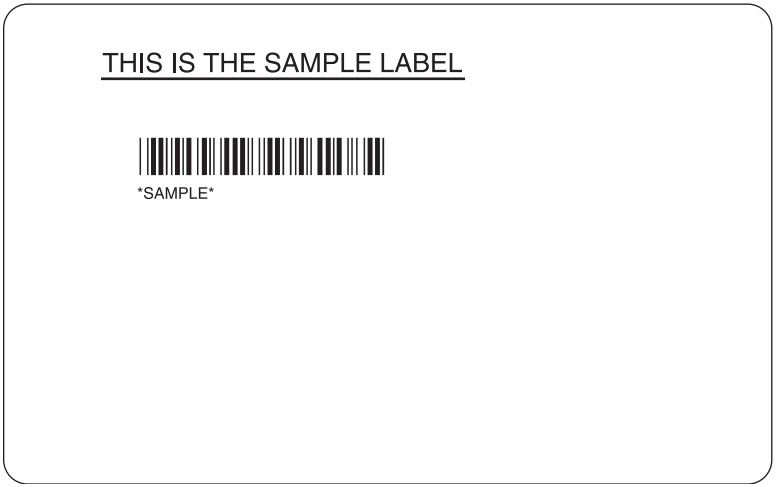
Save the file under a suitable name, for example **`ipltest.txt`**.

Printing a Label File

Use the following instructions to print a sample from the windows environment. You will need to know the name or IP address of the printer you want to print to.

1. Start an FTP application connected to the printer:
   `ftp xxx.xxx.xxx.xxx`
2. Log on using the user account name and password.
3. Send the test file to the printer, for example:
   `put ipltest.txt pr1`
4. If the printing has been successful, the application returns "transfer complete" and other information.

The printed label should look like this:



Configuring the Printer

Having assigned an IP address to your EasyLAN, as described in the Installation Instructions manual, you can change the EasyCoder parameter settings using the File Transport Protocol (FTP).

You can do this by using your preferred text editor to create a simple text file containing the wanted Fingerprint or IPL commands. The commands are explained in detail in the *Fingerprint* and *IPL Programmer's Reference Manuals*.

After creating the file, you can send it to the EasyCoder by following the steps below.

1. Start an FTP application connected to the printer:
   `ftp xxx.xxx.xxx.xxx`
2. Log on using your user account name and password.
3. Send the configuration file to the printer, for example:
   `put configuration.txt pr1`

SNMP

You can use SNMP (Simple Network Management Protocol) for remotely monitoring and configuring the EasyCoder. All major functions for print servers are supported. 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 SNMP implementation runs in the TCP/IP environment. The management is handled by NMS (Network Management System) software running on a host in your network. The NMS software communicates with network devices, such as the printer 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 databases called MIBs (Management Information Base), where MIB-II is a standard database. The EasyLAN supports all relevant parts of MIB-II and also includes Intermec MIBs.

For more information regarding SNMP, please see Chapter 6, "Advanced Configuration."

Password Protection

The network and printer settings can easily be accessed and changed by network users by entering the printer web pages. Intermec therefore strongly suggests that you change the default password settings and thereby limit the access possibilities and hazard of unauthorized changes of the printer settings. Password changes are made through the internal web interface in section **Configuration—Network Admin—General** (see Chapter 4).

Passwords are case sensitive and stored using encryption.

Default Settings

The factory default password settings are:

Account	**Password**
user	*blank (empty) password*
admin	*pass*

Forgotten Passwords

A password that has been set and forgotten is not possible to retrieve in any way. If the default password for the admin account is changed and forgotten, you will need a Compact Flash card to revert the printer to the default settings. Please contact your local Intermec dealer for support.

Part Numbers:

Fingerprint	1-972021-xx
IPL	1-972106-xx

6 Advanced Configuration

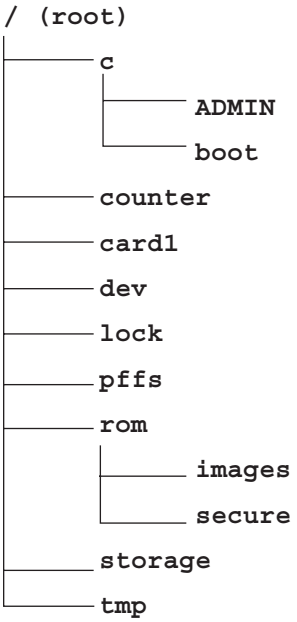
This chapter describes the more advanced features of the printer such as the printer's file structure, customization of the web interfaces and security issues.

Printer File System (Fingerprint)

When accessing the printer through various means of communication, you will encounter different parts of the printer's file system. In this chapter you can find a brief description of the different devices and directories of the file system.

Device Tree Structure

The image below shows the device tree structure of the printer.



Devices and Directories

The file system of the EasyCoder is case sensitive. This must be taken into account since filenames in Fingerprint commands by default are translated into capital letters. A directory or files named in lower case will, by default, be inaccessible for Fingerprint commands and programs.

Depending on what service you use to access the printer you use different commands to navigate the file system. When accessing the printer through an FTP client or a web browser you can easily navigate through the different devices and directories, regardless if they are named in capital letters or lower case.

When accessing through raw TCP ("net1:"), you use Fingerprint to communicate with the printer. As mentioned above, Fingerprint commands are translated into capital letters, which restricts the usage to devices and directories named in lower case. For more information about Fingerprint please consult the Fingerprint manuals.

/ (root)

The root node is write protected to preserve the device and file structure of the printer.

/c

"/c" is the user file system. Here you can create directories and store files such as programs, fonts and images.

boot

This directory on the "/c" device contains the firmware, password file, and other system information

ADMIN

This directory on the "/c" device is only accessible for the admin user. It contains start order, Fingerprint restrictions, and other configuration parameters only configurable for admin.

counter:

When the electronic key hardware option is installed on the printer, this directory is used to store software and data corresponding to the device.

card1:

Compact Flash file system, used to store large fonts, images, etc. This device is also used to upgrade the on-board firmware of the printer.

