

Elite XL Networking Guide

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Introduction

NEST (Novell Embedded Software Technology) is code written by Novell and licensed by GCC. It provides NetWare protocols and is configured using standard NetWare utilities. It offers these advantages:

- Your Elite XL does not require a dedicated print server, so it connects directly to the network.
- You can install the Elite XL anywhere you have an Ethernet connection.
- NEST works with GCC's WebAdmin utility.

This manual shows you how to install and configure your Elite XL printer to work with your NetWare network. You set up your Elite XL printer in two steps – the usual *NetWare* setup, followed by the *GCC* specific NEST setup. If any of the computers on your network are creating PostScript jobs using Windows, you will also need to configure them.

The Elite XL NEST specific parameters are setup using GCC's *WebAdmin utility*. Instructions for accessing and using the *WebAdmin utility* are located later in this section and in Section 2 of this manual.

Setting up the Elite XL Printer

The instructions in this section are a condensed version of those in Chapter 1 of the *Elite XL Users Manual (on this CD-ROM)*, and are intended for users experienced in setting up network laser printers. If you have questions about any of the steps in this section, consult the *Elite XL User's Manual*.

1. Unpack the printer and install the toner cartridge.
2. Insert paper into the paper tray and insert the paper tray into the printer.
3. Connect a cable from the Ethernet port to the network.
4. Plug the AC power cord into the Elite XL, then plug it into a grounded AC outlet.
5. Switch on the printer.

General NetWare Setup

This section discusses the NetWare utilities you use to set up your Elite XL printer. This process is the same as setting up any printer, but in a few cases there are specific instructions to configure the NEST options. These are included in the instructions where necessary.

The instructions are described first for NetWare 3.12, and then for NetWare 4.1 (beginning on page 1-6). The utilities included in this section are **PCONSOLE**, **NWADMIN**, and **NETADMIN**.

NetWare 3.12 instructions

PCONSOLE

PCONSOLE has two functions: setting up and managing print queues, and setting up and managing print servers. This manual covers the outline of how to set up queues and servers; you must create at least one queue and one print server. For more details consult your NetWare documentation.

Creating a Print Queue

1. Log into the file server as **SUPERVISOR** (or equivalent).
2. Start the **PCONSOLE** program (it is located in SYS:PUBLIC).

First you create a print queue.

3. From the menu (*shown in figure 1*) choose **Print Queue Information**.
4. Press **Ins** to add a new item to the list of queues.
5. Type the name of the new queue and press **Enter**.

Then you add users to the queue.

6. With your new queue selected, press **Enter** again.
7. Choose **Queue Users** from the **Print Queue Information** menu and press **Enter**.
8. Modify the list of users as necessary.
9. Press **Esc** to return to the **Print Queue Information** menu.

Choose queue operators (people or groups that can manage this queue).

10. Choose **Queue Operators** from this menu and press **Enter**.
11. Modify the list of users and groups as necessary.
12. Press **Esc** three times to return to the **PCONSOLE** main menu.
13. Repeat steps 3-12 to create further queues as needed, then proceed to the next section.

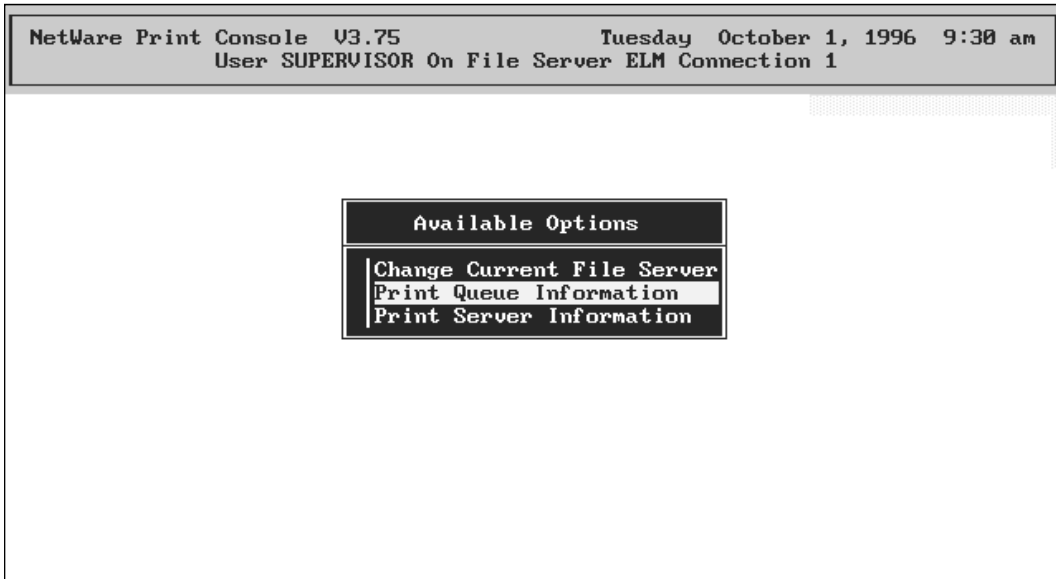


Figure 1. PCONSOLE's opening menu.

Creating a Print Server

1. Choose **Print Server Information**.

First you create a new server.

2. Press **Ins** to add a new item to the list of servers.
3. Type the name of the new server and press **Enter**. Make a note of the name of this server; you will need this when you use *GCC's WebAdmin*, which is described later in this section.

Then you assign users to this server.

4. With your new server selected, press **Enter** again.
5. Choose **Print Server Users** from the Print Server Information menu and press **Enter**.
6. Modify the list of users as necessary.
7. Press **Esc** to return to the **Print Server Information** menu.

Then you choose users who can manage the print server.

8. Choose **Print Server Operators** from this menu and press **Enter**.
9. Modify the list of operators as necessary.
10. Press **Esc** to return to the **Print Server Information** menu.

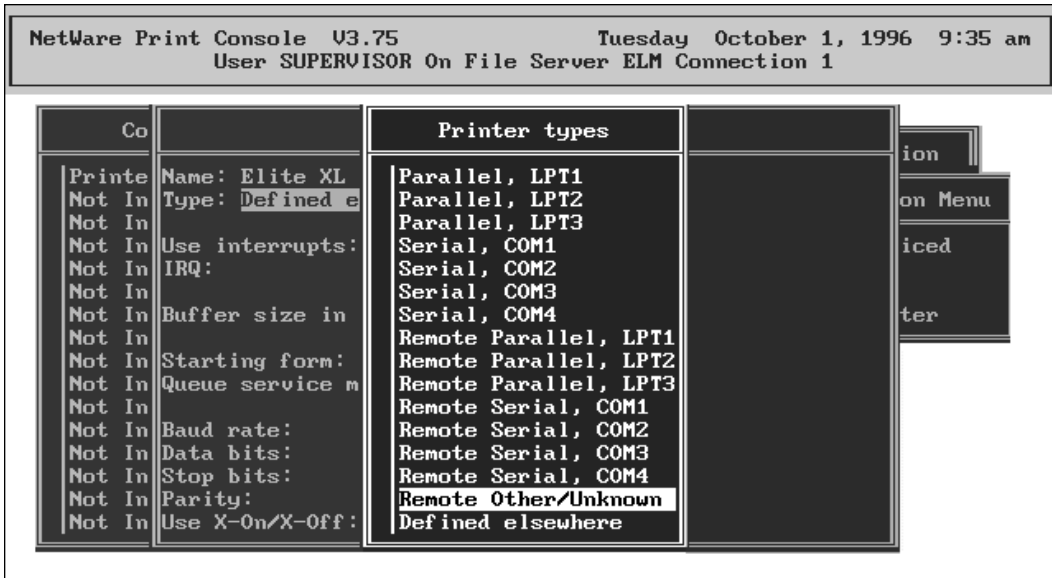


Figure 2. Selecting "Remote Other/Unknown" from the list of Printer types.

Now you configure the printer.

11. Choose **Print Server Configuration** from this menu and press **Enter**.
12. Choose **Printer Configuration** from this menu and press **Enter**.
13. You must configure the printer as printer zero (0) so choose this option from the menu and press **Enter**.
14. Type a name for the printer and press **Enter**.
15. You will see a list of Printer Types (as in figure 2). The Elite XL must be defined as **Other Remote/Unknown**. Select this option from the list.

Finally you assign your queue to your printer.

16. When you have defined your Elite XL printer, press **Esc** to return to the **Print Server Configuration** menu.
17. Choose **Queues Serviced by Printer** from this menu and press **Enter**.

18. Assign the queue you just created to the printer (see your NetWare documentation for more details).
19. When you have finished, press **Esc** to return to the **Print Server Configuration menu**.

You may want to implement this optional item.

- 22a. Choose **Notify List for Printer** and press **Enter**.
- 22b. Choose the Elite XL printer, and then select users that you wish to be notified when the printer has a problem (see your Netware documentation for more details).
- 22c. When you have completed your **Notify List**, press **Esc** until you return to the **Print Server Information menu**.

When you have made all your changes, you exit PCONSOLE.

23. Press **Esc** three times to return to the **PCONSOLE** main menu.
24. Press **Esc** to save changes and exit **PCONSOLE**.

This ends the section of this manual devoted to Netware 3.12. Now continue with the section “NEST-specific Setup” on page 11.

NetWare 4.1 instructions

Setting up PCONSOLE

1. Log into the network as **SUPERVISOR** (or equivalent).
2. Start the **PCONSOLE** program (it is located in SYS:PUBLIC).
3. Change to the correct context, and make a note of it. (You will need this when you use *GCC's WebAdmin utility*, discussed in a later section.)
4. Choose **Quick Setup** and press **Enter** (*see figure 3*).
5. Enter the **Print Server Name**. Press **Enter**, then press **Insert** and type the name. Make a note of this name; you will need it when use use *GCC's WebAdmin Utility*, discussed in a later section.
6. Change the **New Printer** and the **New Print Queue** entries in the same way.
7. Choose the volume where you will store your print queues.
8. Change the **Banner Type** to **PostScript** or **Text** as appropriate.
9. Choose the **Printer Type**. For the Elite XL this must be **Other/Unknown**.
10. Press **Esc** several times to return to the **PCONSOLE** main menu.
11. Press **Esc** to save changes and exit **PCONSOLE**.

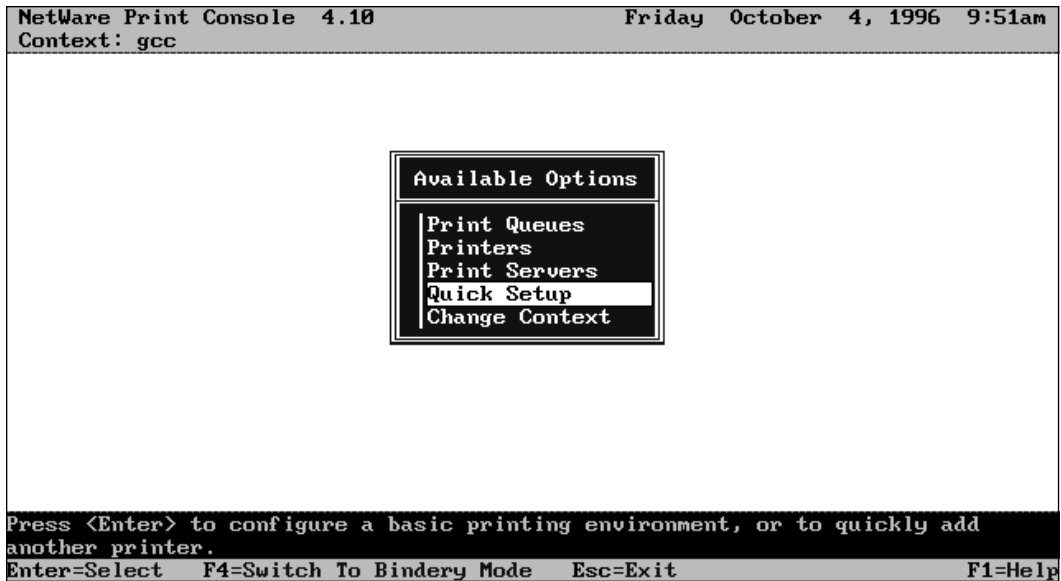


Figure 3. Choosing Quick Setup from PCONSOLE's opening screen.

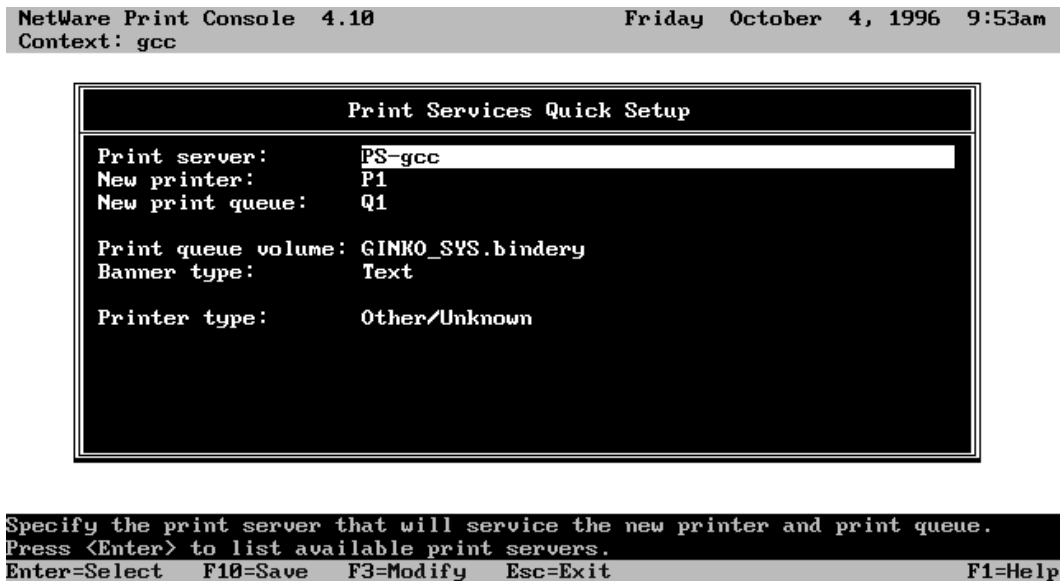


Figure 4. PCONSOLE's Quick Setup screen.

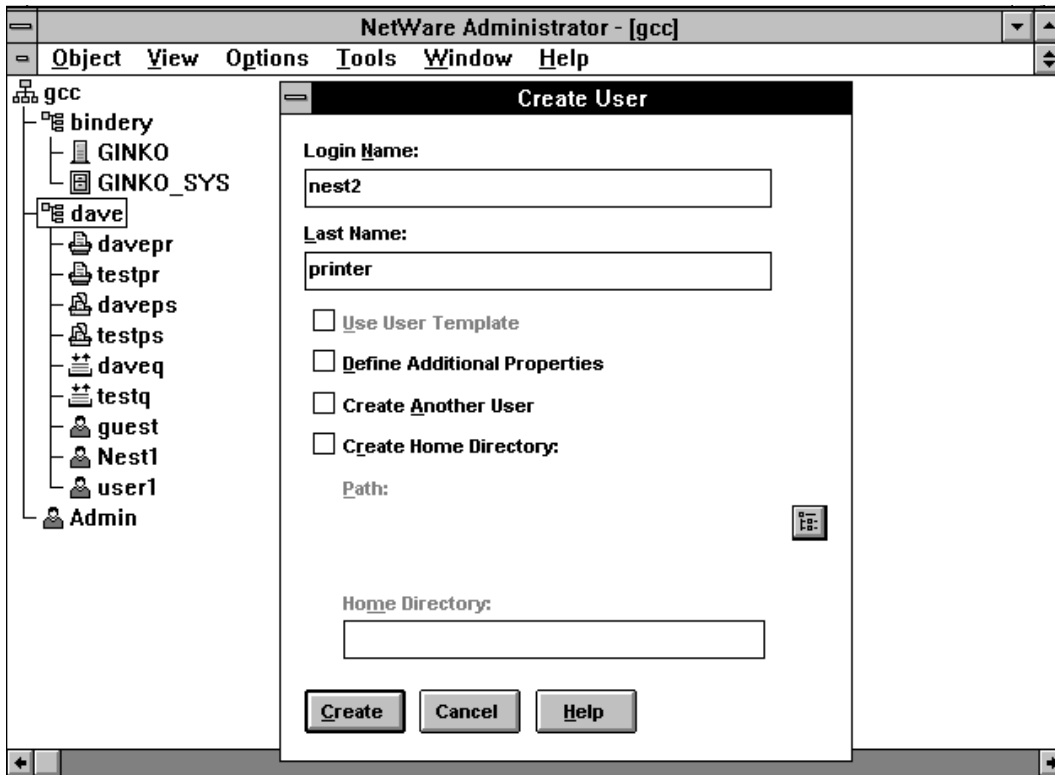


Figure 5. Creating a user in NWADMIN

Creating a User

NPRINT must log in to the network, so you are required to create a user for this purpose. You can do this either by using the **NWADMIN** utility (Windows) or the **NETADMIN** utility (DOS).

