

6400i Line Matrix Printers

*Ethernet Interface
User's Manual*

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Introduction

Overview

This chapter introduces you to the Ethernet Interface architecture and special features, as well as providing information on installation and configuration tools.

What Is The Ethernet Interface?

The Ethernet Interface allows you to attach printers on a local area network (LAN) rather than attaching them directly to a host system. Following simple configuration steps, these peripherals can be simultaneously shared with users on the network whether you are using TCP/IP, NetBIOS over TCP/IP, or IPX (Novell®).

The Ethernet Interface package contains a Ethernet Interface to attach itself and the printer to the network.

What Special Features Are Available?

The Ethernet Interface offers an extensive list of features including:

- built-in HTML forms for easy cross-platform configuration
- availability of remote management software
- a detailed and easy-to-use command shell built-in to the firmware
- multi-level configuration security through passwords, permission levels, and access lists
- WAN-wide communication access

- numerous printer logging methods (e.g., automatic email) to record printer errors and usage
- remote management through HTML forms, Telnet sessions, `rsh/rcmd/remsh` commands, SNMP, and pre-defined log methods
- extensive built-in troubleshooting tools
- built-in `telnet` and `ping` clients
- configurable memory usage by disabling protocols and destination services
- multiple destinations/queues for versatile printer manipulation and distinct print setups
- header and trailer strings to instruct printers on font, pitch, printing, etc.
- flexible naming conventions
- automatic network connection and frame type sensing
- simultaneous printing across all I/O ports and all supported protocols
- multiple network protocol support

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Installation And Configuration

Installation

The Ethernet Interface provides an RJ-45 connector for 10/100Base-T (UTP) networks.

Connecting To The Network

To attach the Ethernet Interface to a network, plug the network cable into the Ethernet Interface connector.

Watch the LEDs in the rear of the printer as they cycle through the power-on self-test. When the test is complete, the STAT LED will begin to flash.

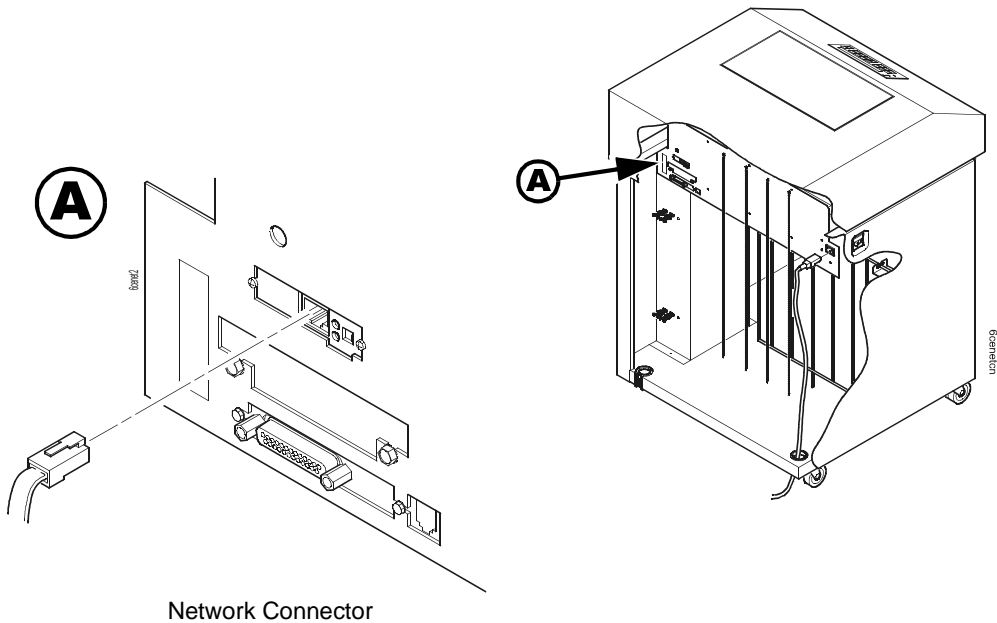


Figure 3. Physical Setup

Configuration Tools

There are two parts to a Ethernet Interface setup:

- Configuring the Ethernet Interface so it can be seen on the network. This involves network-related settings (e.g., an IP address within TCP/IP environments) configured through the built-in command shell, npsd, or from the control panel.
- Configuring a host with a new printer so it knows how to send data to the Ethernet Interface. Just being able to see the printer on the network does not mean you can automatically print to it. A host has to be told where to send the data.

NOTE: Some network environments do not require any network settings to be configured on the Ethernet Interface. However, all network setups require configuration on the host end.

Configuration Using The Control Panel

You can set Ethernet Interface settings from the printer control panel.

CAUTION

When the printer is first powered on, the message “ETHERNET ADAPTER IS BEING INITIALIZED” displays on the control panel. This process takes about 1 to 2 minutes. To prevent a loss of Ethernet Interface configuration information, do not change the Ethernet Interface settings while this message is displayed. When the initialization is complete, the message “ETHERNET ADAPTER IS READY” displays, and you can safely change the Ethernet Interface settings from the control panel.