/dev
Here are devices used for input/output, such as uart1, Flash, net1, Centronics, etc located.

lock:
When the electronic key hardware option is installed on the printer, this directory is used to store all electronic key items that has been specified as locks by means of special software.

pffs:
The power fail file system is used to store files that need to be saved at power down.

/rom
This device is used to store a collection of files that are available as default in the printer, for example the default web pages, fonts, and images.

images
This directory is used to store images used for the default web pages.

secure
This directory is used to store the password protected web pages.

storage:
When the electronic key hardware option is installed on the printer, this directory is used as complementary storage for the software corresponding to the key hardware.

tmp:
This is the printer's temporary read/write memory. It will lose its content when the power is switched off or at a power failure. Thus, do not use "tmp:" to store valuable data! One advantage of using "tmp:" instead of "/c" to temporarily store data is that data can be written to SDRAM faster than to the flash memory.

Limitations

pffs
The /pffs device has a limitation. Files stored on this unit cannot exceed the size of 256 bytes each, and the total size of the "pffs" unit is 32 KB.

Accessing the Printer

The printer can be accessed and configured through the web interface, but there are other ways to access the printer using the network. In this chapter you can find information about these additional interfaces.

Raw TCP

Having assigned an IP address to your EasyLAN network interface card, as described in the Installation Instructions, you can manage your printer using Telnet and Fingerprint or IPL commands.

Connection Settings

There are some settings that will affect your connection. One way, and perhaps the easiest, is to manage these through the web interface. Connect to your printer using a web browser.

When an application is running, it may alter the communication settings and therefore interfere with raw TCP (telnet) communications. The settings described below makes it possible to connect to the printer with a telnet client.

Std I/O and Application (Fingerprint only)

When you have accessed the printer's internal web pages, click on **Configuration**, **Printer**, and finally **Web Shell**.

Make sure that the standard I/O port is set to either **auto** or **net1:** and that the application is set to Fingerprint. If you make changes, reboot the printer for the settings to take effect.

TCP Port Number

When connected to the printer's internal web pages, click on **Configuration**, **Network Admin**, and finally **TCP/IP**.

The net1 TCP Port Number, default set to 9100, is needed to connect with the telnet client.

Connecting

Start your telnet client and connect to the printer using either Host Name or IP Address follow by the TCP Port Number. For example:

```
Telnet 192.168.235.150 9100
```

This will open a connection, which can be used to issue commands to manage the printer.

FTP

In Fingerprint, the FTP functionality of the server consists of a server and a client part, which allows Fingerprint programs both to put and to get files from the printer. In IPL, there is no client part.

Server

The printers FTP server supports most of the common functionalities of a FTP server. Some restrictions and special features are listed below.

Maximum Connected Clients

The maximum number of connected clients at the same time is 5. If trying to connect to the FTP server when the maximum number of connected clients is exceeded, the error message *"230 Server too busy, please try again later"* will be displayed.

Auto Install

Files uploaded (such as images and fonts) are installed automatically. Also, removing an image or font through the FTP server will uninstall the file automatically.

Permissions

The users and passwords are the same as for the rest of the printer's system and are set up the same way. The only exception is anonymous login.

Anonymous

It is possible to log in as anonymous or ftp with your e-mail address as password. The anonymous user is restricted to read access, and anonymous users are not able to use pr1 as a print port, as this is considered as a security risk. When logging in as anonymous or ftp, the user is placed at the root of the virtual file system ("/").

Password Protected Users

If the user logs in with a password, the file system permissions determines what the user has access to. The FTP server supports the users listed in the password file.

Timeout

The FTP server has a 15 minute timeout.

Client (Fingerprint only)

The printers FTP client supports the transfer of files to and from the printer using the Fingerprint statement TRANSFER NET, see *Intermec Fingerprint v8.10, Programmer's Reference Manual*.

Configure Printer through Fingerprint

The following setup sections are used in connection with EasyLAN network interface card and the Fingerprint SETUP command. Information about configuring the printer through Fingerprint commands can be found in the *Intermec Fingerprint v8.10, Programmer's Reference Manual*. This section does not apply to printers running IPL.

The setup sections are:

prt The legacy section as it was before the introduction of sections. It is the default section.

alerts Controls printer alerts in regard of individual enable/disable and delay conditions for repeated traps.

lan1 Contains all variables available in the print server.

wlan Contains all basic wireless network configuration settings(EasyLAN Wireless with Fingerprint 8.10 or later).

8021x Contains all 802.1x security settings (EasyLAN Wireless with Fingerprint 8.40 or later).

Setup objects are used in connection with EasyLAN. There are different objects for each setup section:

prt Section

This is the default section. The syntax corresponds to the syntax of the SETUP statement.

alerts Section

Objects enabled by default

- cutter Alerts if cutter error.
- headlifted Alerts if head lifted and printfeed.
- ribbonend Alerts if ribbon end and printfeed.
- paperend Alerts if paper end and printfeed.
- ribbonlow Alerts if ribbon low and printfeed.
- paperlow Alerts if paper low and printfeed.

Objects disabled by default

- lts Sends alert when the printer is waiting for a label to be taken.
- pause Sends alert if a batch printing is paused.
- setup Sends alert if Setup Mode is entered via the printers internal keyboard.

- error — Sends alert when a Fingerprint/Direct Protocol error occurs (before giving control to the error-handler).
- break — Sends alert if the user breaks the program or if an error breaks The running program, that is, it is not sent after stop or breakpoint.
- job-complete — Sends alert when all labels in a print feed batch are started.
- odometer — Alerts on different service intervals depending on the odometer count1 value.

Value Syntax

```
(enabled|disabled,<integer>,seconds|occurrences,
<text string>)
```

Example

```
SETUP "alerts","cutter","(enabled,9,seconds,Error
- Cutter Error)"
```

lan1 Section

Objects starting with a dot (.) cannot be read if the current user does not have rights to read/set protected lan1 settings.