Creating a User with NWADMIN

1. Log into the network as **SUPERVISOR** (or equivalent).
2. Start the **NWADMIN** program (it is located in SYS:PUBLIC).
3. Change the context, if necessary, to the same as the printer. Choose **Change Context** and press **Insert** to browse the list of available contexts. Choose the correct context and press **F10**.
4. Highlight your required context.
5. Press **Insert** and choose a user object from the list, then press Enter.
6. Type the **login name** and press **Tab**.

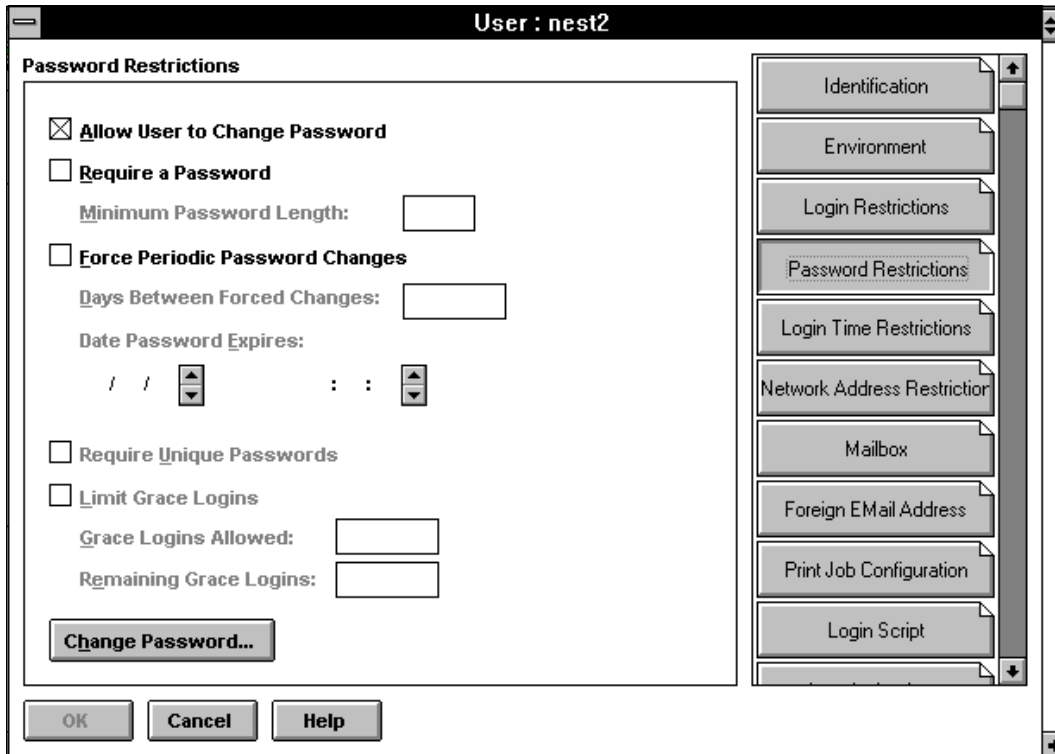


Figure 6. The Password screen in NWADMIN.

7. Type the **last name** and press **Enter**.
8. Click on the **Create** button.
9. Double-click on the **user name** to display the **User dialog** box.

Now you set a password.

10. Click on the **Password Restriction** button.
11. Click on the **Change Password** button.
12. Type the new **password** and press **Enter**, then type the **password** again to verify it.
13. Make a note of the user name and password; you will need them for the *GCC WebAdmin* setup.
14. Press the **OK** button to exit this dialog box. Your user is created.

```

NetAdmin 4.55                               Friday October 4, 1996 10:15am
Context: dave.gcc
Login Name: Admin.gcc

Object, Class
-----
Create object User
-----
Login Name:                               Nest1
Last name:                                Printer
Mailbox location:
Create a home directory?                   No
Copy the User Template object?            Yes

--- Home Directory Information ---
Volume object name:
Path on volume:

Press <Enter> to edit the last name of the user. This is a required field.
Enter=Accept  F10=Save  Esc=Exit                               F1=Help

```

Figure 7. Creating a user in NETADMIN

Creating a User with NETADMIN

1. Log into the network as **SUPERVISOR** (or equivalent).
2. Start the **NETADMIN** program (it is located in SYS:PUBLIC).
3. Change the context, if necessary, to the same as the printer. Choose **Change Context** and press **Insert** to browse the list of available contexts. Choose the correct context and press **F10**.
4. Choose **Manage Objects** from the **NETADMIN** options list and press **Enter**.
5. Press **Insert** to add an object.
6. Choose **User** and press **Enter**.
7. Type the **login name** and press the **down** arrow key.
8. Type the **last name** and press **Esc**.

Now you change properties or set a password, if necessary.

9. If you do not want to change properties or passwords, go to step 14.
10. Press **Enter** to see the **Actions List**.
11. View or edit properties of the **User object**.
12. Press **Enter**. If you need to change or create a password, choose **Change Password** and press **Enter**, otherwise go to step 14.
13. Type the **password** and press **Enter**. Type the **password** again to verify it and press **Enter**.
14. Press **Esc** four times to exit **NETADMIN** and save your changes.

NEST-Specific Setup using WebAdmin

The following instructions for setting up NEST with an Elite XL printer apply to both NetWare 3.12 and 4.X.

Elite XL specific NEST parameters are accessed and changed using GCC's WebAdmin remote printer management tool. WebAdmin allows you to view and/or change many parameters of the Elite XL printer using a World Wide Web browser over an Ethernet network. Please see Section 2 of this manual for information on installation and setup of the WebAdmin utility.

All Elite XL printers on the network that you are intending to use with NEST **MUST** be accessible using WebAdmin. The following instructions assume you have followed the setup in Section 2 and are able to access the printer using WebAdmin.

First, ensure that NEST is enabled on the printer.

1. Launch your World Wide Web browser and attached to your printer as explained in Section 2.
2. Select (click) NETWORKS from the WebAdmin main menu. The Networks main menu is displayed.
3. If NEST is disabled, use the pull-down menu to enable it and restart your printer.
4. Once the printer is configured with NEST enabled, select the NEST link. The NEST Subjects menu appears.

The NEST Subjects menu displays the available subject items (General, Network, NPrinter and PServer) that may be changed. If you select one of the links on this page, a menu of parameters will be displayed for the subject you have selected.

The following information pertains only to those items that are required to change for NEST printing. If you are installing under Netware 3.12, continue with the instructions below. If you are installing under Netware 4.x, skip forward to the bottom of page 12.

Netware 3.12 setup with WebAdmin

If you are installing under Netware 3.12, you will need to configure the following items.

1. From the WebAdmin Networks menu, select the **Network link**. From the **Network configuration** menu:
 - a) Change the **FRAMETYPE** item to *a frametype that is supported by your file server*.
 - b) Change the **MODE** item to *Bindery*.
 - c) Change the **PREFERRED SERVER** item to *the name of your file server*.
2. From the WebAdmin Networks menu, select the **PSEVER** link. From the **PSEVER configuration** menu:
 - a) Change the **PRINT SERVER NAME** item to *the print server name that you created earlier in this chapter when you used PCONSOLE to configure your file server*.
 - b) Change the **PASSWORD** item to *the password you set (if you set one) for the print server when using PCONSOLE*.
3. Click the box that is labeled **Restart printer automatically** and press the **submit new settings** button. The Elite XL will save your changes and reboot.

Netware 4.x setup with WebAdmin

If you are installing under Netware 4.x, you will need to configure the following items.

1. From the WebAdmin Networks menu, select the **Network link**. From the **Network configuration** menu:
 - a) Change the **FRAMETYPE** item to *a frametype that is supported by your file server*.
 - b) Change the **MODE** item to *Directory Services*.
 - c) Change the **PREFERRED SERVER** item to *the name of your file server*.
 - d) Change the **PREFERRED DS TREE** item to *the name of your directory services tree*.

- c) Change the **DS Name Context** item to *the context that contains the print server object, printer object and user that you created earlier in this section.*
2. From the WebAdmin **Networks** menu, select the **NPRINTER** link. From the **NPRINTER configuration** menu:
 - a) Change the **USER NAME** item to *the common name of the user object that you created earlier in this section.*
 - b) Change the **USER PASSWORD** item to *the password you set (if you set one) for the user.*
2. From the WebAdmin Networks menu, select the **PSERVER** link. From the **PSERVER configuration** menu:
 - a) Change the **PRINT SERVER NAME** item to *the print server name that you created earlier in this chapter when you used PCONSOLE to configure your file server.*
 - b) Change the **PASSWORD** item to *the password you set (if you set one) for the print server when using PCONSOLE.*
3. Click the box that is labeled **Restart printer automatically** and press the **submit new settings** button. The Elite XL will save your changes and reboot.

Windows computers that use your NEST printer

Control-d and PostScript printing

If you intend to print from computers running Windows, you may get errors when running PostScript jobs. This is because Windows computers add a Control-d (^d) character to the end of the job, and in some cases to the beginning as well. The following sections tell you how to configure computers running Windows 3.1 or Windows 95 to prevent them from sending the extra characters.

To make these changes you must first install the printer driver in each computer.

Preventing a Windows 3.1 computer from sending Control-d

1. From **Program Manager**, choose **Run** from the **File Menu**.
2. Type **Sysedit** in the dialog box and press **Enter**.
3. Click on the **WIN.INI** title bar in the **Sysedit** window.
4. Choose **Find** from the **Edit** menu.
5. Scroll to the section of WIN.INI headed “[GCC Elite XL,Version 1.1,LPT3]” (This line may be partially different in your computer).
6. Add the following line anywhere in this section:

CtrlD=0

7. Choose **Exit** from the **File** Menu, and save changes when prompted.

Preventing a Windows 95 computer from sending Control-d

1. From the **Start** menu, choose **Settings** and then **Printers**.
2. Right-click on the Elite XL icon, and choose **Properties** in the pop-up menu.
3. Choose the **PostScript** tab in this dialog box.
4. Click on the **Advanced** button.
5. There are two checkboxes relating to Ctrl-d at the bottom of this dialog box. Clear both of them.
6. Press **OK** twice to return to the Windows 95 desktop.

Printing a Config page

NEST Config Page info

You can find information about the current status of your Elite XL by printing a configuration page (unless the printer is in PCL only mode). If you are having trouble with the Elite XL NEST setup, printing a config page may offer helpful information.

1. Make sure the printer's display shows "Ready."
2. Press the **On Line** button to take the printer off line.
3. Press the **Menu** button eight times, until you see the words "Print Info Pages: Configuration" in the display.
4. Press the **Enter** button. The printer will warm up, then print a configuration page.
5. When the page has printed, press the **On Line** button to take the printer on line.

NEST information is at the bottom of the left column.

Typical problems with solutions

You can get information about your printer either by running the configuration tool program, checking settings in the printer's front panel, or by printing a configuration page.

1. The print server didn't log into the file server.

Make sure that the configuration page shows the same print server name and file server name as displayed by WebAdmin. If you are using NetWare 4, check to make sure that the name context and DS tree are correct (with WebAdmin), and check that you have entered a typeful name context instead of a typeless name context.

2. The print server is running, but NPRINTERR didn't connect to it.

In NetWare 4, you must create a user on the file server for NPRINTERR to log in as; check NETADMIN or NWADMIN to make sure that you have created a user. Use WebAdmin to make sure that the printer has the correct name and password. Also make sure that user is in the same context as the print server and printer objects by looking in NETADMIN or NWADMIN.

3. I can send jobs to a queue correctly, but the printer won't read the jobs from the queue.

Try printing a configuration page. This will tell you if the print server and NPRINTERR have connected correctly. If they have not, the print server will not be able to print jobs from the queue. If the print server has connected correctly to NPRINTERR, check the file server name to make sure that you have connected to the correct file server.

If you can find no errors but the printer will still not print from the queue, use PCONSOLE to check the queue; you may have disabled the queue.

4. The printer prints a banner page, but the rest of the job does not print.

If your print job is sent from a Windows computer, this machine may be sending a Control-d (^d) character at the beginning of the file which causes a PostScript error immediately after the banner page is printed, halting the job. See the section "Control-d and PostScript printing" in the section "Configuring Windows computers that will print to your NEST printer."

5. I changed the frametype and now my printer won't connect to the file server.

When you change the frametype, you are also changing the network number of the printer. Since the internal print server is now on a different network, NetWare thinks that it is a different print server, even though it has the same name. Since NetWare doesn't allow more than one print server at a time to use the same name, you must wait a few minutes until the network realizes that the old print server is no longer running.

(You should only have this problem if the print server was already connected to a file server and you did not change the print server name when you changed the frametype.)

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Introduction

WebAdmin is an innovative solution to remote printer management. Using a World Wide Web browser, you can view the status and configuration settings of any Elite XL printer with WebAdmin capability on your Ethernet network.

Furthermore, you can actually change the settings from the browser. Using WebAdmin is like standing next to the printer and physically pressing the front panel function keys. For example, you may need to change the configuration prior to sending a print job.

To provide this functionality, the Elite XL incorporates a built-in HTTP (HyperText Transfer Protocol) server that provides a Web page interface for configuration and management. The Elite XL acts as a Web server, serving information about its configuration as Web pages to your computer. Using a Web browser, you can view these pages and send back requests to change certain settings on the printer.

WebAdmin is best suited for system administrators who perform a variety of configuration tasks, and for those who are already using their printers on an Ethernet network. WebAdmin does not send print jobs to the printer.

Getting Started

1. Install a Web browser on your computer.

You must use a HTML 3.0-compliant browser with forms capability. Install a World Wide Web browser (such as Mosaic or Netscape Navigator) on your PC or Macintosh, if you don't already have one.

Launch your browser and open the Web page **install.htm** (located in the **WebAdmin Folder** on the *Elite XL Software and Documentation CD-ROM* provided with your printer. This page offers helpful information on how to setup and use WebAdmin.

2. Configure the printer for TCP/IP.

Refer to the *TCP/IP* section of this Networking guide. TCP/IP runs over an Ethernet network; therefore, you must have an Ethernet connection from your computer to your Elite XL to use WebAdmin.

3. Configure your computer for TCP/IP.

Make sure the TCP/IP network protocol on your Macintosh or PC is set up to enable communication between your printer and computer.

UNIX machines, Macintoshes (System 7.5 or later) and IBM PC-compatibles (Windows 95 or Windows NT) come with the TCP/IP protocol built in.

If your computer is not configured for TCP/IP, refer to “Setting Up TCP/IP Protocol” on page 2-14 of this Chapter.

Note: You may want to verify the setup of TCP/IP on your printers and computers. To verify that TCP/IP is set up properly, use some other method of connecting your computers and printers (such as telnet or ping).

Connecting to WebAdmin

There are two ways to connect to the WebAdmin server:

- 1 Type the IP address of the printer in the browser’s URL (Uniform Resource Locator) entry area.
Example: Type **http://1.0.4.23/**, where **1.0.4.23** is the printer’s IP address.
- 2 If your network has a Domain Name Server, you can type the printer’s assigned name in the browser’s URL entry area.
Example: Type **http://myElite/**, where **myElite** is the name of the printer.

In most cases, your system administrator will assign a hostname to your Elite XL. This name may differ from the AppleTalk® name of the printer that appears on the printer’s front panel display. For more information on Domain Name Servers and local host files, contact your system administrator.

For convenience, you may want to set up an Elite XL home page on your computer with links to all your Elite XL printers that have WebAdmin capability.

Navigating WebAdmin

Linking to Pages

When you connect to your Elite XL, the printer’s home page automatically appears. This page provides a list of **page bars** that link to the WebAdmin pages used to view and change the printer’s configuration.

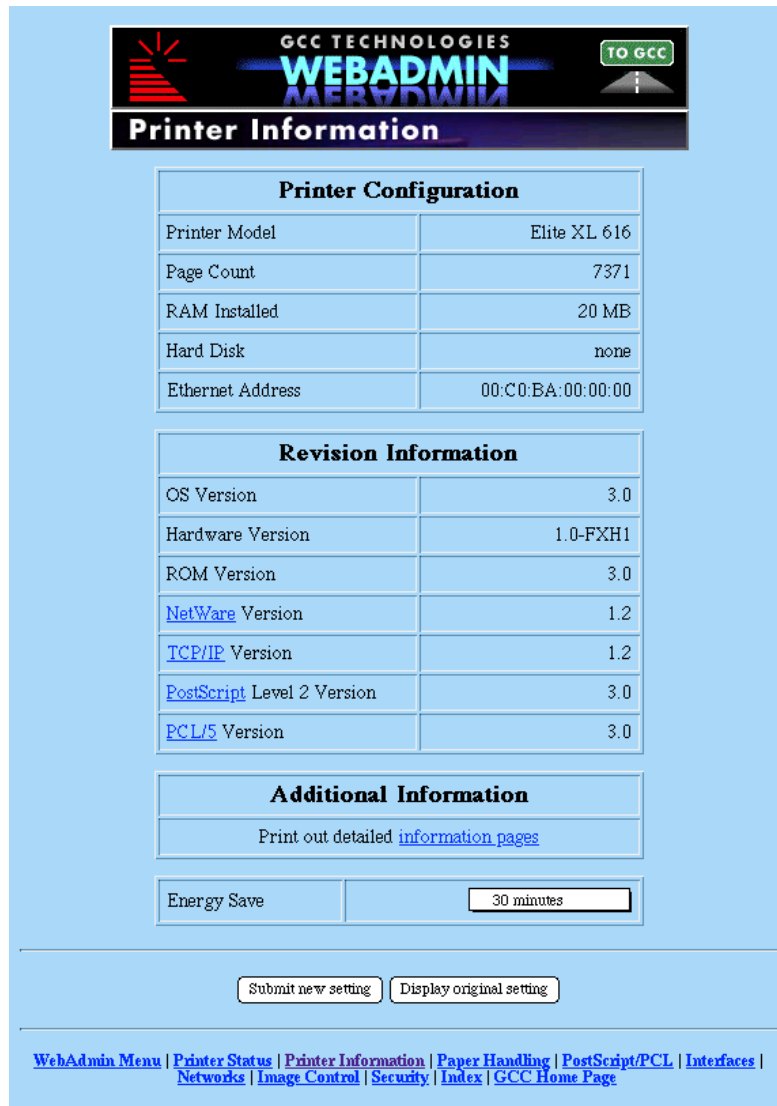
The screenshot shows the WebAdmin interface with several annotations:

- title bar:** Points to the top header area containing the GCC Technologies logo, the text "GCC TECHNOLOGIES WEBADMIN", and a "TO GCC" button.
- page bars:** Points to a vertical list of menu items: **Printer Status**, **Printer Information**, **Paper Handling**, **PostScript/PCL**, **Interfaces**, **Networks**, **Image Control**, **Security**, and **Index**.
- text links:** Points to a horizontal list of text links at the bottom: [WebAdmin \(Text Menu\)](#) | [Printer Status](#) | [Printer Information](#) | [Paper Handling](#) | [PostScript/PCL](#) | [Interfaces](#) | [Networks](#) | [Image Control](#) | [Security](#) | [Index](#) | [GCC Home Page](#).