1. You can set any of three listed parameters from the printer control panel. These parameters are located in the Arrange to have an IBM service technician install the Ethernet Interface card if it is not already installed; this is not a customer installable feature.
2. Power on the printer. The message “ETHERNET ADAPTER IS BEING INITIALIZED” appears when the printer is powered on. Configuration can be done after the “ETHERNET ADAPTER IS READY” message appears (about 1 to 2 minutes after the “ETHERNET ADAPTER IS BEING INITIALIZED” message displays).
3. Disable the Power Saver mode before starting this procedure, see the *6400i Setup Guide* for instructions.

4. Always print an Ethernet Adapter test page before performing any updates or network configuration using the following steps:
For 6400i *printers*:
 - a. Press **STOP** to take the printer offline. The printer is in the NOT READY state.
 - b. Press **Scroll**↑ + **Scroll**↓ simultaneously to unlock the printer menu.
 - c. Press **Menu** to display the “Operator Menu.”
 - d. Press **Scroll** until “Operator Print Test” displays, then press **Enter**.
 - e. Press the left arrow until “E-Net Test Page” appears.
 - f. Press **Enter**.
5. Verify the current Ethernet Interface firmware version number.

NOTE: Firmware exists within the Ethernet Interface and the printer itself. Each firmware is a separate entity with its own version number. Please pay close attention to the type of firmware referenced in the remaining sections of this document.

The Ethernet Interface version should be 1.1.3 or higher for 10/100Base-T Ethernet adapters. If the Ethernet Interface version is current, skip to step 6 below. If the Ethernet Interface version is not current, you need to update both the Ethernet Interface and printer firmware.

If you need to update the printer firmware, you must do so now. After the update is complete, you must restart this instruction from the beginning. To upgrade the printer firmware, contact your IBM service representative.

CAUTION Turning off the printer before the firmware update is complete may permanently damage the Ethernet Interface adapter.

Updating the printer firmware takes time. Please be patient and wait for the “ETHERNET ADAPTER IS READY” message to display on the LCD. Do not turn off the printer before it has completed the firmware download procedure. The LCD will display “ONLINE / ETHERNET ADAPTER IS READY” when the download is complete. Wait for this message before turning off the printer.

6. To enter IP Address parameters, do the following:
 - a. Press **STOP** to get to the NOT READY state.
 - b. Press **Scroll**↑ + **Scroll**↓ to unlock the printer menu.
 - c. Press **Menu** to display OPERATOR MENU.
 - d. Press **Scroll** until ETHERNET PARAMETERS displays, then press **Enter**.
 - e. Press **Scroll** until IP ADDRESS displays, then press **Enter**.
 - f. Press **Enter** again, then **Scroll** to choose an IP address octet to change. Press **Enter**.
 - g. Press **Scroll** to choose the desired value for the octet, then press **Enter**. The new value is shown with an asterisk. Press **Return**.
 - h. Repeat steps d and e until you have set all IP address octets to the desired value.
 - i. Press **Return** until ETHERNET PARAMETERS is on the first display line.
 - j. Press **Scroll** to choose other IP parameters to change, then follow the above steps for each of these.
 - k. When finished, press **Return** multiple times until NOT READY displays.
 - l. Press **Start**.
 - m. Wait for “ETHERNET ADAPTER IS READY” to display.
 - n. Press **Scroll**↑ + **Scroll**↓ to lock the printer menu.

7. Put the printer online and wait for the “ETHERNET ADAPTER IS READY” message to display on the front panel. Placing the printer online starts the Ethernet Interface IP Address and Netmask update process. This process will take several minutes.

NOTE: If you do not put the printer online, the setting you just entered will not take effect. Do not turn the printer off until you see the “ETHERNET ADAPTER IS READY” message. If you turn the printer off before the new values are written to memory in the Ethernet Interface adapter, you will need to repower the printer and repeat steps 6 and 7 above immediately.

8. Once the “ETHERNET ADAPTER IS READY” message displays, you may enter the Gateway Address by repeating front panel steps 6 and 7 above. This will ensure the correct Netmask becomes associated with the Gateway value you enter. From the front panel navigate to the Gateway Address and enter the appropriate value. You must press ENTER after inputting each segment of the Gateway Address.
9. Put the printer online and wait for the “ETHERNET ADAPTER IS READY” message to display on the front panel.
10. Enable the Power Saver mode if desired.

Ethernet Interface Verification

Before performing the verification, you must connect the Ethernet Interface card to the network.