Objects	Description
ALERT_REC	To address. Defines to whom the Alert messages should be sent.
ALERT_SND	From Address, the address that will be displayed as the sender of alert messages. This is the address that the e-mail will be returned to if the recipient is unreachable (for example when a e-mail bounce). If you want to avoid e-mail bounces when the recipient is unknown, leave this field empty.
ALERT_SRV	Should alerts be sent using e-mail or SNMP traps.
DDNS	DDNS status (“enable” or “disable”)
DDNS_ALIAS	DDNS alias (name)
DDNS_REGISTERED	(Read-only)Returns whether or not the client (printer) is registered with the name server.
DDNS_ZONE	DDNS zone to which an alias will be added.

FAMILY	ION family, used in ION XML settings files.
IONC_ENABLE	ION client for EasyADC. Set to “default”, “on” (same as “default”), or “off”.
NET1_REMOTE_HOST	(Read-only) Remote host. IP address of a computer accessing the printer through raw TCP.
NET1_REMOTE_PORT	(Read-only) The port of a remote computer accessing the printer.
NET1_STATUS	(Read-only) Status of Net1. Method by which clients are currently connecting to the printer (Raw TCP, lpd, ftp).
PS_NAME	Network identification name (WINS name).
.READ_COM	Read Community. Community with rights to read the SNMP MIBs.
RTEL_PR1	net1: TCP Port Number. The default port number for raw TCP.
SMTP_ADDR	E-mail (SMTP) server.
SNMP_AUT	Authentification Failure Trap, enabled/disabled.
SMTP_INP	Settings for SMTP Server (Manual or DHCP).
SMTP_PORT	e-mail (SMTP) port (default 25).
SYS_CONT	System Contact (printer administrator) (optional).
SYS_LOC	System (printer) location (optional).
SYS_NAME	SNMP Name. Administrative name for the SNMP Node.
.TCT_LIMIT1	The variable to set the Odometer Count1 limit. Defines when an odometer count1 alert message shall be sent.

.TCT_UNIT1	Thermal Counter Unit. This object is used to set the unit of measurement to either forms (labels) or meters for the Odometer Counter. This object is used in combination with the .TCT_LIMIT1 object and the odometer count 1 alert.
TESTMAIL	Submit test e-mail. When this variable is set to yes, a test e-mail is generated and sent to the default address. After the e-mail is sent, reverts back to the default (no).
TIMESERVER	Timeserver host name (for DDNS with TSIG)
TRAP_COM	Trap Community. This defines what community the SNMP Traps should be sent to.
TRAP_ENABLE	Trap status (enable, disable, delete).
TRAP_TNAME	Friendly trap names.
TRAPADDR	Trap Address. This is the IP address of the receiver of SNMP Traps.
TRAPPORT	SNMP Trap port. Default port to send SNMP Traps.
.TSIG_KEY	TSIG key (for DDNS with TSIG)
.TSIG_KEYNAME	Name of the TSIG encryption key.
WINS_ADDR1	Primary WINS Server.
WINS_ADDR2	Secondary WINS Server.
.WRT_COM	Write Community. Community with rights to read and write SNMP MIBs.

Example:

```
SETUP "lan1","RTEL_PR1","9100"
```

wlan Section

Objects starting with a dot (.) cannot be read if the current user does not have rights to read/set protected wlan settings.

Objects	Description
SSID	Service Set Identifier (0-32 characters).
WEP 1-4	WEP keys 1 to 4 (alphanumerical or hexa-decimal).
.WEP_KEY	Select WEP key (0 disables WEP; 1-4 selects transmission key).
CHANNEL	Read current channel.
AP_MAC	Read MAC address of the associated access point.
SIGNAL	Read signal strength.
SPEED	Read transmission speed.
.REGION	Read region. Can be changed by authorized personnel only.

Example:

```
SETUP "wlan","SSID","qwerty"
```

8021x Section

Objects starting with a dot (.) cannot be read if the current user does not have rights to read/set protected 8021x settings.

Objects	Description
EAP_TYPE	Preferred EAP type (TTLS, LEAP, PEAP, or OFF)
EAP_USER	Logon user name.
EAP_PASS	Logon password.
TTLS_USER	TTLS outer name.
INNER_AUTH	(TTLS/PEAP only) Inner authentication type (PAP, MSCHAPv2, EAP/MSCHAPv2, EAP/MD5, EAP/GTC)
CA_CERT	(TTLS/PEAP only) Installs overriding CA certificate.
.SERVER_CN1	(TTLS/PEAP only) Common name 1.
.SERVER_CN2	(TTLS/PEAP only) Common name 2.
VALIDATE	Enables/disables server certificate validation.

Example:

```
SETUP "8021x","TTLS_USER","Manufacturing"
```

Customization (Fingerprint)

The easiest way to modify the appearance of the printer web page is to create an HTML file called “INDEX.HTM” in the device “/c” with custom designed logo and colors. From this file is quite easy to link to the printer’s configuration pages. The web server generates these web pages with dynamic information on the fly. This makes the printer’s real time generated pages appear in the Intermec style and the colors and logo of the customer will be ignored.

Web Style Guide Files

The EasyLAN is prepared for customization of the default web pages in a more permanent way by changing the configuration of the engine that generates the pages. While generating the pages the web server accesses configuration parameters, like the background color, the name of logos

to be displayed on the page and generates the HTML code. Default configuration of these parameters makes the printer's web page appear in the Intermec style, with corporate colors and logos. When changing the parameters the web pages are permanently customized. Customization of these parameters has to be done in specific files called *"Web Style Guide Files"*, assigning user defined values to several support environment variables.

Web style guide files contains parameters to set web page content and layout. These files can be stored either on /c or pffs:.

In the file system, /c has priority over pffs:, which implies that if there is a web style guide on /c (for example /c/webstyleguide.0), the printer will not look for pffs:webstyleguide.1. We suggest that wen style guides are stored on pffs: to minimize the risk that they are accidentally removed.

Content of a Web Style Guide File

A Web Style Guide file has to contain a set of mandatory environment variables and it can also contain optional variables. All variables have to be lowercase, followed by a "=" sign and a consistent value. There is no specific order of the variables.

Required Environment Variables

In the reference table below are all required environment variables described.