Below the menu items, the text reads: **Welcome to WebAdmin**, *Remote Printer Management Solution*, and **Click on a topic to view or change printer settings.**

If you are using a browser that does not display inline images, or you do not want to load the images on the home page, click the **WebAdmin (Text Menu)** link at the bottom of the home page.

There are two ways to navigate to WebAdmin pages. To retrieve detailed printer information, move the cursor to the **Printer Information** page bar and click the mouse button. Alternatively, you can click the **Printer Information** text link at the bottom of the home page. You are linked to the Printer Information page (shown on the next page).



The image shows a screenshot of the GCC Technologies WebAdmin interface for printer configuration. The page has a light blue background and a dark header with the GCC Technologies logo and 'WEBADMIN' text. Below the header is a 'Printer Information' section with three tables: 'Printer Configuration', 'Revision Information', and 'Additional Information'. The 'Printer Configuration' table lists details for an Elite XL 616 printer, including page count, RAM, hard disk, and Ethernet address. The 'Revision Information' table lists various software and hardware versions. The 'Additional Information' section includes a link to print detailed information pages and an 'Energy Save' setting set to 30 minutes. At the bottom, there are buttons for 'Submit new setting' and 'Display original setting', and a navigation menu with links to various printer settings and the GCC Home Page.

Printer Configuration

Printer Model	Elite XL 616
Page Count	7371
RAM Installed	20 MB
Hard Disk	none
Ethernet Address	00:C0:BA:00:00:00

Revision Information

OS Version	3.0
Hardware Version	1.0-FXH1
ROM Version	3.0
NetWare Version	1.2
TCP/IP Version	1.2
PostScript Level 2 Version	3.0
PCL/5 Version	3.0

Additional Information

Print out detailed [information pages](#)

Energy Save

[WebAdmin Menu](#) | [Printer Status](#) | [Printer Information](#) | [Paper Handling](#) | [PostScript/PCL](#) | [Interfaces](#) | [Networks](#) | [Image Control](#) | [Security](#) | [Index](#) | [GCC Home Page](#)

Note: Using the browser's **Back**, **Forward** and **Reload** buttons will help avoid duplicate references to the same Web page in your browser.



If your computer has Internet access, clicking the **TO GCC** icon (top right corner of the WebAdmin title bar) links you to the GCC Technologies Web home page (<http://www.gcctech.com/>). From the GCC home page, you can view our online manuals, retrieve software upgrades and service information, and find out what's new at GCC. Clicking anywhere else on the WebAdmin **title bar** displays the WebAdmin home page for your printer.

Refreshing Information

The WebAdmin page being viewed at any given time reflects the status of the printer at the moment the page was displayed, or *loaded*. To insure that the information on that page is current, you need to periodically click your Web browser's **Reload** button. That page will then be reloaded to reflect any changes.

For example, the Printer Information page (shown on the previous page) displays the printer's page count. If another user prints a page to that printer while you are viewing this page, the information displayed in your browser will not be current. You need to refresh the Printer Information page to see the new page count.

Printer Status Page

The most illustrative example of a WebAdmin page containing information that needs to be refreshed is the Printer Status page. The Printer Status page displays the printer's status, the status of each paper tray, and the front panel display language. To access this page, click the **Printer Status** text link at the bottom of any WebAdmin page.

Printer Status

Printer Status	Ready
Paper Tray 1	Letter; Paper present
Paper Tray 2	Not available
Paper Tray 3	Not available

Front Panel Display Language:

Submit new setting Display original setting

Refresh this page every seconds

Update Status

[WebAdmin Menu](#) | [Printer Status](#) | [Printer Information](#) | [Paper Handling](#) | [PostScript/PCL](#) | [Interfaces](#) | [Networks](#) | [Image Control](#) | [Security](#) | [Index](#) | [GCC Home Page](#)

The information on this page can change frequently as multiple users send print jobs to the printer. For example, if a user sends a print job that uses up all the paper while you have this page loaded, the page will not reflect this current status. You will be unaware that the paper tray is empty. The page needs to be refreshed to display updated information.

Some Web browsers support *automatic* refresh. If your browser supports automatic refresh, the Printer Status page will be automatically updated according to the interval you enter in the **Refresh this page every** **seconds** box. (The default is every 30 seconds.) To change the interval, type the new value in the box and click the **Update Status** button.

Note: The Printer Status page is the only WebAdmin page with the automatic refresh option.

If your browser does not support automatic refresh, you will not see the Printer Status page update itself. Instead, use the **Update Status** button or your browser's **Reload** button as frequently as you need to.

Changing the Printer's Configuration

In addition to displaying the status of the printer, WebAdmin allows you to make changes to the printer's configuration. Configurable WebAdmin pages are known as **forms**.

A WebAdmin form provides pop-up menus, entry boxes and buttons to make the same changes you would make by pressing the printer's front panel function keys. This interface is similar to the graphical user interface of most programs.

A description of each configuration setting can be found in Chapter 2, "The Elite XL front panel," of the *Elite XL User's Manual*.

Note: Web pages can be retrieved from the WebAdmin server while printing is in progress; however, configuration settings cannot be modified until the printer is idle.

To make changes:

1. **Access the page you want to make a change to via the WebAdmin home page or the text links at the bottom of the page you are currently on.**
2. **Make the necessary changes using the page's pop-up menus, entry boxes and buttons.**
You can make more than one change on a page.
3. **Click the Submit new setting button to submit the change to the printer. Or, if you need to view the page with its original settings, click the Display original settings button (clicking this button redisplay settings originally received from the printer; it does not reload current settings from the printer.)**

When you submit your request, the printer is automatically taken offline, the changes are initiated and the printer is automatically brought online. (This process assures that your changes do not conflict with changes being entered at the front panel by another user.)

A reply page will appear listing the changes.

IMPORTANT: Making a change on a WebAdmin page without clicking the Submit new setting button has no effect on the printer.

4. **Press the browser's Back button to go back to the page you made the change to and press the Reload button.**

Note: Some Elite XL settings require that you restart the printer so changes can take effect. The corresponding WebAdmin page for these settings include a Restart printer automatically check box option to restart the printer automatically when you click the Submit new settings button. If you choose to restart automatically, give your printer enough time to restart before you try to reconnect to WebAdmin.

Printing Informational Pages

With WebAdmin, you can print the Elite XL printer informational pages that are accessible through the printer's front panel.

To print an informational page:

1. **From the WebAdmin home page, click the Printer Information page bar or click the Printer Information text link at the bottom of any WebAdmin page.**

The Printer Information page appears.

2. **In the Additional Information section, click the information pages link.**

The Information Pages page appears.

Note: If the Elite XL's PS/PCL Sensing option is set to PCL only, the Font List (for PCL) will be the only informational page available to print.

3. **Click the radio button to the left of the page you want to print.**
4. **Click the Print Selected Page button.**

WebAdmin Security

WebAdmin comes with two security options to prohibit unauthorized users from reconfiguring the printer:

- 1 WebAdmin password

This password prohibits unauthorized users from making changes to the WebAdmin pages.

- 2 TCP/IP address restrictions

As an alternative to, or in addition to, the WebAdmin password, you may want to restrict which TCP/IP addresses can connect to the Elite XL. These restrictions apply to all methods of connecting via TCP/IP, including WebAdmin, telnet and ping.

You define the IP addresses that are allowed to connect to your printer. Any other addresses will not be able to view the printer's configuration using WebAdmin or print using TCP/IP mechanisms. For more information about IP address restrictions, refer to Chapter 4 (*TCP/IP*) on "Restricting Connection To Certain IP Addresses."

The **default** settings for these security features allow anyone to use WebAdmin. You can customize the settings for the level of security you require. Security is particularly important if your printer is connected to the Internet.

WebAdmin Password

IMPORTANT: If you are concerned about unauthorized users, we recommend setting a password immediately after setting up your Elite XL.

Although submitting WebAdmin changes is prohibited without the password, users can still view the printer's configuration.

To enter a WebAdmin password:

1. **Click the Security text link at the bottom of any WebAdmin page or the Security page bar on the WebAdmin home page.**



The screenshot shows the WebAdmin interface with a 'Security' page bar at the top. Below it is a form titled 'Change or set printer password'. The form contains the following fields and options:

Change or set printer password	
Password status	Disabled
New password	<input type="text"/>
New password (retype)	<input type="text"/>
Additional security	restrict TCP/IP connections

Below the form are two buttons: 'Submit new setting' and 'Display original setting'.

At the bottom of the page is a navigation menu with the following links: [WebAdmin Menu](#) | [Printer Status](#) | [Printer Information](#) | [Paper Handling](#) | [PostScript/PCL](#) | [Interfaces](#) | [Networks](#) | [Image Control](#) | [Security](#) | [Index](#) | [GCC Home Page](#)

2. **Enter a password in the New password entry box.**
The password can include up to 12 characters.

3. Enter the same password in the **New password (retype)** entry box.

4. Click the **Submit new setting** button.

All subsequently loaded WebAdmin pages will now include a **Password** entry box. Each time you make a change to a page, you need to enter the password in the **Password** entry box prior to clicking the **Submit new setting** button.

To disable the password, leave the **New password** and **New password (retype)** entry boxes blank, enter the current password in the **Password** entry box, and click the **Submit new setting** button. A password cannot be reset from the front panel.

IMPORTANT: A WebAdmin password does not prohibit users from making changes using the front panel function keys.

If you forget your WebAdmin password, call the GCC Technical Support Hotline at (617) 276-8620.

TCP/IP Address Restriction

IMPORTANT: We do not recommend setting IP restrictions unless you are familiar with TCP/IP addressing schemes and hexadecimal masks.

To enter TCP/IP restrictions:

1. Click the **Security** text link at the bottom of any WebAdmin page or the **Security page bar** on the WebAdmin home page.
The Security page appears.
2. Click on the **restrict TCP/IP connections** link.
The TCP/IP Settings page appears.
3. In the **Restrict TCP/IP communications** pop-up menu, select **Enabled**.

Printer Security	
Restrict TCP/IP communications	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Acceptable mask / IP address pairs	

4. Enter mask/IP address pairs in the appropriate boxes.

The restrictions are defined as pairs of masks and addresses. For each MASK/ADDRESS pair with a non-zero MASK, an IP address X.X.X.X can connect to the printer if:

MASK & ADDRESS = MASK & X.X.X.X
(where & is a bitwise AND operator).

Note: If all the MASK values are set to zero, IP access will not be restricted, even if **Restrict TCP/IP communications** is set to Enabled.

Example: Class A Network

If you want to allow any subnet address on the network 100.5, along with the address 2.1.4.149, to connect to the printer, set up two mask address pairs as follows:

Printer Security		
Restrict TCP/IP communications	Enabled	
Acceptable mask / IP address pairs		
Pair 1	FF.FF.00.00	100.5.0.0
Pair 2	FF.FF.FF.FF	2.1.4.149
Pair 3	00.00.00.00	0.0.0.0
Pair 4	00.00.00.00	0.0.0.0

Note: You must restart the printer for any new TCP/IP settings to take effect. Make sure you use the new IP address, if applicable, when you reconnect to the printer using WebAdmin.

Restart printer automatically

IMPORTANT: When restricting the mask/address pairs, be careful not to disable your own ability to connect to the printer. However, the IP restriction menu *is* accessible from the front panel of the Elite XL and can be reset.

5. Click the Restart printer automatically check box so that the printer will automatically restart after step 6.
6. Click the Submit new settings button.

WebAdmin Index

The WebAdmin Index provides a list of all Elite XL configuration items, each linked to the related WebAdmin page. Note that some items specify the range of valid settings. To access the Index page, click the Index page bar on the WebAdmin home page or click the Index menu item at the bottom of any WebAdmin page.

The configuration items are listed in alphabetical order. To quickly jump to an item, click one of the links at the top of the page (A - F | G - L | M - R | S - Z).

WebAdmin Messages

The following are WebAdmin messages that may appear after clicking the **Submit new setting** button on a WebAdmin form.

Unable to set [parameter] to [value].

The configuration can not be changed. At least one of the changes you made on a page will not be made because an invalid value was selected or entered. Consult the *Elite XL User's Manual*.

The printer could not be taken offline. Try again later.

The printer is busy, most likely processing a job. Check the Printer Status page to verify that the printer's status is Ready. (Changes were not made.)

The printer is already offline. Try again when it is back online.

A user has taken the printer offline. You can switch the printer online from the printer's front panel. (Changes were not made.)

Failed to bring printer back online.

Changes may have been made, but the printer could not go back online. You need to switch the printer online from the printer's front panel.

No configuration changes requested.

Configuration settings were not changed from originals.

No valid selection made in form.

All selections made were invalid values. (Changes were not made.) Consult the *Elite XL User's Manual*.

Password changed.

The new password submitted is in effect. If you entered a blank password, the password requirement is disabled.

You must type the password the same way twice.

When changing a password, you are required to type the new password twice in the same way on the Security page. Try entering the password again. Make sure you do not add extra space or carriage return characters at the end of the password.

You must supply the current password to change it.

To change an existing password, you need to supply the current password in addition to the new one. Make sure you do not add extra space or carriage return characters at the end of the password.

You must give the password to change printer configuration.

A valid password was not entered when submitting a change. If there was no entry box for the password, reload the page.

XXX address/mask badly formed or has invalid value.

The IP address or mask for this specific field was not entered correctly. Refer to the discussion of IP addressing in Chapter 4 of this guide.

Values of printer's subnet mask or IP address are invalid or inconsistent.

Subnet mask or syslog host addresses are invalid. Refer to the discussion of IP addressing in the Chapter 4 of this guide.

Broadcast address used by printer must be either all ones, or the printer's network number (and subnet number, if any), with a host number of all ones.

There was a problem with the broadcast address. Try using FF.FF.FF.FF or contact your system administrator. Refer to the discussion of IP addressing in Chapter 4 of this guide.

IP address of default router (default gateway) must have same network number as printer (and subnet number, if any), and a host number that is not zero, all ones, or the same as the printer's.

There was a problem with the default router's address. Check the network number and subnet mask to make sure they are the same IP class. Make sure the host's address is not all zeros, ones or the same address as the printer. Refer to the discussion of IP addressing in Chapter 4 of this guide.

Setting Up TCP/IP Protocol

If your Macintosh is running System 7.0 or earlier, or your PC is running Windows 3.1 or earlier, you may need to install TCP/IP networking software if networking software is not already present. Windows 3.1 specifically needs a Winsock-compliant TCP/IP protocol stack, such as the shareware Trumpet Winsock.

MacTCP is included with System 7.5 on the Macintosh. Some newer Macintoshes use the OpenTransport TCP/IP stack. Windows 95 and Windows NT also have TCP/IP built in.

The TCP/IP software must be configured for LAN (Local Area Network), not for SLIP/PPP (Serial Line Internet Protocol/Point to Point Protocol), so that IP packets will go out over your local Ethernet network to your printer, not out to an Internet Service Provider via your modem. Note that if you use SLIP/PPP to connect to the Internet, you will not be able to connect to WebAdmin on your Elite XL until the TCP/IP software is configured to LAN mode.

1. Obtain IP addresses for your Macintosh or PC and Elite XL.

If your network already uses TCP/IP, ask your network administrator to assign a unique IP address for your Elite XL and one for your Macintosh or PC (if one is not already assigned). Follow these directions if your Macintosh is **not** already configured as a TCP/IP node on Ethernet (not LocalTalk® or SLIP/PPP).