1. Print an E-NET test page (following the steps on page 31) to verify the settings you made.
2. Verify the Netmask is correct in two locations on the E-NET test page:
 - NETWORK INTERFACES
 - TCP/IP ROUTING TABLE

The Netmask must be the same in both locations. For example, if the Netmask is listed as 255.255.255.0 in NETWORK INTERFACES and is listed as 255.255.255.255 in the TCP/IP ROUTING TABLE, they do not match and you must correct it for the Gateway. Also, if a Gateway Address was entered, verify that “xxx.xxx.xxx.xxx is alive” is printed under the Default Gateway Ping Test, where xxx.xxx.xxx.xxx is the Gateway Address. If a Gateway Address was not entered, the Default Gateway Ping test is not required and will not display on the page.

If the Netmask does not match, complete the following steps:

- a. Place the printer offline.
- b. Using the front panel, modify the Gateway value to 0.0.0.0. (non-configured).
- c. Place the printer online and wait for the “ETHERNET ADAPTER IS READY” message to display.
- d. Place the printer offline and enter the Gateway Address you desire.
- e. Place the printer online and wait for the “ETHERNET ADAPTER IS READY” message. This saves the new Gateway Address.

Your Ethernet Interface is now configured and connected to your network.

HTML Forms

The Ethernet Interface settings can be configured over TCP/IP through a standard Web browser. The Ethernet Interface Web pages provide a handy way to access some of the commands built into the print server.

NOTE: If a router is used, make sure a Gateway value is configured.

To access the Ethernet Interface home page:

1. Make sure the print server has an IP address and Subnet Mask so it is recognizable on your TCP/IP network.

2. Make sure your network station can successfully ping the Ethernet Interface over the network.
3. Direct your Web browser to the URL:
http://IPaddress
 (e.g., `http://192.75.11.9`)
 where *IPaddress* is the IP address of your Ethernet Interface.

The Ethernet Interface HTML structure is divided into several menus as shown in Figure 4.

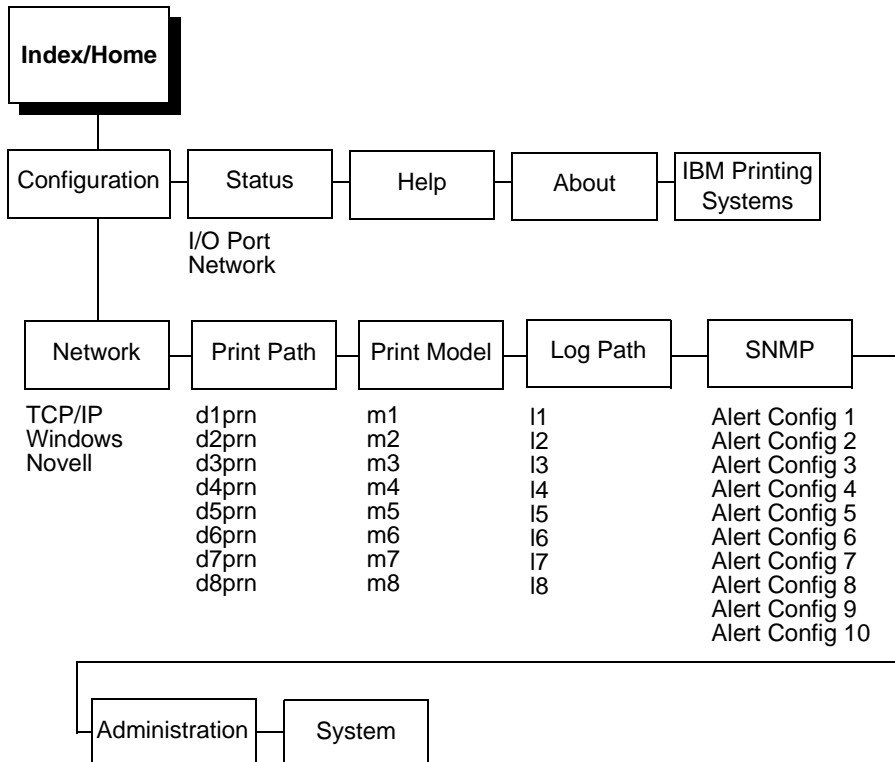


Figure 4. Ethernet Interface HTML Structure

NOTE: Online help is available for all HTML pages.

Printer Status Screen

Using the printer IP Address and any standard Web browser, you can check the status of the printer. Figure 5 shows the exact state of the printer by showing the printer LCD message. (This screen automatically refreshes every minute.)



Figure 5. Printer Status Screen

Configuration Alternatives

Besides the HTML forms and software provided, the Ethernet Interface internal command shell, npsh, can also be reached using Telnet and Remote Shell.

Telnet

A TCP/IP command that helps configure Ethernet Interface settings remotely. A TCP/IP host starts a Telnet session with the print server and logs into the device command shell to alter and view settings.

Example:

```
telnet 192.75.11.9
```

Remote Shell

A TCP/IP command that helps configure print server settings remotely. A TCP/IP host uses this command to remotely execute a single command on the Ethernet Interface.

Example:

```
rsh spike list prn
```

This command remotely executes the npsh command `list prn` on the Ethernet Interface named `spike`.