Variable	Meaning
bgco	Background color, BGCOLOR attribute of BODY tag
coli	Copyright link, link to html file showing Copyright notes
cona	Company name
loat	Logotype attributes, contains all attributes for the IMG-tag to replace the Intermec logo
trna	Trade name, for example EasyCoder

Optional Environment Variables

The optional environment variables are used to specify extra parameters; for instance, these variables permit to change the printer's model name. The web server only recognizes the following model names:

PF2i PF4i PM4i PX4i PX6i

The web server checks the available hardware and then displays the correct model name in the web page. If the page has to show a different name of the printer and for instance the web page is running on an PF2i, the web style guide file has to contain the optional variable PF2i=your name.

Optional Variables Reference Table

Variable	Meaning	Comments
alco	Active link color, ALINK attribute of BODY tag	
bgli	Background image link, BACKGROUND attribute of BODY tag	
heon	Help On, enables a help link on the page	If this parameter is in the webstyle guide file, then the variables "heli" and "hena" must have a value
heli	Help Link, link associated to the Help tag	
hena	Help link Name, the label to be shown on the web page	
lico	Link color, LINK attribute of BODY tag.	
suon	Support link On, enables a support link on the page	If this parameter is in the webstyle guide file, then the variables "suli" and "suna" must have a value
suli	Support Link, it is the link associated to the support tag	
suna	Support link Name, it is the label to be shown on the web page	
teco	Text color, TEXT attribute of BODY tag	
vlco	Visited link color	

x-www-url-Encoding Syntax Rules

The value given to environment variables has to be specified respecting the x-www-url-encoding syntax rules. According to the syntax rules, characters can be inserted using the notation **%<ASCII Hex>**. For example, space in the ASCII table has the Hex number 20 so it corresponds to **%20**. For example, "**Intermec Technologies Corporation**" corresponds to "**Intermec%20Technologies%20Corporation**" (it can also be written "**Intermec+Technologies+Corporation**").

Colors are specified according to the RGB syntax: **%23cdcdcd** corresponds to **#cdcdcd**.

Any quotation marks (%22) must be preceded by a back slash (\).

The file must contain only one line, where the different variables and valuers are separated by ampersand (&) characters.

Memory and Storage

Web Style Guide files are designed to be placed on the printer's pffs, as mentioned. Due to the memory limits of the pffs the environment variables have very short name (4 bytes), which may make them less user friendly to use, but this allows more space to be used for the value of the variable.

There is also a size limit per file that is set to 256 bytes. In case the Web Style Guide File you want to create is bigger than 256 bytes, the content has to be split in more than one file.

The parser daemon will start looking for the first Web Style Guide File which has to be named "webstyleguide.0", then it will try to read the next file called "webstyleguide.1" and so on.

Creating a Web Style Guide File

Web Style Guide Files can be created with a standard text editor and then transferred to the printer, however there are some rules that has to be followed when creating a Web Style Guide File:

1. The name has to be lowercase.
2. The first file has to have extension ".0". The following files have to have sequential extension number if one number is missing in the sequence the parser will stop reading the files.
3. The split point between one web style guide and the other cannot be in the middle of a line. The last line of the file has to be consistent in the syntax and the first line of the following web style guide file has to be a new line.
4. If variables are specified more than one time, the last value is the one assumed.

Intermec recommends that you use the FTP server to transfer the files.

Example (the default Web Style Guide):

```
bgco=%23ffffff&loat=src%3d\%22/rom/images/itclogo1.
gif\%22+align%3dbottom+alt%3d\%22Intermec_
Technologies_Corporation\ %22+border%3d0
&cona=Intermec+Technologies+Corporation&coli=copyri
ght.htmf&suli=support.htmf&suna=Support&suon=t&trna
=EasyCoder
```

CGI-scripts

Identifying CGI-resources

The web server is designed to recognize two types of CGI-resources: IPP and application specific CGI.

IPP

IPP (Intermec Page Parser) are used to create dynamic contents on web pages. The files are parsed and executed before the output is written to stdout and then sent to the web browser. To be identified as an IPP-resource, the first line in the file must contain options that tell which command parser that should be used and how the HTTP request shall be handled.

The options are x-www-url-encoded, that is, multiple arguments are passed as name1=value1&name2=value2. Recognized options are **ush** for command parser, **rec_hdr** and **prot** for arguments.

Application specific CGI

Application specific CGI is a file identified as CGI, which do not fall into the previous category. To be identified as a CGI resource, the first non-empty line in the file must contain **Intermec-CGI/1.0: <option>**. The options are x-www-url-encoded, that is, multiple arguments are passed as name1=value1&name2=value2. Recognized parameter names are **mode**, **send_hdr** and **prot**.

Other files

Files that do not fall into any of the previous categories are considered regular files and are sent to the web browser without further inspection.

Fingerprint CGI-scripting

Fingerprint CGI-scripting is a kind of application specific CGI. Fingerprint CGI-scripting has been inspired by concepts commonly used in web programming and the web servers. When the web server gets a request it sets environment variables to reflect the request, and redirects stdin and stdout to the TCP-connection established with the web browser. Then it starts the CGI program. When the program ends, the web server (or OS) disconnects the TCP-connection. As a request is received, a string-associative environment named ENV is created to reflect the nature of the request; stdin and stdout are redirected to the web browser and control is given to the application layer. When the application layer finishes, the web server disconnects the TCP-connection to the web browser.

The format of the parameter stream passed from the web browser follows the standard formatting given by the HTTP and CGI standards. For GET requests the arguments are given in the QUERY_STRING, and for POST requests the arguments are passed on stdin. The numbers of bytes to read on stdin are given by CONTENT_LENGTH. Decoded data is given in the DATA stringassoc. environment.

For example:
"Intermec-CGI/1.0:mode=single&send_hdr=yes"

Parameters	Meaning
mode=interrupt	The program is run until it ends, servicing multiple requests via ON HTTP GOTO/HTTP RESUME.
mode=single	The program is started and ended once per HTTP request. The TCP-connection to the web browser is open until the program is ended. Output on STDOUT is transmitted to the HTTP client.
send_hdr=yes	The program must produce headers, the web server does not produce any.
prot=list of users	The program is protected, comma separated list of user that have access.

Fingerprint CGI Commands

GETASSOC$

GETASSOC$ is a function for getting a value from a string association.