If TCP/IP is not in use by anyone else on your network you can assign an IP address to your Macintosh or PC and one to your Elite XL. For example, you can assign 1.0.0.1 to your Macintosh and 1.0.0.2 to your Elite XL. However, if you are planning to connect your network to the Internet in the future, consult your Internet Service Provider for advice on choosing an IP address.

2. Configure TCP/IP on your Macintosh or PC.

Open the application or control panel used for configuring TCP/IP (for example, MacTCP or TCPMAN.exe).

Note: You should not have to change your address or any other settings in MacTCP if your Macintosh is already set up as a TCP/IP node on the network.

- Select the same IP class of address for your Macintosh or PC as your printer.
- Input the computer's IP address.
- Input any other parameters suggested by your Network Administrator, such as a Domain Name Server.
- Exit the application and restart the computer. Consult your computer's TCP/IP network software documentation for additional information.

Troubleshooting Tips

If you are unable to connect to the WebAdmin home page:

- Reboot the printer after configuring it for TCP/IP.
- Reboot the computer after configuring it for TCP/IP.
- Give the printer the same address class (A, B or C) as your Macintosh, unless they are on different networks separated by a router.
- If a router exists between your printer and your Macintosh, enter the printer's IP address on the front panel. (Make sure the router handles TCP/IP packets.)
- If your browser is set up to send all Web requests through another computer (a Web proxy server), you need to tell the browser and the proxy how to handle requests for the local network.
- Via the front panel, check to make sure the printer's **OS Version** is 2.9 or later.

If your browser does not connect to your printer by name, try connecting to the printer's IP address to verify that the network is set up correctly. For example, if the printer's IP address is 1.0.0.1, try the URL **http://1.0.0.1/**. If this works, then the problem lies in the setup of the Domain Name Server. See your Network Administrator.

Windows 95/Windows NT

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Windows 95/Windows NT

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Introduction

This chapter details the use of GCC Technologies® Elite XL laser printers with Microsoft® Windows® 95 and Windows NT™ operating systems. For each operating system, specific instructions are given for installing and configuring the printer software, along with an overview of page setup and printing dialog boxes, highlighting GCC-specific options. For further information about either Windows 95 or Windows NT configuration and printing please refer to the user documentation provided with these products or to the on-line help systems.

Windows 3.1 users

If you are installing the **Windows 3.1** driver, please refer to Chapter 4 of your *Elite XL User's Manual* for installation instructions.

Using a GCC printer with Windows 95

Microsoft's Windows 95 software provides a user-friendly operating environment for IBM-PC's and compatibles. GCC printing software is designed for easy installation, configuration, and printing under Windows 95.

Windows 95 printing software overview

The printing software is contained on the *Elite XL Software and Documentation CD-ROM*. The CD-ROM contains the following:

- **GCC model-specific PPD files for use with Windows 95**

Each PPD file describes the characteristics and options of a specific Elite XL printer. The PPD file is used in conjunction with the standard Windows 95 PostScript® printer driver (included with the Windows 95 software) to provide user access to page setup and printing options available with the Elite XL printer in use and to assure optimum print quality.

- **GCC model-specific printer description files used directly by applications**

Some applications do not use the Windows 95-compliant PPD's. Because of this, a folder containing PPD's for these applications is included on the *Elite XL Software and Documentation CD-ROM*.

Installing a PPD for your GCC printer

The installation process includes the following steps:

- **Installing the PPD file for your GCC printer**
- **Installing the Windows 95 PostScript driver**
- **Configuring the communication port**
- **Printing the Windows 95 test page**

Before starting

Before starting the installation procedure, you should perform the following steps:

- **Setup and connect the printer according to Chapter 1 in the *Elite XL User's Manual*.**
- **Switch on the printer.**

And have the following items available:

- **Elite XL Software and Documentation CD-ROM**
- **The Windows 95 CD-ROM or floppy disk set**

Software installation

Software installation is accomplished using the Add Printer Wizard function of Windows 95. Add Printer Wizard presents a simple step-by-step dialog to help you to setup your printing software.

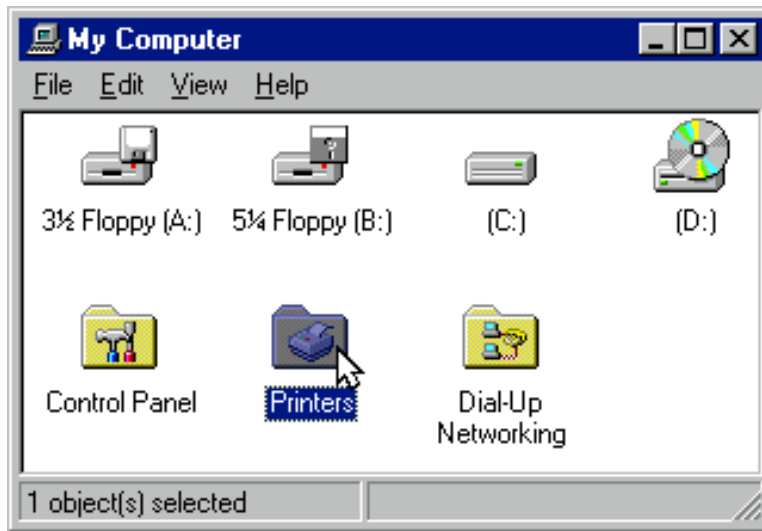
To install the printing software:

1. **Double-click the My Computer icon.** This is the Windows 95 icon that looks like a computer. You may have renamed it.



The My Computer window will appear.

2. Double-click the **Printers** folder.



The Printers folder opens.

3. Double-click the **Add Printer** icon.



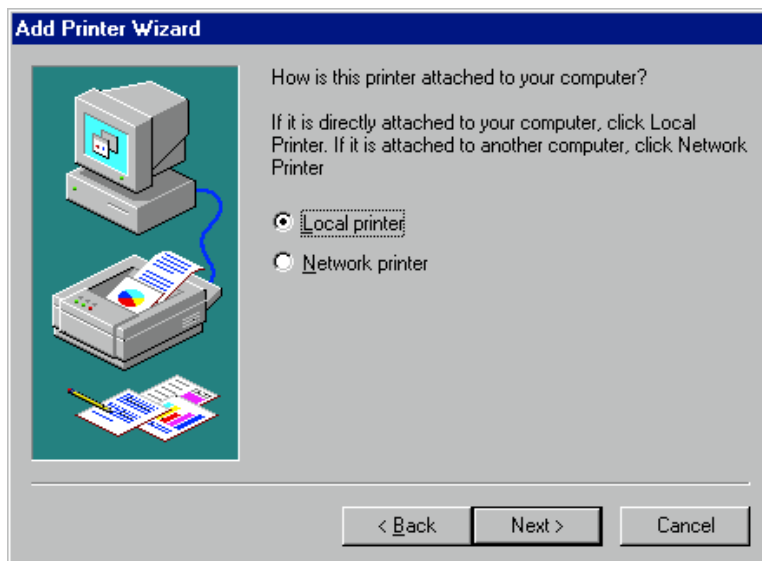
Add Printer

The Add Printer Wizard dialog box appears.



4. Click Next.

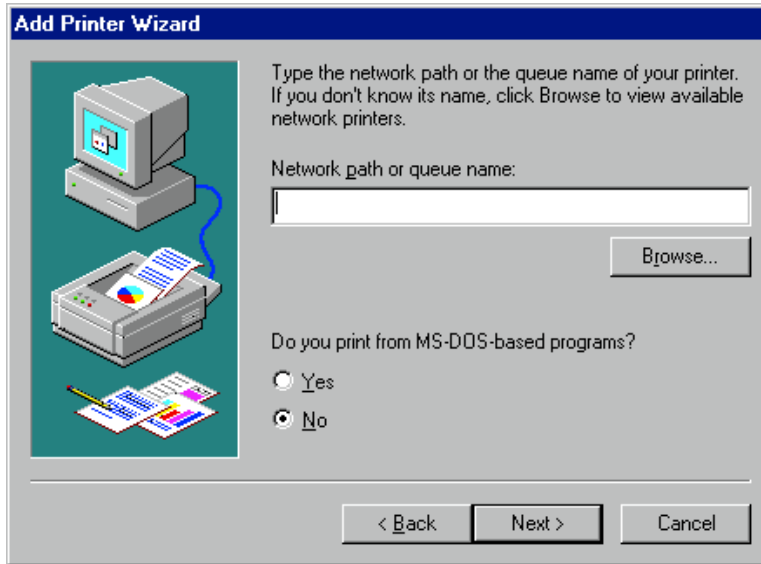
The local/network dialog box appears.



- Select either a **Local** or **Network** connection.
- If you selected **Local**, go to step 7. If you selected **Network**, go on to the next step.

5. **Click Next. (For network connection only.)**

The network path dialog appears.

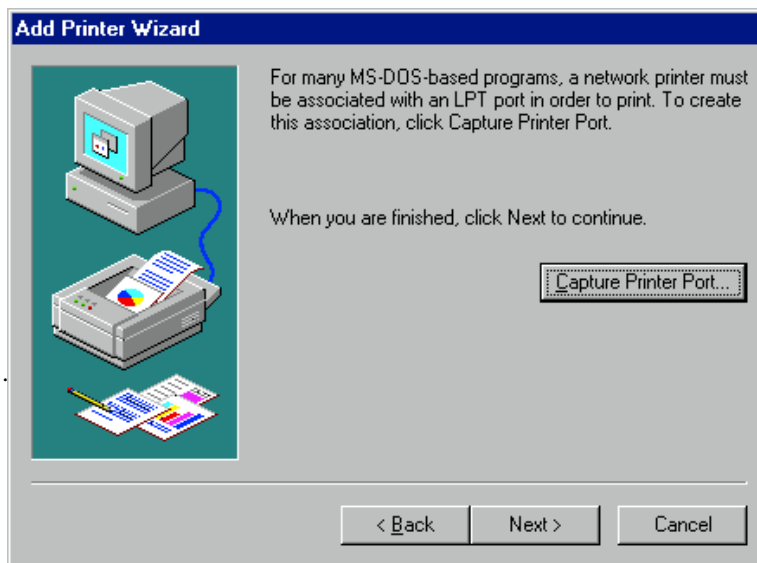


- Type in the path or queue name of the printer. You can click **Browse** to display a visual representation of your site's network and the printers location on it.
 - Click the **Yes** radio button if you print from MS-DOS based programs.
- If you select **No** for the MS-DOS printing question go to step 7. If you selected **Yes** go on to the next step.

6. Click Next. (For MS-DOS network printing only.)

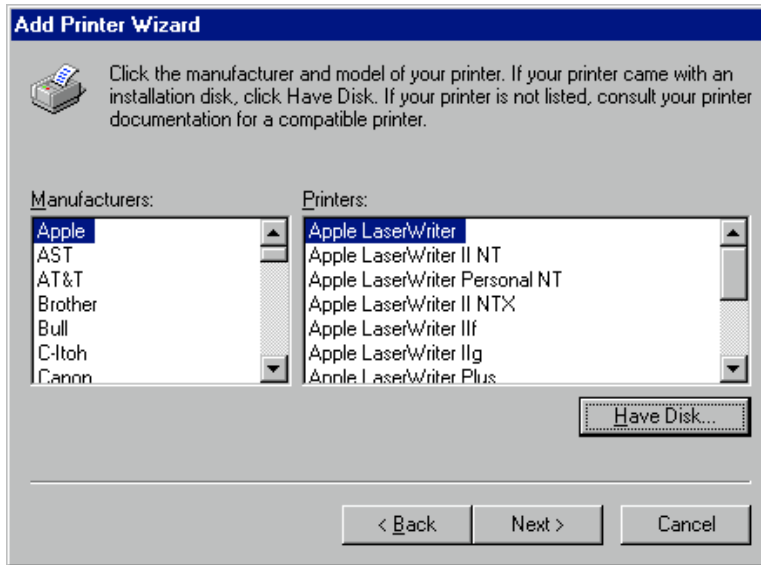
A dialog box appears that enables you to send print jobs from MS-DOS applications to a network printer. Click the **Capture Printer Port** button and select an appropriate LPT port and print queue.

Click **OK**.



7. Click Next.

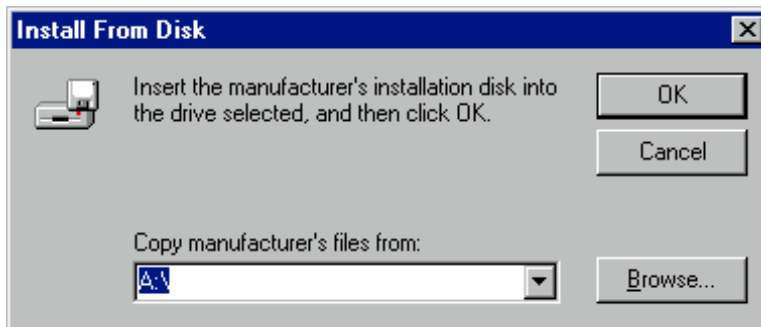
The manufacturer/model selection dialog box appears.



This dialog box contains lists of printer manufacturers and their printer models.

8. Click Have Disk....

The Install From Disk dialog box appears.

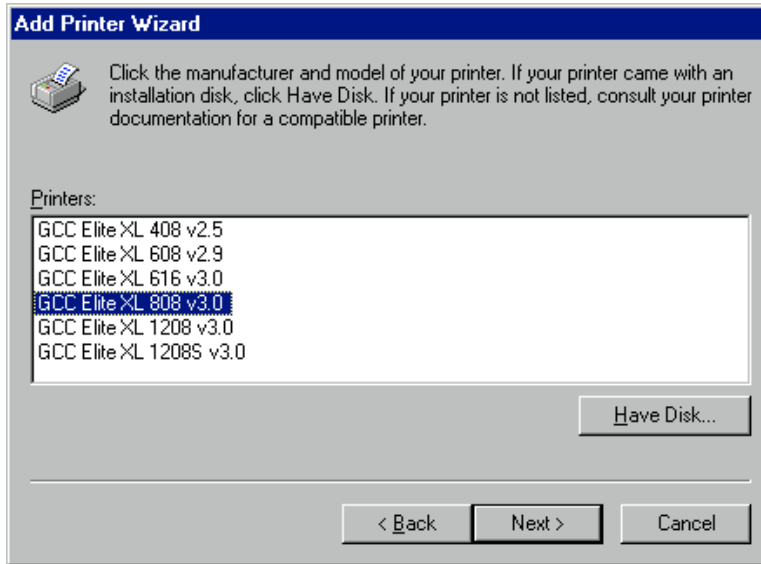


Change A:\ to D:\ if that is the designation of your CD-ROM drive.

9. Insert the Elite XL Software and Documentation CD-ROM.

10. Click OK.

A dialog box containing a list of GCC printers appears.



11. Select your GCC printer model from the disk.

As an example, the GCC Elite XL 808 is chosen in the above illustration. The number following the printer name is the software version, and is subject to change.

If you chose **Network** in step 4, go to step 15. If you chose **Local**, go to the next step.

12. Click Next. (For local printers)

The port selection dialog box appears.

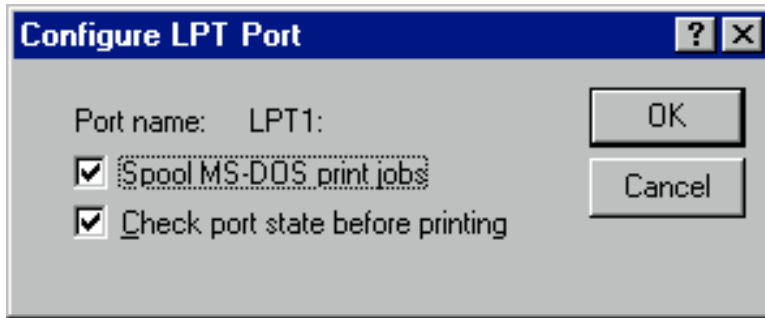


GCC printers can accept jobs from either an LPT (Parallel) port or a COM (Serial) port.

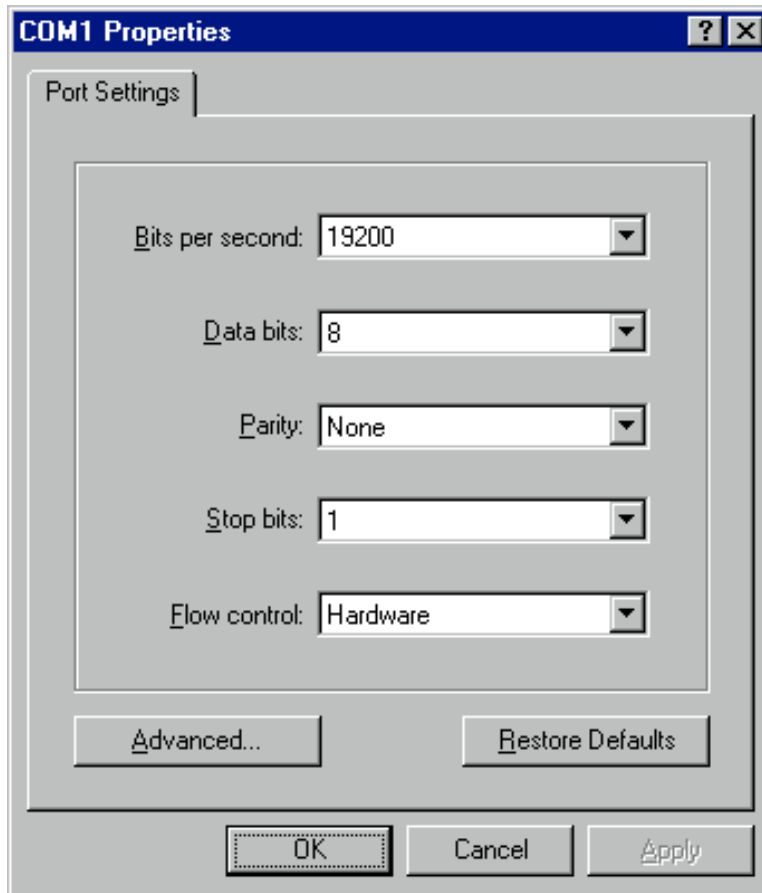
13. Click Configure Port.... (For local printer only.)

A configuration window, specific to the type of port chosen (LPT or COM), will appear.

LPT port configuration dialog box–



We recommend that you use the settings shown above.

COM port configuration dialog box–

We recommend the above settings.

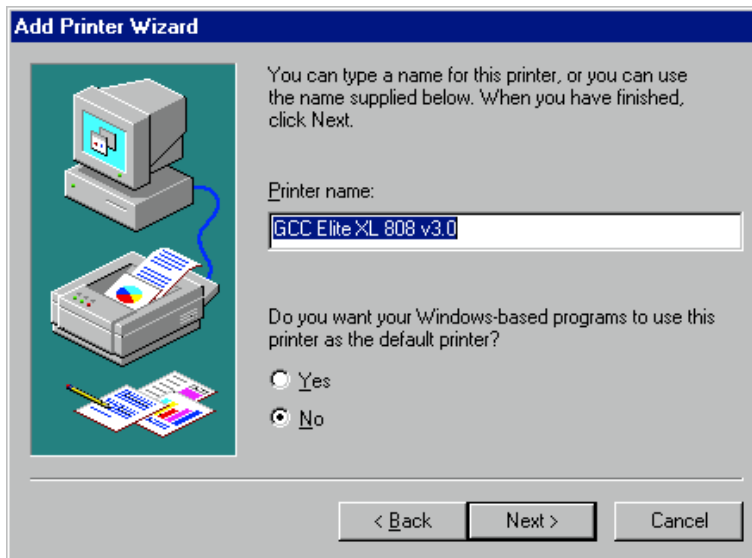
Note: The serial port settings in the printer's front panel menus must match the settings in this dialog box. Check the settings and change them if necessary (see Chapter 2 in your manual). Note that the serial port's Baud Rate submenu corresponds to the Bits per second drop-down list box in the dialog box, while the DTR setting in the Flow Control submenu corresponds to the Hardware setting shown above.

14. Click OK. (For local printers only.)

The port selection dialog reappears.

15. Click Next.

The name printer dialog box appears.



You may enter a new name for your printer if you wish, or you may leave the default name. Also, you should decide whether you want to make this the default printer.

16. Click Next.

The print a test page dialog appears.

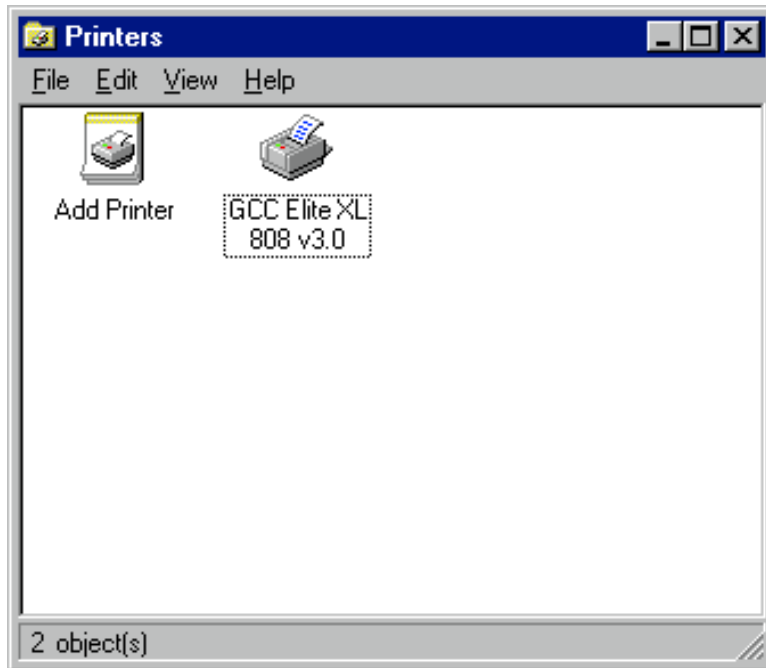


We recommend that you **not** print the test page at this time, so change the setting to **No**. We do recommend that you print a test page after the installation is complete.

17. Click Finish.

The software installation will now commence. At one point, you will be asked to insert either the Windows 95 CD-ROM or the Windows 95 floppy disk that contains the printer driver.

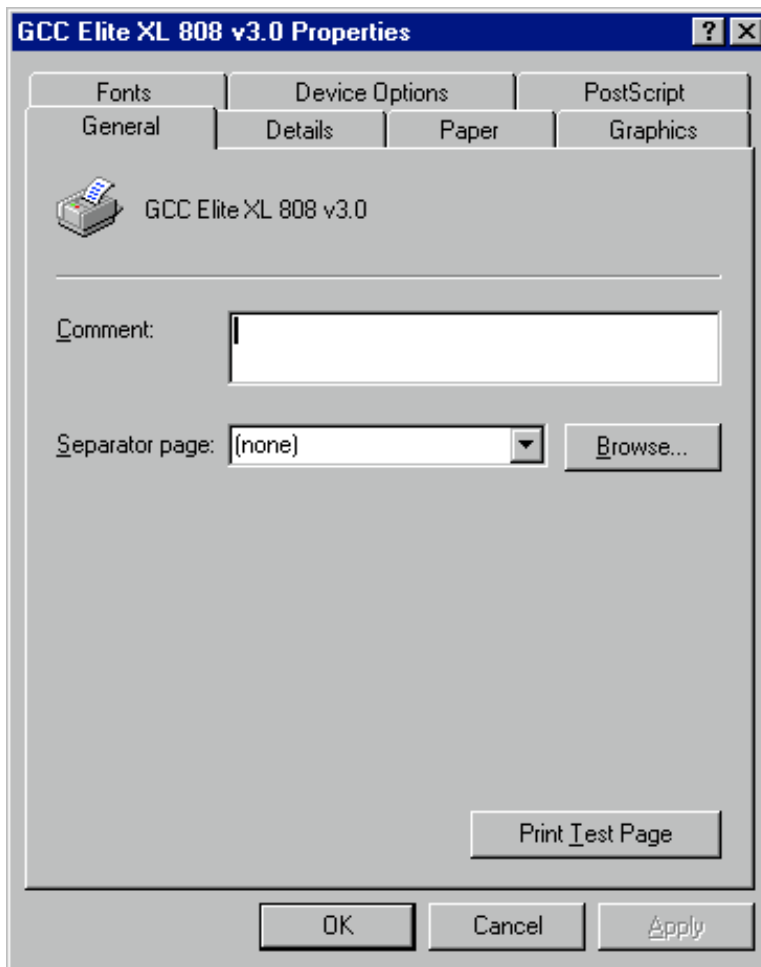
When the installation is complete, you will be returned to the Printers folder. The folder now contains an icon for the newly installed printer, as shown below.



The remaining steps are for network printers only. If your printer is setup for local operation go on to the next section “Exploring the Properties dialog box.”

18. Click the printer’s icon so that it is highlighted.
19. Click **File** in the menu bar.
20. Select **Properties**.

The printer's *Properties* dialog box appears displaying the *General* panel.

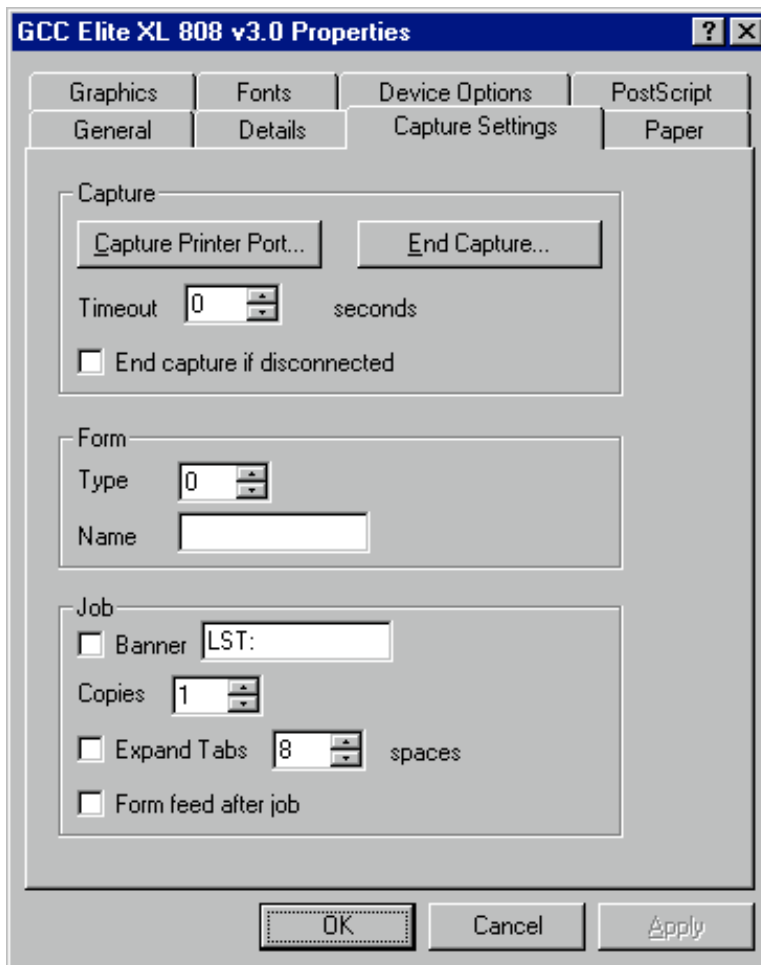


If you selected a network printer in steps 4 and 5, a Capture Settings tab will be visible at the top of the dialog box. If not, proceed to step 22.

21. Click the **Capture Settings** tab at the top of the dialog box.

(For network connection only)

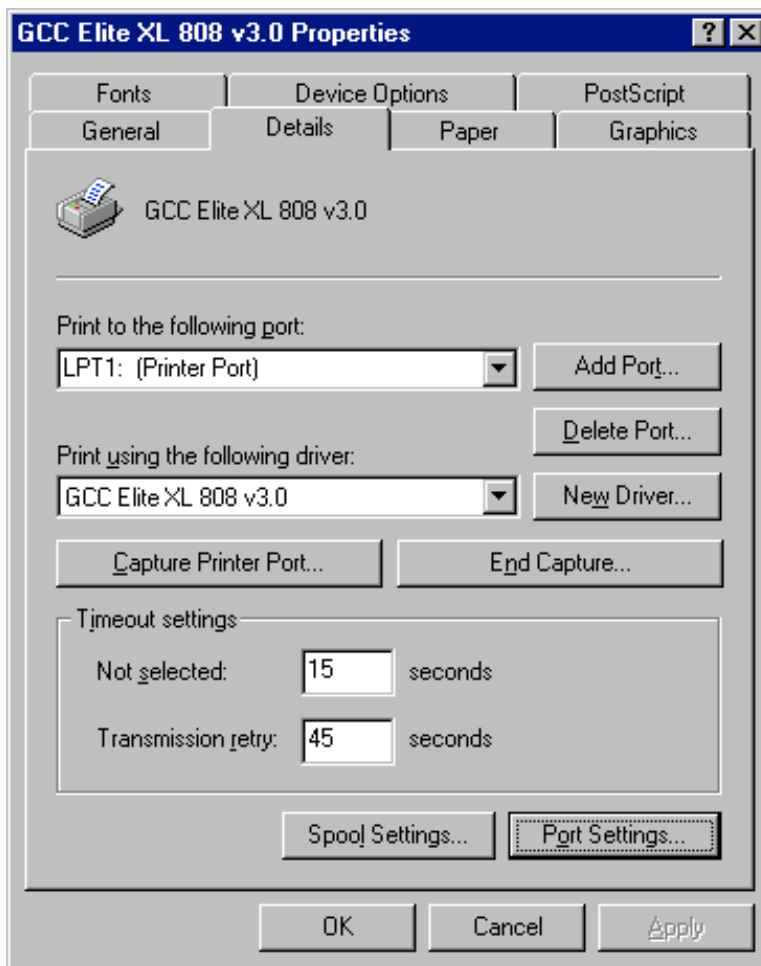
The Capture Settings panel is displayed.



Deselect all of the checkboxes, as shown above.

22. Click on the **Details** tab at the top of the dialog box.

The Details panel is displayed.

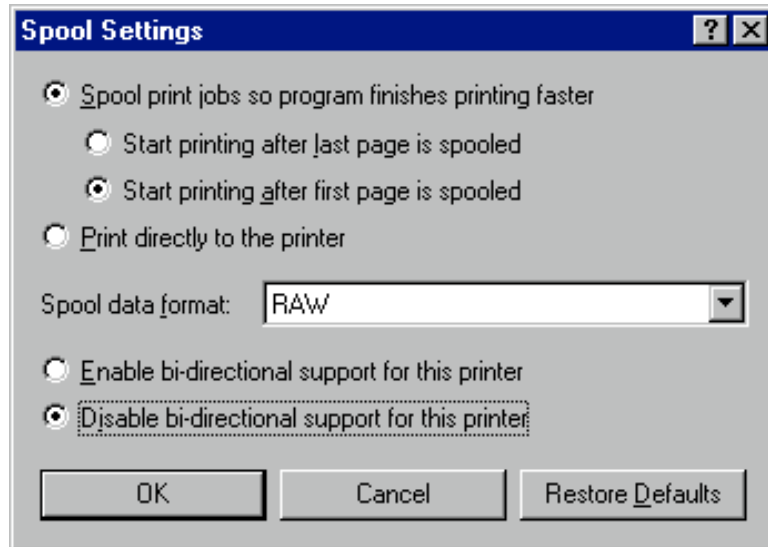


If you did not select a parallel port (LPT1, LPT2, or LPT3), proceed to step 25.

23. Click **Spool Settings** in the lower portion of the dialog box.

(For parallel port only)

The Spool Settings dialog box appears.



- Click the **Disable bi-directional support for this printer** radio button.

We recommend that you also use the other settings shown above.

24. Click **OK**. (For parallel port only).

The **Details** Panel reappears.

25. Click **OK**.

The **Printers** folder reappears.

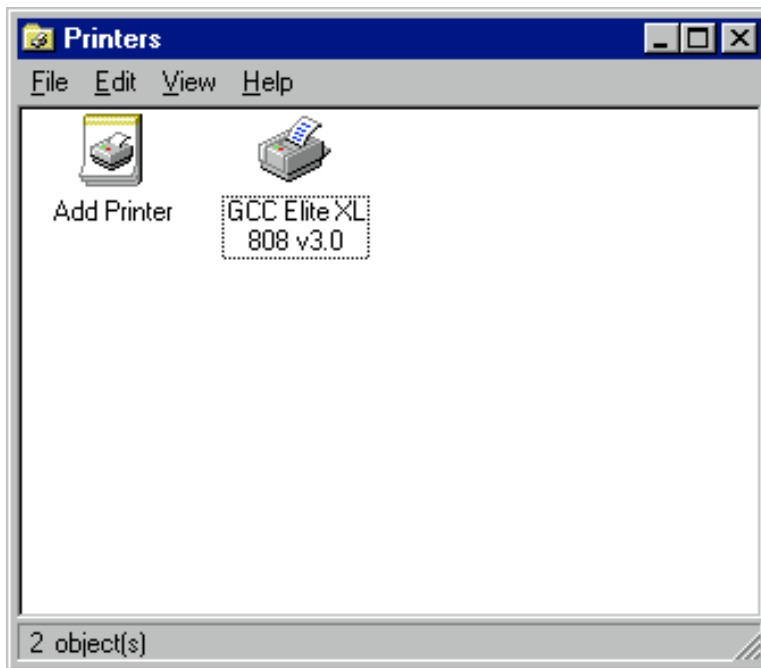
The installation procedure is now complete. Please go to the next section, “Exploring the Properties dialog box.”

Exploring the Properties dialog box

The Windows 95 Properties dialog box is used to configure your printer’s page setup, printing, and communications options. Most of the options found in the Properties *panels* are standard to Windows 95, while some are specific to your Elite XL printer model. This section details the GCC-specific options. For information on other options, please refer to the Windows 95 on-line help system, and the Windows 95 documentation.