Syntax: **GETASSOC$ (<sexp$_1$>,<sexp$_2$>)**

<sexp$_1$> is the name of the association (case-sensitive).
<sexp$_2$> is the name of a tuple in the association.

An association is an array of tuples, where each tuple consists of a name and a value.

This example shows how a string, including three string names associated with three start values, will be defined and one of them (time) will be changed:

```
10    QUERYSTRING$="time=UNKNOWN&label=321&desc=DEF
"
20    MAKEASSOC"QARRAY",QUERYSTRING$,"HTTP"
30    QTIME$=GETASSOC$("QARRAY","time")
40    QLABELS%=VAL(GETASSOC$("QARRAY","label"))
50    QDESC$=GETASSOC$("QARRAY","desc")
60    PRINT"time=";QTIME$,"LABEL=";QLABELS%,
      "DESCRIPTION=";QDESC$
70    SETASSOC"QARRAY","time",time$
80    PRINT"time=";GETASSOC$("QARRAY","time")
```

The example yields the following when run:

```
time=UNKNOWN LABEL=321 DESCRIPTION=DEF
time=153355
```

GETASSOCNAME$

GETASSOCNAME$ is a function for traversing the tuples of a string association.

Syntax: **GETASSOCNAME$(<sexp>,<nexp>)**

<sexp> is the association to be traversed (case-sensitive).
<nexp> specifies the tuple in the association.
<nexp> = 0 specifies first tuple.
<nexp> ≠ 0 specifies next tuple.

An association is an array of tuples, where each tuple consists of a name and a value. To get the first position in the string association, <nexp> should be zero. Consecutive calls to GETASSOCNAME$ witn <nexp> non zero will traverse all variables in an undefined order. When a blank string ("") is returned, the last variable has been traversed.

This example shows how “QARRAY" is traversed (run example from GETASSOC first):

```
10 LVAL$=GETASSOCNAME$("QARRAY",0)
20 WHILE LVAL$<>""
30 RVAL$=GETASSOC$("QARRAY",LVAL$)
40 PRINT LVAL$;"=";RVAL$
50 LVAL$=GETASSOCNAME$("QARRAY",1)
60 WEND
```

The example yields the following when run:

```
label=321
desc=DEF
time=153355
```

MAKEASSOC

MAKEASSOC is used to create associations.

Syntax: **MAKEASSOC <sexp$_1$>,<sexp$_2$>,<sexp$_3$>**

<sexp$_1$> specifies the name of the association to be created (case-sensitive).
<sexp$_2$> contains an argument list of parameter tuples according to the convention in <sexp$_3$>.
<sexp$_3$> should always be "HTTP" (case-sensitive).

Remarks: HTTP implies that the argument list in <sexp$_2$> is encoded in "x-www-url-encoding."

ON HTTP GOTO

ON HTTP GOTO is used to define the Fingerprint handler for the CGI-request. When a request for an application CGI is received, the current execution point will be pushed on to the stack and then execution will commence in the handler with stdin and stdout redirected from/to the web browser.

Syntax: **ON HTTP GOTO<ncon>|<line label>**

<ncon> is the number of the line to which the program will branch when the CGI request is received.
<line label> is the label of the line to which the program will branch when the CGI request is received.

Remarks: This statement is used in connection with EasyLAN and defines a Fingerprint subroutine that handles the CGI-request. Setting the handler's line number or line label to 0 disables it. When a request for an application CGI is received, the current execution point will be pushed on to the stack and then the execution will commence in the handler with stdin and stdout redirected from/to the Web browser.

RESUME HTTP

When RESUME HTTP is executed, the application layer finishes and the web server closes the TCP-connection and pops the execution point so that the program continues where it was before the request was received. Stdin and stdout will be restored to their original values.

Interrupt

If mode is set to interrupt but the program is not running, the error message "Application not started" is shown when the resource is requested. If ON HTTP GOTO is defined, the interrupt handler will be called even for other Fingerprint CGI-programs, and it is up to the application to handle/honor this.

To look-up which program that was requested, you should use **`GETASSOC$("ENV","SCRIPT_NAME")`**.

Example of Fingerprint program:

```
10  'Intermec-CGI/1.0: mode=interrupt&send_hdr=no
20  ON HTTP GOTO 200
30  BREAK 1 ON
40  GOTO 40
200 PRINT "<html><head><title>Fingerprint CGI
    </title></head>"
201 PRINT "<body bgcolor="+CHR$(34)+"#FFFFFF"+
    CHR$(34)+"> <h2>This is generated by Fingerprint
    CGI</h2></body></html>"
210 RESUME HTTP
```

Access to Running Fingerprint Applications

The URL *fp/running* is an easy way to access the running application. If the running application can be identified as a Fingerprint CGI and it is registered with mode=interrupt, the interrupt handler will be called.

A program that has not been given a name will not be able to run through *fp/running*. To assign a name to the program, you should use the SAVE command, or you can load it with LOAD or RUN. Otherwise error messages like: *"No Fingerprint application running"*, *"The running application is not registered as CGI"*, or *"The running application is not setup for interrupt mode"* will be displayed on a web page.

Mail Command

The printer can be set up to generate alert mails as described in "Alerts" in Chapter 4. It is also possible to send mail from Fingerprint using the "run" command mail.

Syntax:

mail [-s subject] [-r from/reply-address] [-c cc-address] [-b bcc-address] [-a SMTP-address] [-p SMTP-port] <to-address> [-f file | text]

Note: The mail command and the flags must be entered in lowercase.

Several "to", "cc", and "bcc" addresses can be entered if separated by commas.

If SMTP address and/or port are set (flags '-a' and '-p'), the corresponding printer setting will be changed accordingly. SMTP address and port cannot be set if the user does not have rights to read/set protected lan1 settings. See "Configure Printer through Fingerprint" in Chapter 6.