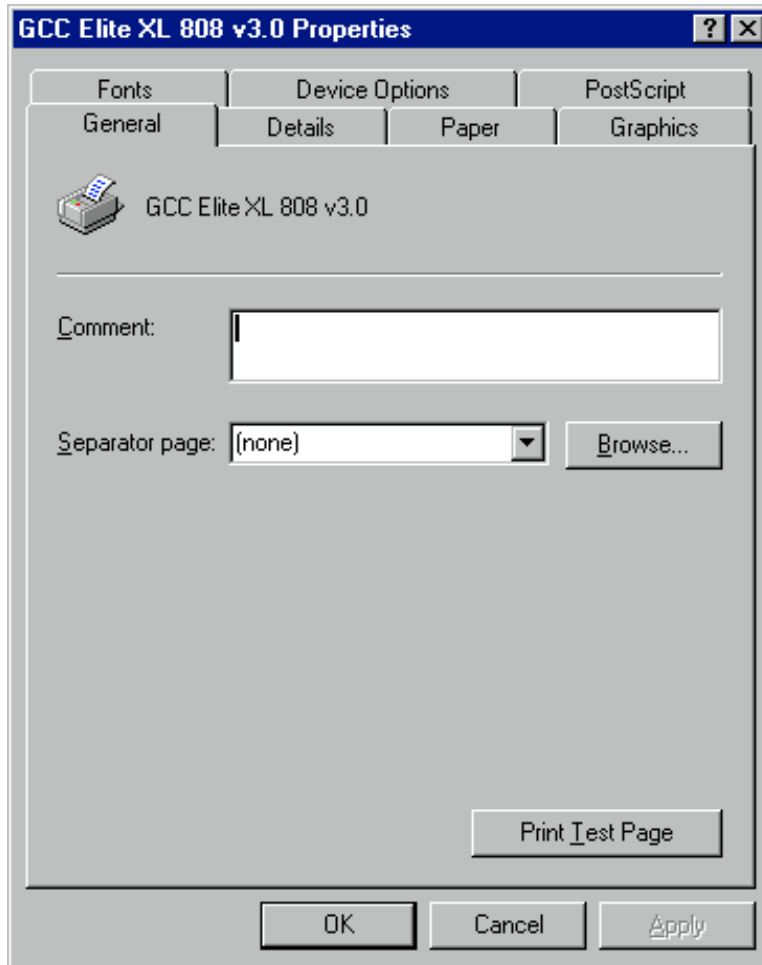
To access the Properties dialog box for your GCC printer:

1. In the Printers folder, click on the printer icon of your GCC printer so that it is highlighted.



2. Click **File** in the menu bar.
3. Select **Properties**.

The printer's *Properties* dialog box appears displaying the *General* panel.



The Properties dialog box is a standard feature of Windows 95. The dialog box is composed of panels that contain options for configuring your printer. Panels are accessed by clicking on the appropriate tab along the top of the dialog box.

The Properties dialog box shown above is for a GCC Elite XL 808 printer setup up for local communication. The only difference between the Properties boxes for local and network printers is that network printers include a panel called *Capture Settings*, which local printers do not; while local printers may include a *Sharing* panel (if printer sharing is enabled in the Network control panel), which is not shown for network printers.

The *Sharing* panel is not detailed in this document, and the *Capture Settings* panel has already been configured with the recommended settings (see page 3-18).

Printing a Windows 95 test page

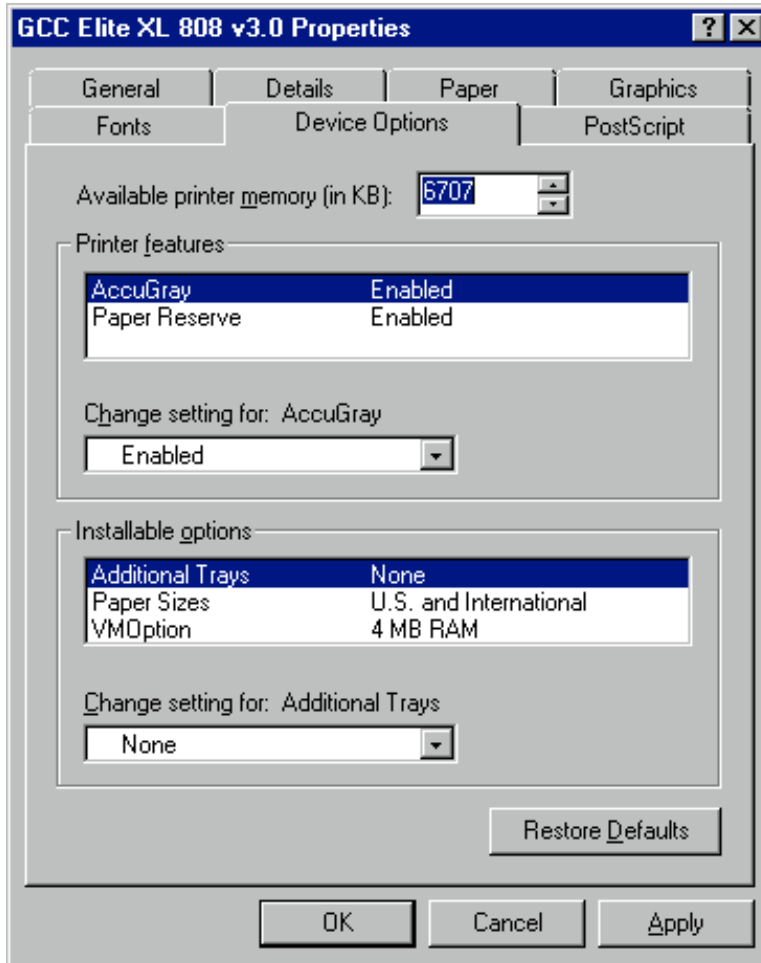
At this point it is a good idea to print a test page to verify that your PC and printer are communicating correctly. The General panel includes a Print Test Page button.

Click **Print Test Page** now.

The test page will be formatted and a message box will appear asking you if the test page has printed successfully. If the test page printed, click **Yes**; if there is a problem, click **No**, and Windows 95 will display some troubleshooting steps.

The Device Options panel

The Device Options panel contains settings specific to your GCC printer model.



Printer features:

The Printer features area lists options specific to your printer in the upper scroll box. If you want to change the current setting of any feature, highlight its name in the upper box, and select the new setting from the drop-down list box below. Any settings chosen here will override the corresponding setting in the printer's front panel.

Note: Available features will vary between printer models. Please refer to the *Elite XL User's Manual* for information about specific features.

Installable options:

The Installable options area lists items (paper trays, printer RAM) that can be upgraded. When adding a new option, you need to update the printer driver, so that the new option is available.

Note on VMOption: The VMOption selection corresponds to the amount of RAM installed in the printer. In some cases, with a new printer, the number displayed may not be correct. To display the correct memory size, highlight **VMOption** and select the correct memory size from the drop-down list box. Answer Yes to question that appears about available printer memory. Also, see the following section on upgrading printer memory.

Updating the printer driver

After installing additional memory in your printer, it is a good idea to update the printer driver to get maximum use out of the newly installed memory during printing. The following procedure will enable you to adjust the *Available printer memory* setting at the top of the Device Options panel. By adjusting this number, the printer driver will be better able to process documents containing downloadable TrueType or other soft fonts.

Note: This update procedure should also be used if you routinely download more than one or two fonts to the printer's memory (regardless of whether you have upgraded the printer's RAM). You should download your normal font set and then perform the procedure.

To update the printer driver *after installing more memory:*

1. Determine the printer's new available memory setting.

Print the file TESTPS.TXT. This file is included with Windows 95 and is located in the System folder within the **Windows** folder. For example, if your printer is connected to LPT1 open a DOS window and type:

copy c:\windows\system\testps.txt lpt1

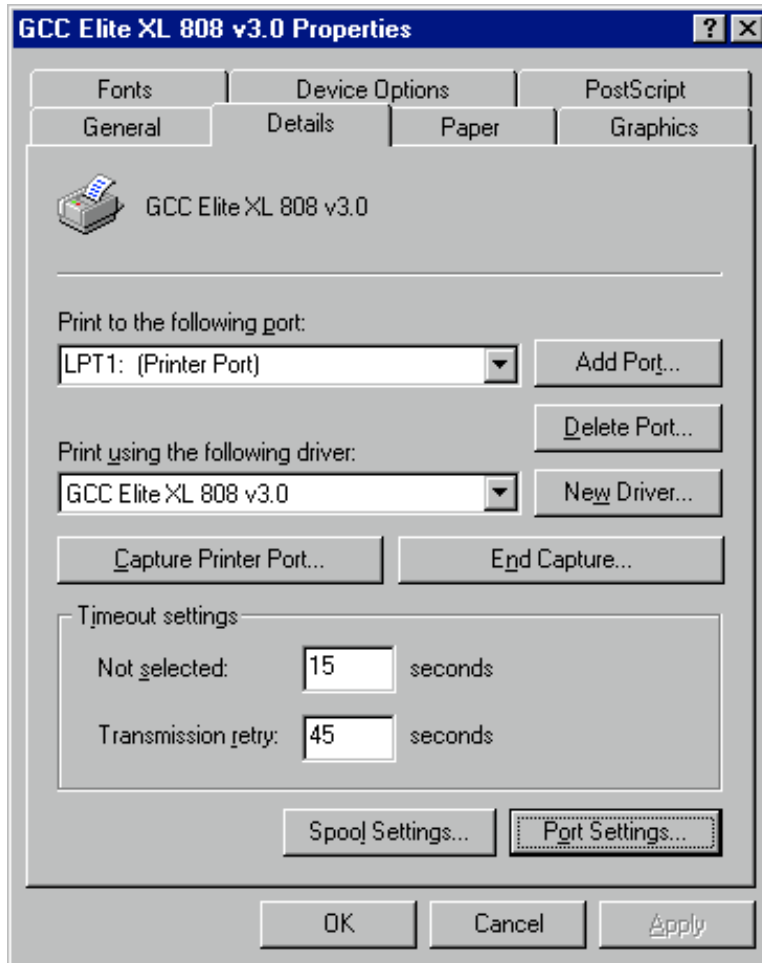
The printed file will indicate the maximum available virtual memory and the maximum suggested virtual memory. You will use the suggested value.

2. Enter the new value.

At the top of the Device Options panel, there is a box labeled Available printer memory (in KB); enter the suggested value from step 1 into this box.

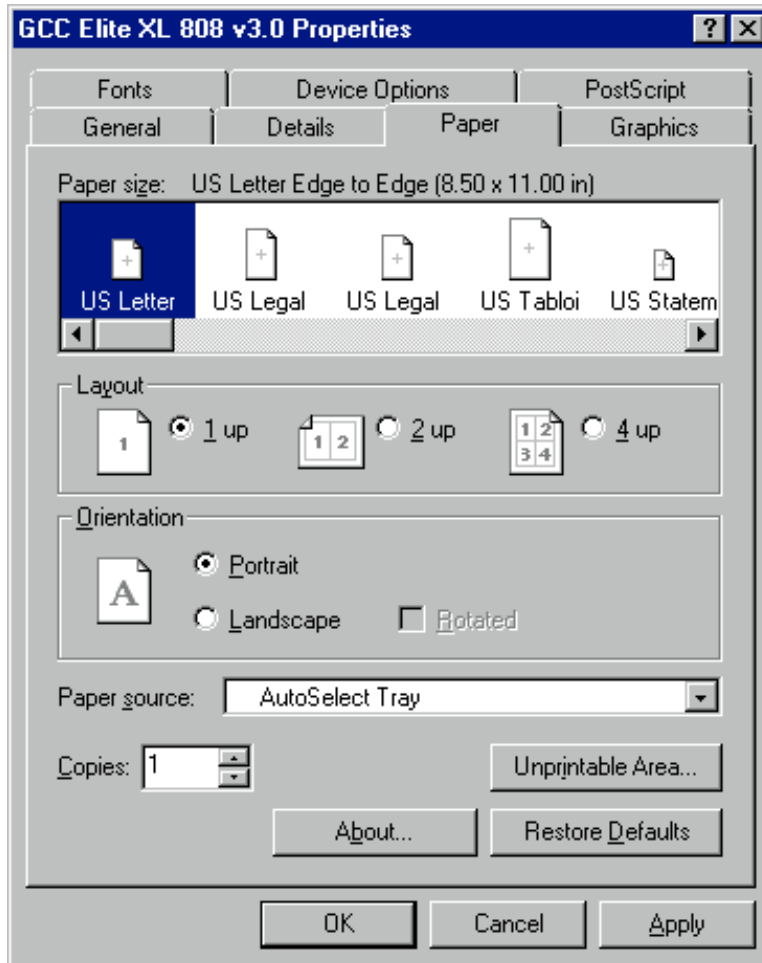
The Details panel

The *Details* panel enables you to change the printer driver and port settings. Refer to pages 3-9, 3-10, and 3-13 for information about recommended port configuration settings. Refer to pages 3-19 and 3-20 for information on the Spool Settings.



The Paper panel

The Paper panel enables you to select paper sizes, layout, orientation, and paper source.



Paper size:

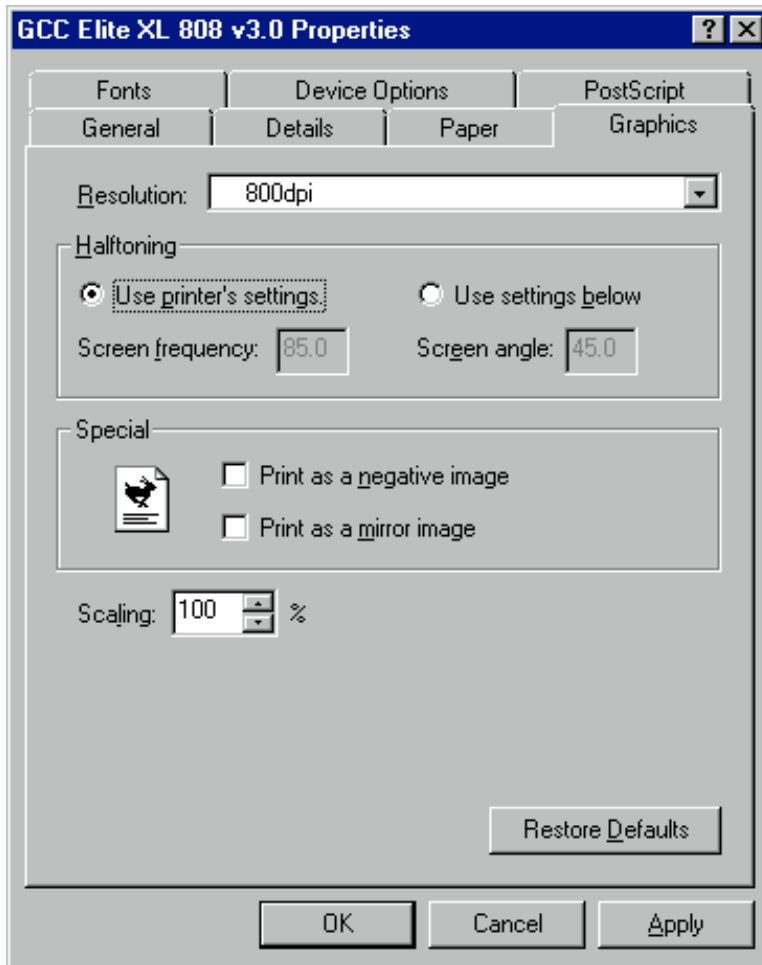
The printer's paper sizes are accessed through the Paper sizes scroll box. To change the paper size, scroll to the desired paper icon and click on it so that it is highlighted. Note: In some cases the name of the paper size below the paper icon will be truncated. However, the full name of the selected paper size will appear above the scroll box.

Paper source:

The Paper source drop-down box provides options that allow you to specify how paper will be provided to the printer. There are selections for Auto Select, any installed paper trays, manual feed, and a multipurpose feeder (if available).

The Graphics panel

The Graphics panel enables you to adjust settings that control the look of your documents.



Resolution:

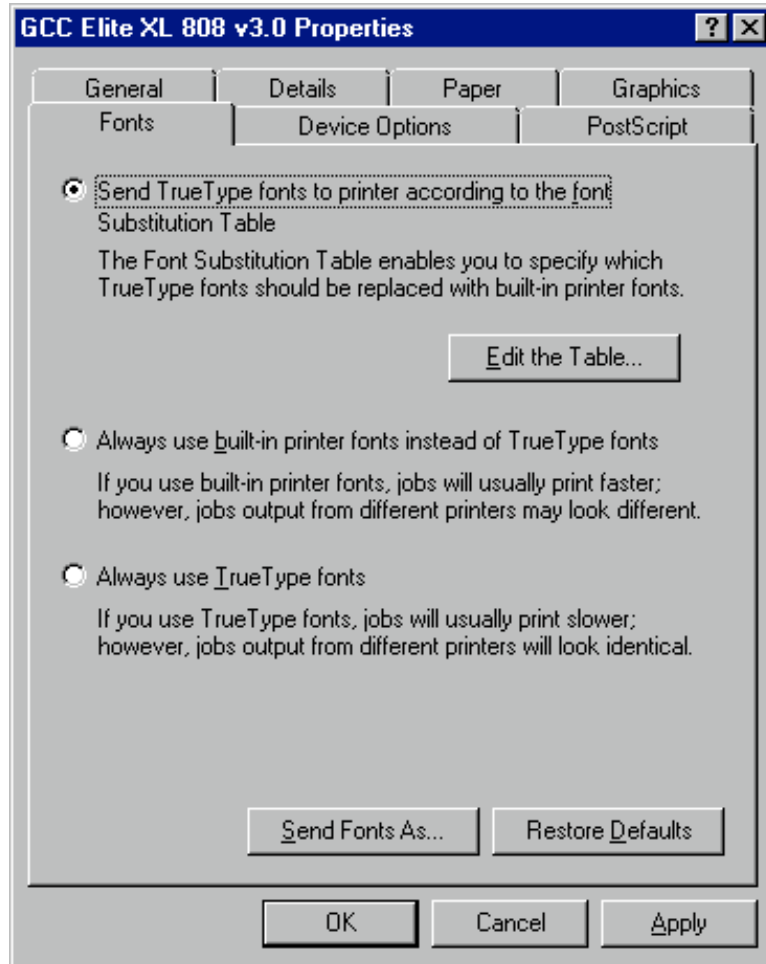
The Resolution drop-down list box enables you to choose the output resolution (in dots per inch). The resolution selected in this menu will override the resolution selected in the printer's front panel.

Halftoning:

The Halftoning area controls the screen frequency and screen angle for your documents. In general, it is recommended that use the printer's default screen frequency by selecting **Use printer's settings**. Note that you can change the screen frequency by using the **Default Screens** submenu in the printer's front panel (see Chapter 2 of the *Elite XL User's Manual*).

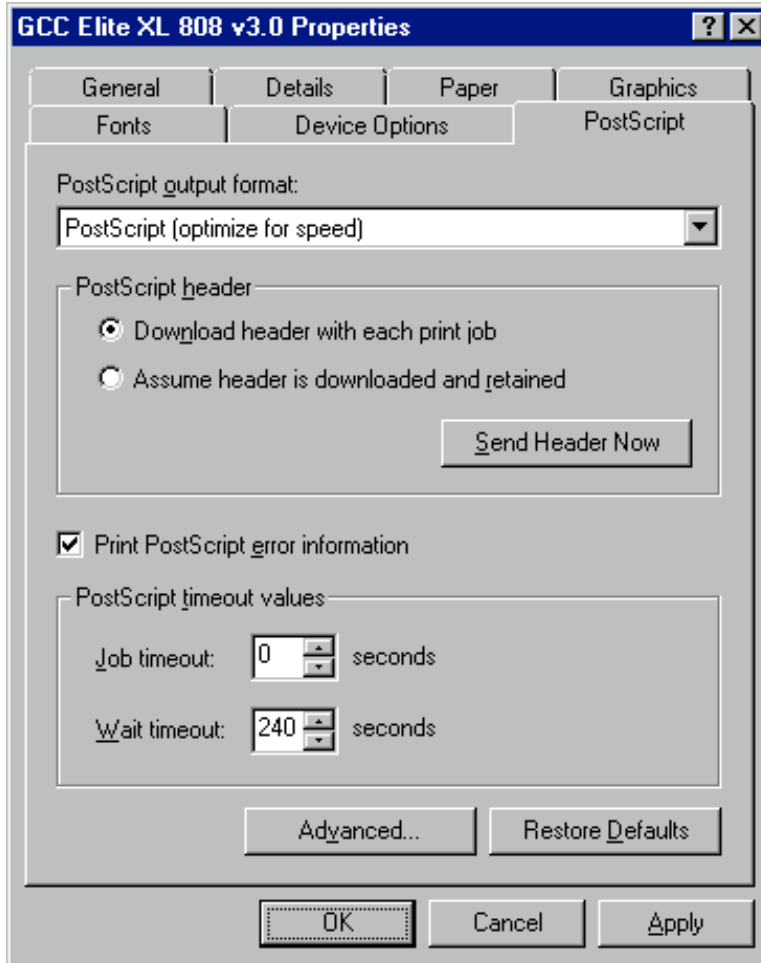
The Fonts panel

The Fonts panel enables you to specify how fonts are sent to the printer. Use these options in conjunction with the information provided in the “Fonts” chapter of the *Elite XL User’s Manual*.



The PostScript panel

The PostScript panel provides settings for controlling the way print jobs are sent to the printer.



We recommend you use the default settings.

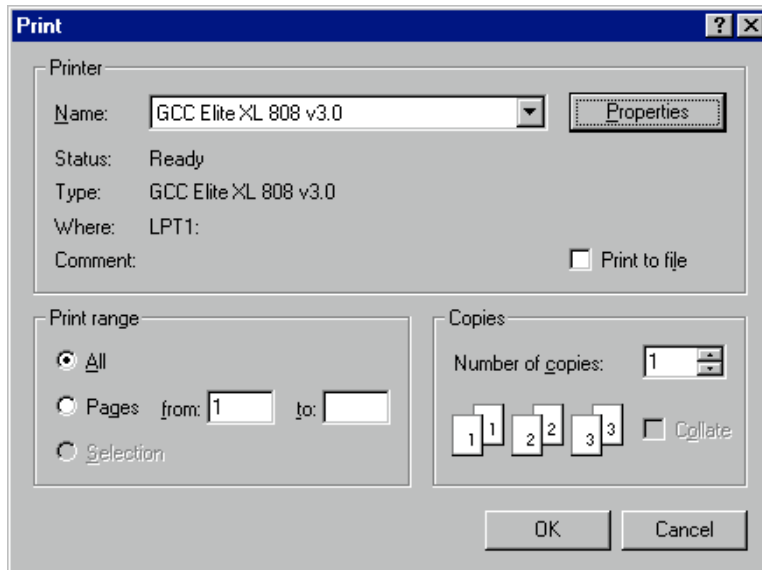
Printing from Windows 95 applications

GCC printers are designed to work with all Windows 95 compatible applications. The Windows 95 driver provides commonly used printing options along with some others (e.g. paper sizes and paper trays) that are specific to GCC printers.

Printing options may be selected from within an application through the Print dialog box, or from your printer's Properties dialog box (see page 3-17). Options selected through the Properties dialog box appear as the default options when you open a new document in your applications. In general, options selected from within an application document will override corresponding options in the Properties dialog box, and the printer's front panel submenus.

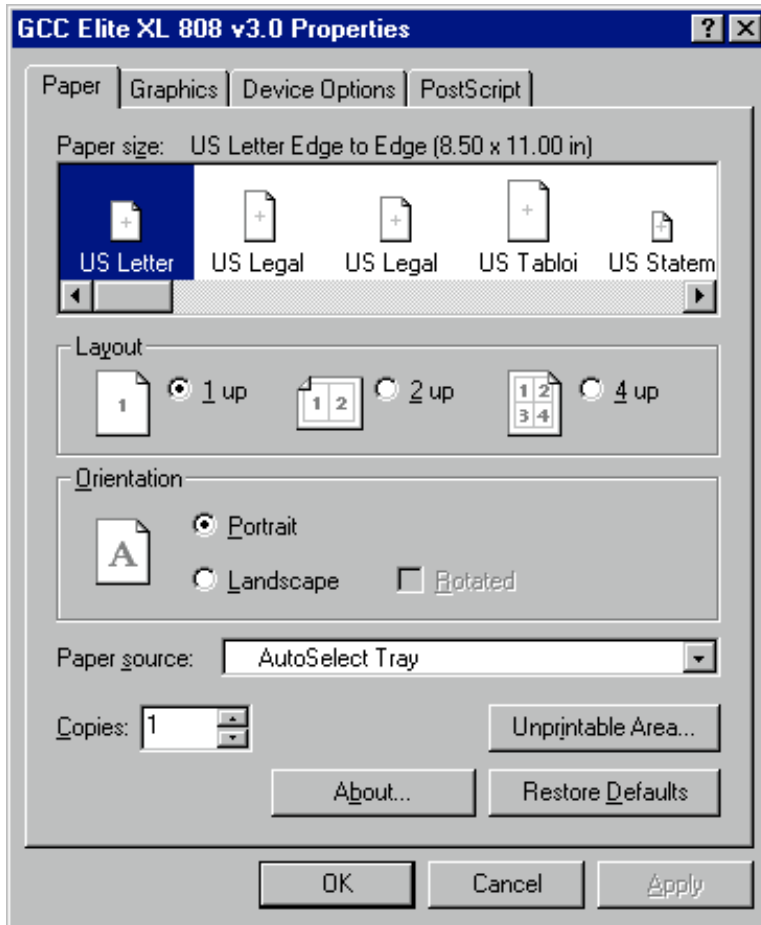
Selecting print options

The following Print dialog box illustration is taken from *WordPad*, a standard word processing application included with Windows 95. The Print option is located under the File menu of most applications. The standard Windows 95 Print dialog box provides settings for changing the target printer, page range, and number of copies. Further print settings are also available by clicking on the **Properties** button. Other applications may provide additional settings.



The Print Properties dialog box

The Properties dialog box available from the Print dialog box displays a subset of the panels and options found in the printer's Properties dialog box.



Installing the printer description files

The following instructions are for installing printer description files for using applications that do not use the Windows 95 or Windows NT PPD's.

To install printer description files:

1. **Insert the *Elite XL Software and Documentation CD-ROM* into your CD-ROM drive.**
2. **At the root directory (C:\>), type the following command and path name for the application you are using and press the Enter key. (Note: Depending on where you have installed any of these applications, the path names may be different).**
 - **Adobe Illustrator 4.0:**
Type `copy d:*.ppd c:\ai4\ppd` to install the PPD file.
 - **Adobe PageMaker 6.0:**
Type `copy d:*.ppd c:\pm6\src\usenglish\ppd4` to install the PPD file.
 - **Aldus FreeHand 4.0 or PageMaker 5.0:**
Type `copy d:*.ppd c:\aldus\usenglish\ppd4` to install the PPD file.
 - **Aldus FreeHand 3.1 and earlier:**
Type `copy d:\ppd3*.* c:\aldus\usenglish\ppds` to install the PPD and PDX files.
 - **Macromedia FreeHand 5.0:**
Type `copy d:*.ppd c:\fh5\usenglish\ppd` to install the PPD file.
 - **QuarkXPress:**
Type `copy d:*.pdf c:\xpress` to install the PDF file.

Using a GCC printer with Windows NT

Microsoft's Windows NT is a powerful operating system for networked environments. GCC printing software is designed for easy installation, configuration, and printing under Windows NT.

The following instructions pertain to the installation and use of the Elite XL printer with Windows NT v3.5. GCC does support Windows NT 4.0 and has provided a Windows NT v4.0 driver.

Please see the README.TXT file located in the NT40 folder on the *Elite XL Software and Documentation CD-ROM* for instructions on the installation and use of Windows NT v4.0. You may also visit GCC's website at <http://www.gcctech.com> for additional information.

Windows NT printing software overview

The Windows NT printing software is contained on the *Elite XL Software and Documentation CD-ROM*. The Windows NT software consists of:

- **Standard Windows NT PostScript printer driver.**
- **GCC model-specific PPD files for use with Windows NT.**
Each PPD file describes the characteristics and options of a specific Elite XL printer. The PPD file is used in conjunction with the standard Windows NT PostScript® printer driver to provide user access to page setup and printing options available with the GCC printer in use and to assure optimum print quality.
- **GCC model-specific printer description files used directly by applications.**
Some applications do not use the Windows NT-compliant PPD's. Because of this, a folder containing PPD's for these applications is included on the *Elite XL Software and Documentation CD-ROM*.

Before starting

Before starting the installation procedure, you should perform the following steps:

- **Setup and connect the printer according to Chapter 1 in the *Elite XL User's Manual*.**
- **Switch on the printer.**

And have the following available:

- **GCC Elite XL Software and Documentation CD-ROM**

Installing the Windows NT software

Software installation is accomplished using the *Printers* option in the *Control Panel*. The installation process includes the following steps:

- **Installing the printing software (printer driver and PPD file).**
- **Selecting and configuring a communication port.**
- **Setting print defaults.**

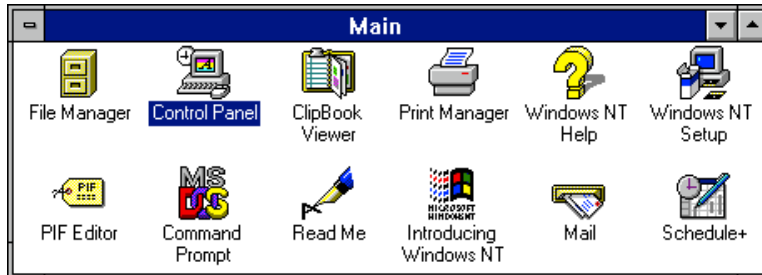
Step 1- Install the printing software:

1. Start Windows.
2. Double-click the Main group from the Program Manager window.



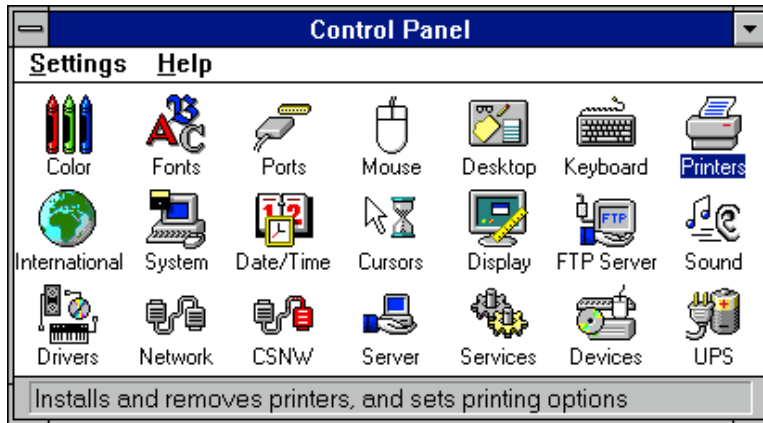
Main

The Main group window appears.



3. Double-click the **Control Panel** icon.

The Control Panel window appears.

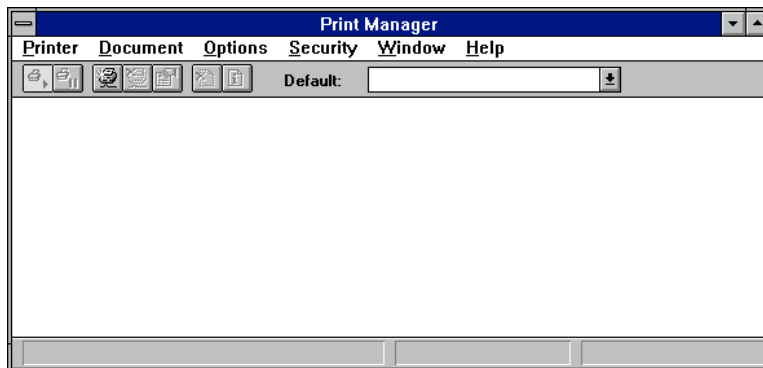


4. Double-click the **Printers** icon.



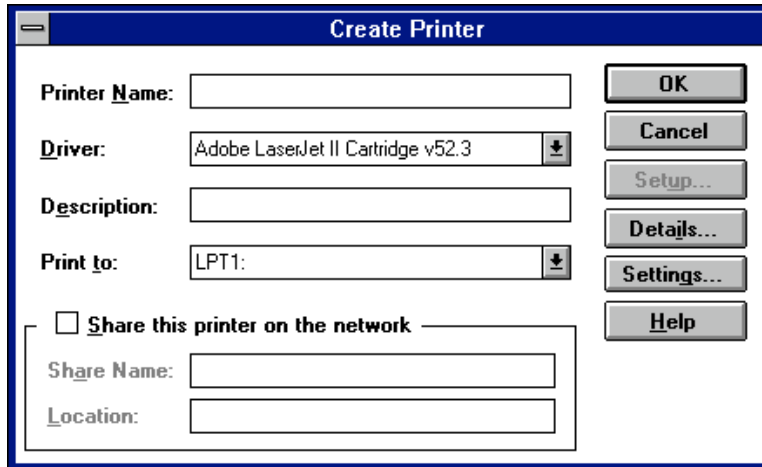
Printers

The Print Manager window appears.

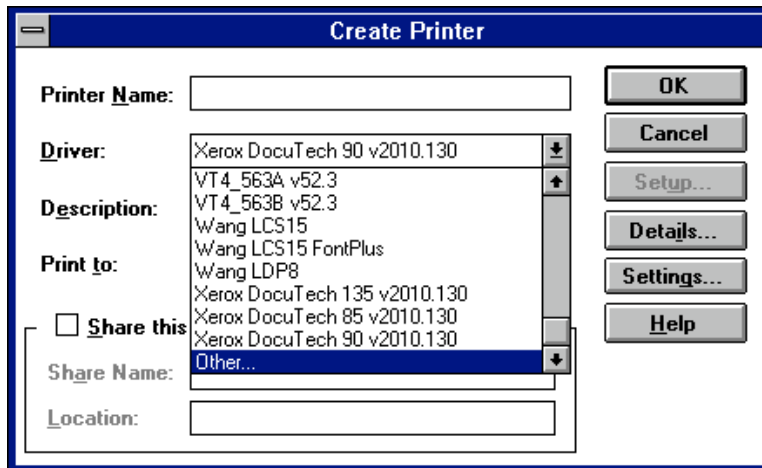


5. Select **Create Printer** from the **File** menu.

The Create Printer window appears.