Examples:
Below is a simple example of how to send a mail in Fingerprint.

```
10   RUN "mail -s 'Test mail' me@domain.com 'Just
     testing.' "
```

The following example shows how variables and strings can be used to create a mail.

```
10   A% = 10
20   A$ = "Apple"
30   SUB$ = "-s "+CHR$(34)+"A% and A$ in a mail"
     +CHR$(34)
40   REC$ = CHR$(34)+"me@domain.com,you@domain.com"
     +CHR$(34)
50   SND$ = "-r me@domain.com"
60   TXT$ = CHR$(34)+"A% = "+STR$(A%)+" and A$ = "
     +A$+CHR$(34)
70   MAIL$= "mail "+SUB$+" "+SND$+" "+REC$+" "+TXT$
80   PRINT MAIL$
90   RUN MAIL$
```

SNMP

Setting up the Printer for SNMP

For information about SNMP printer settings, see "SNMP" on page 48.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the EasyLAN SNMP support:

- NMS software that allows you to install private enterprise MIBs.

Adding Intermec MIBs to NMS Software

1 Copy the Intermec MIB files from the CD-ROM that came with the EasyLAN interface card 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
printer-tc.mib	Textual conventions
prtcmmn.mib	Printer-specific items regarding system, media, memory, print mechanism, etc.
prtitp.mib	Programming language version.

2 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 Odometer Count1

The printer keeps track on used forms (labels or tickets) and printed distance. This is modeled in *bcpThermalCounterTable*, where there is a unit (forms or meter), a current value, and a limit.

The Odometer Count1 can be used for maintenance purposes, for alerting when the label stock is close to running out, or when the thermal print head should be exchanged.

Examples:
On a roll there are 500 labels, set "limit" to 470 and "unit" to forms. When Count1 reaches 470, the printer will send an alert and the roll can be replaced before the printer actually runs out of media.

If you want the printhead replaced when it has printed 30 km of media, set the "limit" to 29500, and the "unit" to meter. When Count1 reaches 29500, it will send an alert and you can replace the printhead in time.

Restrict Functionality

Accounts

There are two default accounts on the printer—*admin* and *user*. The *admin* account has the same default permissions as the user account, but as admin you can also change Network and LAN settings and upgrade the printer's software.

There are two ways to restrict the possibility to change the printer's settings–the file system and through Fingerprint restrictions.

Note: When you log on to the printer through FTP the current user in Fingerprint is not changed. This means that even if you log in as admin on the FTP server you do not automatically become admin in the Fingerprint environment.

File System

In the file system, any user can set the read and write permissions on files and directories. In regard to file and directory permissions, the accounts are equal. This makes it possible to set the permissions so that the *admin* account can read and write to files that the *user* account cannot.

Restrictions

The easiest way to configure these restrictions is through the internal web page. You will find the restrictions by accessing the web page and then browse to *Configuration–Network Admin–General*. There are three restrictions available; *Users Allowed to Update*, *Users allowed to read/set protected lan1 settings*, and *Users allowed to change network settings*. All restrictions are not available in IPL printers.

Users allowed to update

This defines who should be allowed to update the printer's firmware; regardless in what way the update is performed (excluding updates through CompactFlash card).

Users allowed to read/set protected lan1 settings (Fingerprint only)

Here you can define who should be allowed to read and change the settings in the "lan1" setup section. By default the *admin* is the only account with permissions to change these settings, but by removing or adding accounts to the appropriate field you can limit or expand the number of accounts that will be able to change the settings.

The protected lan1 settings includes the following:

- SNMP read community
- SNMP write community
- Thermal Counter Unit
- Odometer Count1 value.

Users allowed to change network settings (Fingerprint only)

Here you can define who should be allowed to change the TCP/IP network settings. This does not include set up through the printer's internal keyboard.

Users allowed to change wireless settings

Here you can define who should be allowed to read and change the settings in the "wlan" and "8021x" setup sections. By default the *admin* is the only account with permissions to change these settings, but by removing or adding accounts to the appropriate field you can limit or expand the number of accounts that will be able to change the settings.

Display Current User

To display who the current user is in Fingerprint, the "whoami" command is used.

Syntax:

RUN"whoami"

Note: This command is case-sensitive.

The command echoes the current user to the standard out channel.

Example:

```
RUN"whoami"
user

Ok
```

Changing User

To change the current user in Fingerprint, the "su"-command is used.

Syntax:

RUN"su [-p <password>] <user>"

su requests the password for <user>, and switches to that user after checking the password file.

Valid <user> names are **admin** and **user**.

Everyone can become user even if user's password is set.

No password is requested if the current user already is the one to switch to.

The option is as follows:

`-p password` Don't query for a password; use the one supplied at the command line.

Note: Everything is case sensitive (user name, su command, passwords).

Examples:

To become “admin”.

```
RUN"su admin"
Password:

Ok
```

Or:

```
RUN"su -p pass admin": RUN"whoami"
admin
```

To switch back to user:

```
RUN"su user"
```

Changing Passwords

To change the password for a user in Fingerprint, the “passwd”-command is used.

Syntax:

RUN"passwd [<user>]"

passwd changes the user’s password. First, the user is prompted for the current password (if it exists). If the current password is correctly typed, a new password is requested. The new password must be entered twice to avoid typing errors. The new password s total length must be less than 128 characters. Numbers, upper-case letters and metacharacters are encouraged. Valid user names are **admin** and **user**.

You can also use this command:

RUN"passwd <user> '<oldpasswd>' '<newpasswd>' '<newpasswd>'

Examples:

To change password for the current user (user, without password):

```
RUN"passwd"
Changing local password for user.
New password:[enter new password]
Retype new password:[enter new password]
```

To change password for ’admin’:

```
RUN"passwd admin"
Changing local password for admin.
Old password:[enter current password]
```

```
New password: [enter new password]
Retype new password: [enter new password]
```

Note: You do not have to change to the user whose password is changed.

7 Troubleshooting

This chapter contains troubleshooting information for the EasyLAN network interface board. The purpose is to provide an aid to detect and correct abnormal states and conditions, faulty functions and parts. Here you can also find information about how to contact Intermec's help and support organization.

Diagnostics and Troubleshooting Procedures

If there is a problem with a printer connected to your network, this chapter helps you find and correct the issue and to obtain information that will make it easier for support personnel to help you correct the problem. Follow the procedures below before contacting support.

Verifying Settings

Use a PC connected to the same network as the printer to verify the printer's network configuration as described in the Installation Instructions.

If you are trying to connect the printer via a crossover network cable, you may need to disable the web browser's proxy settings on your computer to get in contact with the printer's web pages.

PC Settings

Verify that the PC has a working connection to the network. Do this by opening a **Command Prompt** and type the command that corresponds to your operating system, as described below:

For Windows 95, 98 and ME, use the command *WINIPCFG*.
For Windows NT4, 2000 and XP, use the command *IPCONFIG*.

The PC will show a table with its configuration containing the settings for IP address, Subnet Mask and Default Gateway. Verify these settings to be sure that the computer is correctly configured for your network.

Printer Settings

Check the IP address of the printer. Press the <**i**> key on the printer's keyboard and use the <⇐> and <⇒> keys to browse to the IP address. A prerequisite in Fingerprint is that the standard IN port is set either to "auto" or "net1:", which can be done using Intermec Shell. Another method is using the Setup Mode:

1. Press the <**Setup**> key, on the printer's internal keyboard, and step your way to "*NETWORK*" using the <⇒> key.
2. By pressing <**Enter**> on the printer, you can step through the configuration to verify the settings.
3. Press <**Setup**> to exit the Setup Mode.

More information about configuration settings can be obtained by printing a test label.

Also check on the printer's home page (Configuration [TCP/IP]) that the net1 TCP Port Number is correct (default 9100).

Network Card Not Responding

Connection to the Network

1. Check the network LED indicator at the back of the printer. There should be:
   a) a green light flashing occasionally showing network activity.
   b) a solid yellow background light if connected to a 100 Mbps network, or if the network card is associated with an access point (wireless only). Note that there is no background light indication provided for 10 Mbps wired networks.
2. Check that the network cable connection at the back of the printer is connected correctly.
3. Check that the cable connecting to the network is not of "crossover" type. It has to be a straight "pin to pin" connection.

Internal Cabling

Authorized personnel only!

1. Check that the internal network extension or antenna cable and light guide are properly connected to the EasyLAN optional board.
2. Check that the EasyLAN optional board is properly inserted in the connector on the printer's CPU board.

Verifying IP Address

In the user's guide for your printer, you will find information on how to print test labels in the chapter *"Setting Up the Printer"*. Print the network test label and find the IP Address field. If the IP address is set to 0.0.0.0, the network card has not received a IP address. Verify the *IP SELECTION* setting under the *NETWORK* menu in the Setup Mode. See the *EasyLAN Interface Kit Installation Instructions* for information on various methods for setting the IP address automatically or manually.

Verifying Subnet Mask

Check subnet mask of PC and printer and make sure they belong to the same segment. For example:

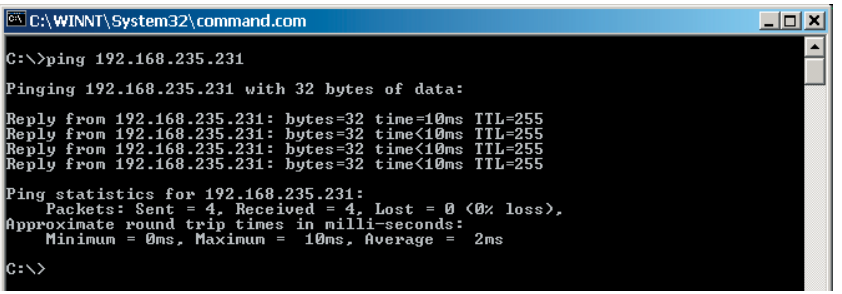
If they have the subnet mask	**The numbers in the PC and Printer *IP addresses* have to be**
255.255.255.0	<Same>.<Same >.<Same >.<Any >
255.255.0.0	<Same>.<Same >.<Any >.<Any >
255.0.0.0	<Same>.<Any >.<Any >.<Any >

In case the addresses are not in the same network segment, the printer may not be reachable from the LAN side. Check the configuration with the administrator.

Pinging the Printer

Start the **Command Prompt**. In the Command Prompt, type *Ping <printer IP-Address>* and then click **OK**.

This command sends an echo command to the EasyLAN to check if the PC and the printer can reach each other through the network. The following figure shows a correct response to the Ping command.



The first reply to the first Ping command often takes more time than the following. This is a normal behavior. The first time the Ping command is executed, the PC needs some extra time to perform a "discovery" of the network address (ARP request). The Ping command makes the printer's network LED flash green.

If you have completed the test procedure and all the conditions are met, but you do not get any answer to the Ping command, then you probably have a hardware problem. Check the following:

- The LED should occasionally flash green when the cable is plugged in.

8 Support and Help

This chapter provides information on how to obtain help and contacting customer support. Please make sure that you have followed the procedures described in the "Troubleshooting" chapter before contacting support.

Intermec Knowledge Central

The Intermec Knowledge Central can be found on the following address: http://intermec.custhelp.com. The Knowledge Central provides answers to commonly asked questions. If you do not find answers for your questions you can submit questions to the Intermec support staff.

You can create a personal profile, which will help you to keep track of questions submitted to support staff.

Local Intermec Dealer

If the information you need is not provided through Intermec Knowledge Central or if you need spare parts, please contact your local Intermec Dealer for further assistance.

A Glossary

This appendix lists the network terms used in this User's Guide in alphabetic order.

Agent

Is the part of firmware of a device supporting SNMP. Fingerprint and EasyLAN include an agent to serve SNMP purposes

ARP

Address **R**esolution **P**rotocol is 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.

BOOTP

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

CompactFlash memory card

CompactFlash card is a removable mass storage device.

Daemon

Disk **a**nd **e**xecution **mon**itor is a program that lays dormant waiting for some condition to occur.

DHCP

Dynamic **h**ost **c**onfiguration **p**rotocol (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 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 v8.10, Programmer's Reference Manual*.

DNS

Domain **n**ame **s**ervice reflects the server names and addresses within a network.

Ethernet Adapter
The Network interface card, compliant with IEEE 802.3 standard, with support for full duplex 10/100 Mbps transmission and reception. The adapter also supports the auto negotiation function described in the standard.

Ethernet address
See MAC address.

Fingerprint
A programming language developed by Intermec for controlling some of its high-end EasyCoder printer ranges. Refer to *Intermec Fingerprint v8.10, Programmer's Reference Manual*.

Flash Memory
The printer software is stored in Flash Memory. The data on flash memories is retained when power is switched off.

FTP
File **t**ransfer **p**rotocol (FTP), a standard Internet protocol, designed for exchange files between a client and a server. It is based on TCP/IP and has a good level of reliability

Hardware Address
See MAC address.

HTML
Hyper**t**ext **m**arkup **l**anguage is a standard hypertext language used for creating World Wide Web pages and other hypertext documents.

HTTP
Hyper**t**ext **t**ransfer **p**rotocol. The TCP/IP protocol for Web based communication.

IEEE
The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers, Inc. (pronounced "Eye-triple-E"), is a non-profit, technical professional association of more than 380,000 individual members in 150 countries.

IP
Internet **p**rotocol. The TCP/IP session-layer protocol that regulates packet forwarding by tracking IP addresses, routing outgoing messages and recognizing incoming messages.

IPL
Intermec **P**rogramming **L**anguage. A programming language developed by Intermec for controlling some EasyCoder printers. Refer to the *IPL Programming Reference Manual*.

LAN
Local **a**rea **n**etwork.

Lease time
In a DHCP environment it's the amount of time a device keeps a reservation on an IP address when it is off. For example, if printers configured in DHCP mode never stay off or disconnected more than one hour, setting the lease time to one hour and one minute makes the printer always get the same IP address from the DHCP server. If the printer does not appear on the network for more than one hour and one minute, the DHCP server will consider the former IP address of the printer as available for other devices

LPD
Line **p**rinter **d**aemon.

LPR
Line **pr**inter.

MAC address
Media **A**ccess **C**ontrol 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 organized in couples of digits with space, hyphen, or colon characters between each couple. Do not confuse with Mac as in Macintosh!

MIB
Management **i**nformation **b**ase is a database of network configuration information used by SNMP and CMIP to monitor or change network settings.

NIC
Network **i**nterface **c**ard. This is a circuit board that allows you to connect a device to the network.

PrintSet
PrintSet is easy to use software developed by Intermec and running under Windows 95, and later versions. 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.

SNMP

Simple **n**etwork **m**anagement **p**rotocol is a protocol based on UDP/IP used for configuration of network devices and error reporting. An SNMP server has to be installed on the network (IPNM in the case of Intermec printers).

SSID

Service **S**et **Id**entifier. Used to differentiate wireless LANs that operlap in frequency and physical coverage area.

TCP

Transmission **c**ontrol **p**rotocol. This protocol provides a method for creating a connection-oriented, reliable, error-free, full-duplex, byte-stream communication between two processes. See also IP.

Telnet

The TCP/IP remote terminal protocol for connection to a login server.

Trap

Is a SNMP message between a device and an SNMP server reporting a failure. Out of paper is a trap sent to IPNM (Intermec Printer Network Manager) from a printer.

URL

Uniform **r**esource **l**ocator is a way of specifying the location of publicly available information on the Internet.

WEP Key

Wired **E**quivalent **P**rivacy is an encryption key for radio transmissions.

WINS

Windows **i**nternet **n**ame **s**ervice. A NetBIOS Name Server that maps NetBIOS names to dynamically assigned IP addresses.

Wizard

A special form of user assistance that automates a task through a dialog with the user. Wizards help the user to accomplish tasks that are complex and require experience, and even for the experienced user can help to speed up an operation.

WLAN

Wireless **L**ocal **A**rea **N**etwork. In this context, refers to IEEE 802.11b/g.

B Technical Specifications

EasyLAN Ethernet

General
10baseT/100baseTX Internal Ethernet Interface card

Models
EasyLAN Ethernet model 100i2

Supported Printer Models
EasyCoder PF2i, PF4i, PF4i Compact Industrial, PM4i.

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

Dynamic Printer Alert Messaging
SNMP and/or e-mail.

Supported versions of Microsoft Windows
Windows NT v.3.5 and later versions, Windows 95, Windows 98, Windows ME, Windows 2000, Windows XP.

Supported versions of UNIX and Other Systems
All computers supporting the TCP/IP suite of protocols.

Print Methods
LPD, FTP, raw TCP.

WWW
Netscape 4.5 or higher and MS Internet Explorer 4.5 or higher.

Supported Protocols
Running simultaneously any combination of the following protocols:
LPD, FTP, BOOTP, DHCP, IP, TCP, UDP, HTTP, SNMP, SMTP.

Interface Network Management
SNMP-MIB II compliant (over UDP/IP), private enterprise MIB incl.

Logical Network Connection Ethernet
Compliant with IEEE 802.3 standard, with support for full duplex 10/100 Mbps transmission and reception.

Fast Ethernet
Supports auto negotiation function (IEEE 802.3 specification), which provides automatic selection of network speed and duplex mode.

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

EasyLAN Wireless

General
IEEE 802.11 b/g Internal Interface card

Models
EasyLAN Wireless model plus IEEE 802.11 b/g internal card

Supported Printer Models

EasyCoder PF2i, PF4i, PF4i Compact Industrial, PM4i.

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

Dynamic Printer Alert Messaging
SNMP and/or e-mail.

Supported versions of Microsoft Windows
Windows NT v.3.5 and later versions, Windows 95, Windows 98, Windows ME, Windows 2000, Windows XP.

Supported versions of UNIX and Other Systems
All computers supporting the TCP/IP suite of protocols.

Print Methods
LPD, FTP, raw TCP.

WWW
Netscape 4.5 or higher and MS Internet Explorer 4.5 or higher.

Supported Protocols
Running simultaneously any combination of the following protocols:
LPD, FTP, BOOTP, DHCP, IP, TCP, UDP, HTTP, SNMP, SMTP.

Interface Network Management
SNMP-MIB II compliant (over UDP/IP), private enterprise MIB incl.

Logical Network Connection Wireless
Compliant with IEEE 802.11b/g with support for up to 54 Mbps transmission and reception.

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