6. Insert the *Elite XL Software and Documentation CD-ROM*.
7. Select **Other** from the Driver drop-down list box.



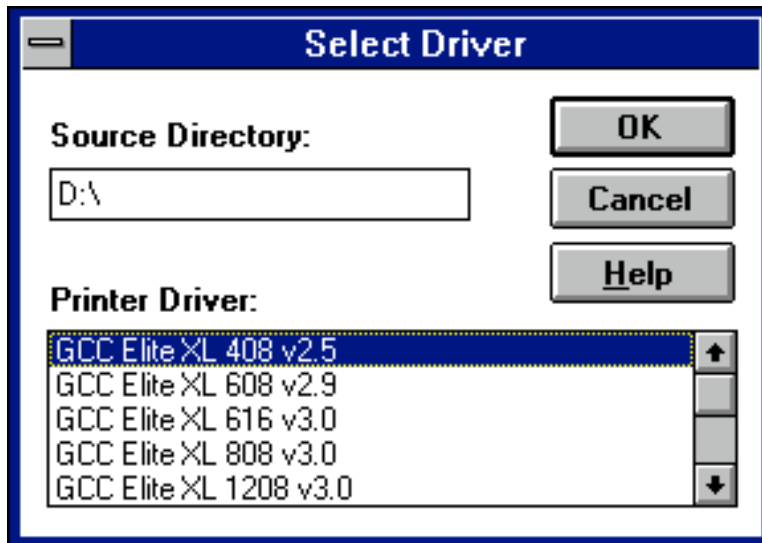
The Install driver dialog box appears.



Change A:\ to D:\ if that is the designation of your CD-ROM drive.

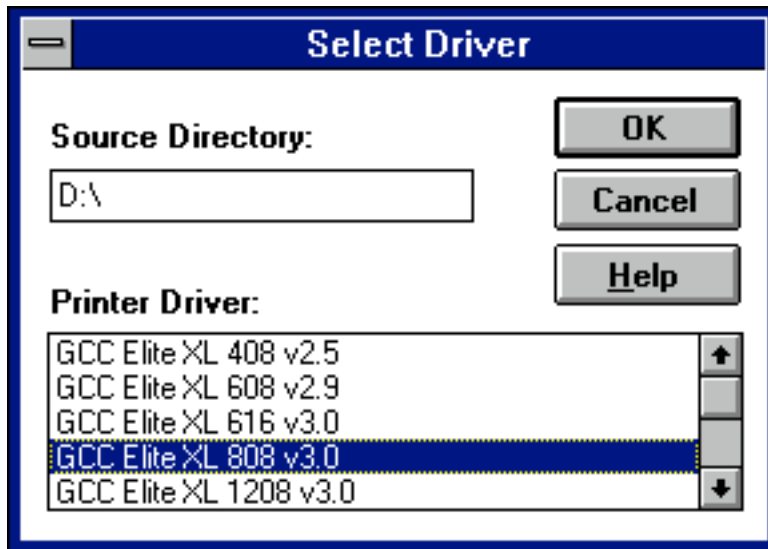
8. Click **OK**.

The Select Driver window appears.



9. Select a driver.

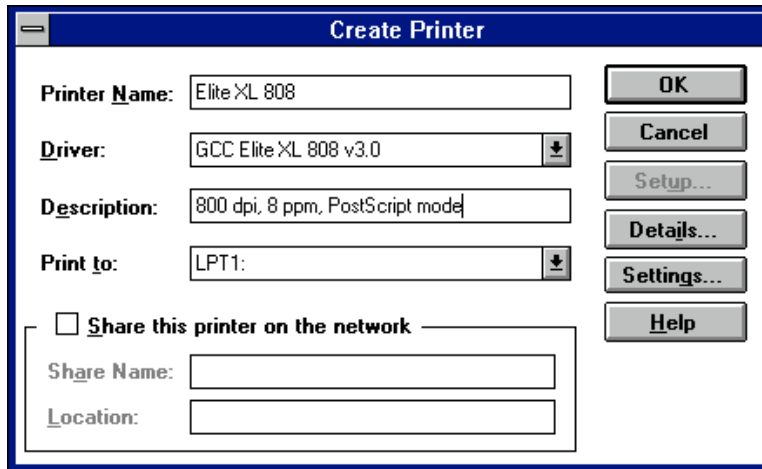
Select the driver for the GCC printer model you are installing.



10. Click **OK**.

A progress box appears. After a few seconds, the printer software is installed,

and the Create Printer window reappears displaying the selected GCC driver.



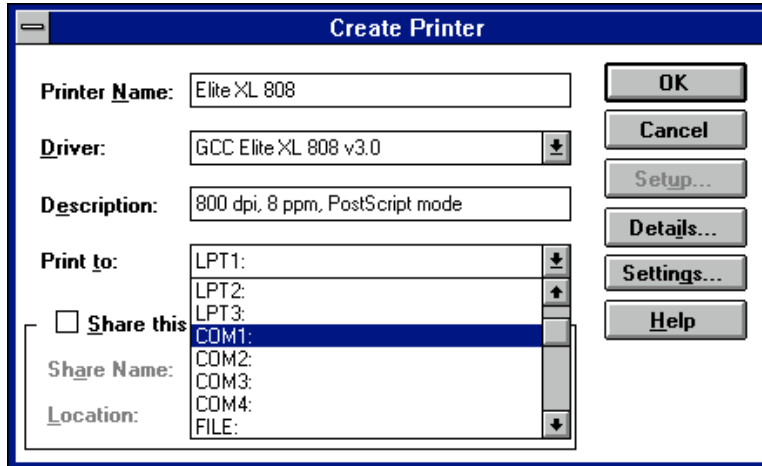
At this point you must give the printer a name, and, optionally, enter a description, as shown in the example above.

11. Go on to Step 2

Step 2 - Select and configure a communications port.

In order to print you must select and configure a port. A port can be either a serial port (also called a COM port), a parallel port (also called an LPT port), or you can select a network queue.

1. Select a port from the **Print to** drop-down list box.

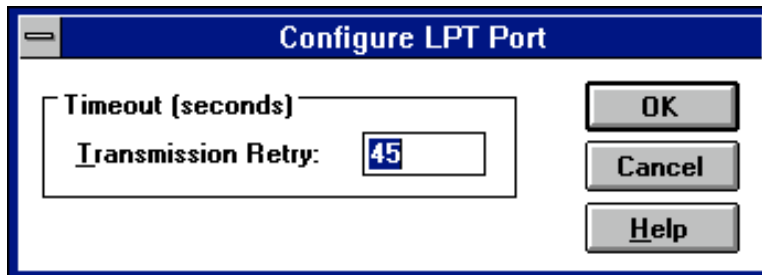


2. Click **Settings**.

Depending upon the type of port selected, a different dialog box will appear.

- **LPT port selected:**

The **Configure LPT Port** dialog box appears.

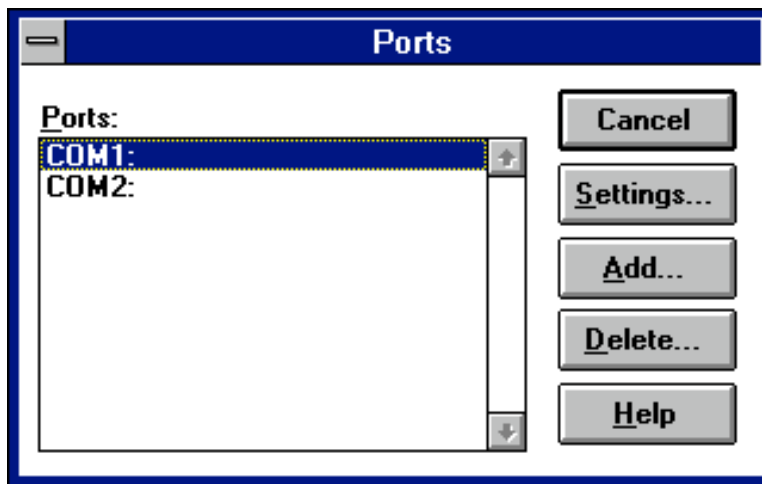


We recommend the above settings.

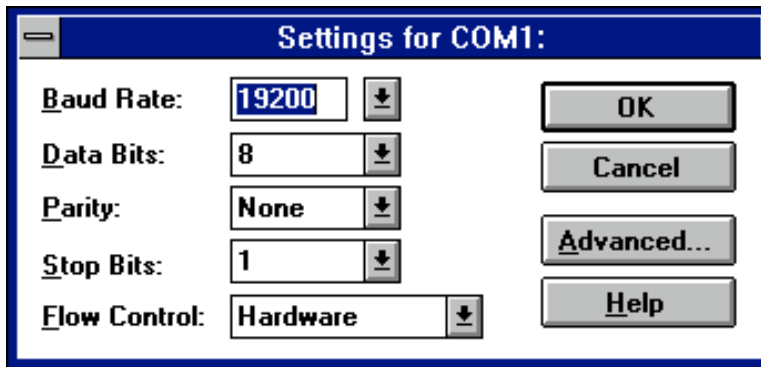
- Click **OK**.
- Close the **Configure LPT Port** dialog box.

- **Network print queue selected:** A network print queue resides on a print server. Print queues are established with the network software running your network. Any necessary settings will be specific to the network software. Refer to the network software documentation or contact your network administrator for information regarding correct settings.
- **COM port selected:**

The Ports dialog box appears, with the selected COM port highlighted.



The Settings dialog box appears.



We recommend the above settings.

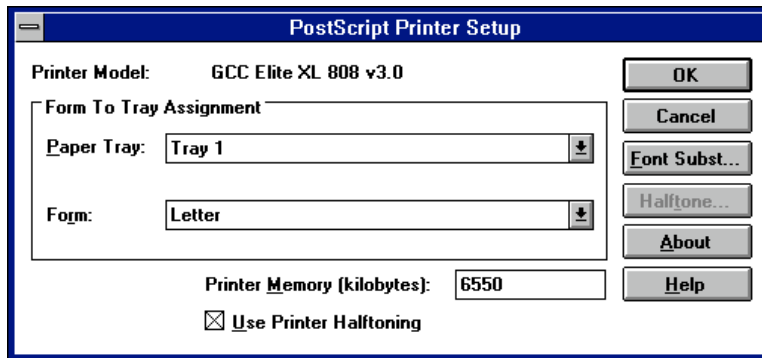
Note: The serial port settings in the printer's front panel menus must match the settings in this dialog box. Check the settings and change them if necessary (see Chapter 2 in your manual). Note that the DTR setting in the Flow Control submenu corresponds to the Hardware setting shown above.

- **Click OK.**
- **Close the Settings dialog box.**

At this point you should be back at the Create Printers dialog box.

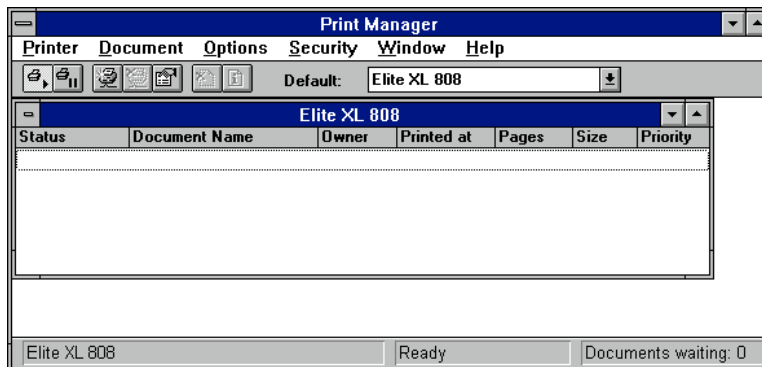
3. Click OK.

In a few seconds the PostScript Printer Setup Window appears.

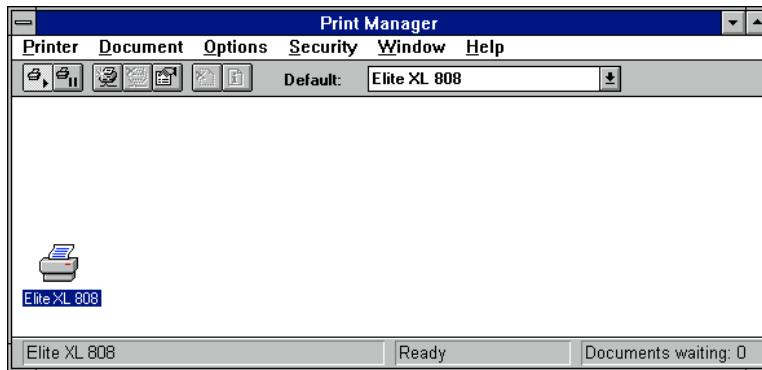


- Select a default paper tray and paper size in this window. Your selections should reflect the usual paper tray and paper size that will be used for print jobs. These settings can always be overridden from an application's Print window.
 - Select **Use Printer Halftoning**. Halftoning controls the screen frequency and screen angle for your documents. In general, it is recommended that you use the printer's default screen frequency by selecting Use Printer Halftoning. Note that you can change the screen frequency by using the Default Screens submenu in the printer's front panel (see Chapter 2 of the *Elite XL User's Manual*).
4. **Click OK.**

The Print Manager window reappears, now displaying a window for the newly created printer.



You may wish to minimize the printer status window to an icon.



You are now ready to print. If you wish to change any of the settings, select Properties from the Print Manager's File menu. For further information on settings not detailed in this guide, refer to the extensive on-line help provided by Windows NT.

Selecting Page Setup and Print options

The Elite XL printer is designed to work with all applications compatible with Windows NT version 3.5 or later. The printing software provides commonly used printing options along with some others (e.g. paper sizes and paper trays) that are specific to your GCC printer model.

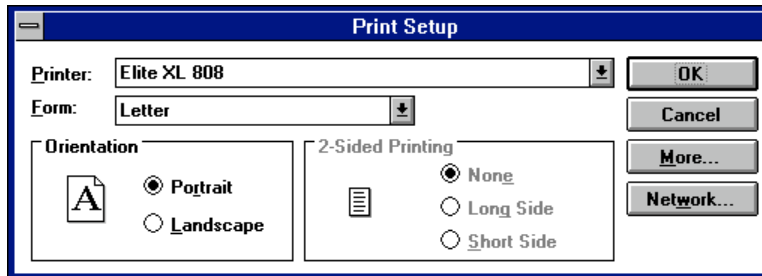
Printing options may be selected from within an application through the Print Setup and Print dialog boxes, or from within the Windows NT **Print Manager** or the **Printers** control panel. In general, options selected from within an application document will override corresponding options in the Printers control panel, Print Manager, and the printer's front panel submenus.

Most of the options found in the Print Setup and Print dialog boxes are standard to Windows NT, while some are specific to your GCC printer model. This section details the GCC-specific options. For information on other options, please refer to the Windows NT on-line help system, and the Windows NT documentation.

The location of printing options can vary among applications, and certain options may be accessible from more than one dialog box. Refer to the application's documentation for further information.

Print Setup options

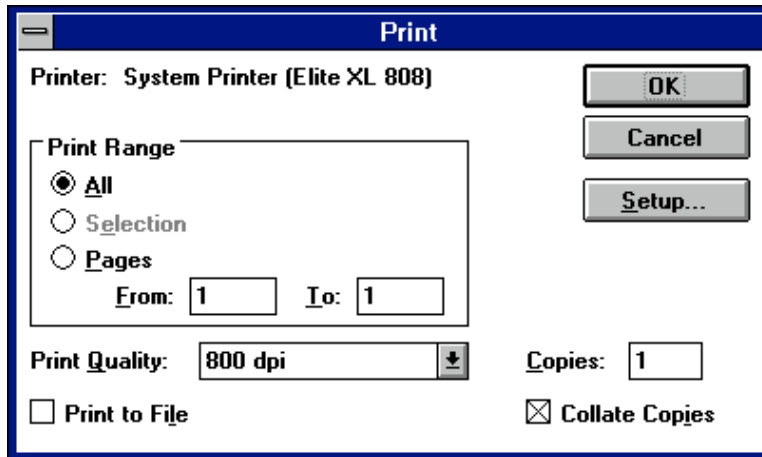
The **Print Setup** option is usually located under the **File** menu. The following Print Setup dialog box example is taken from Microsoft Write.



- **Printer** - The Printer drop-down list box enables you to select the printer that you wish to send a job to. The printer that initially appears in the box is the default printer. The default printer is set through the Print Manager.
- **Form** - The Form drop-down list box enables you to select a paper size. Available paper sizes will differ between GCC printer models.
- **Orientation** - This option determines the orientation of the image on the page. Vertical, or **Portrait**, orients the image upright on the page. Horizontal, or **Landscape**, orients the image sideways on the page. The default is **Portrait**.
- **2-Sided Printing** - This option is currently not supported by GCC printers.

Print options

The Print option is usually located under the File menu. The following Print Setup dialog box example is taken from Microsoft Write.



- **Print Range** - The **Print Range** option default is **All**, which prints all of the pages in the document, from first to last. **From** and **To** allow you to specify a range of pages to print. Click in the box labeled **From**, and type the first page number of the range you want to print. Then click in the box labeled **To** and type the last number of the range.

- **Print Quality** - This option enables you to select an output resolution for your document. Available resolutions will differ between GCC printer models. The resolution selected in this menu will override the resolution selected in the Print Manager and/or the printer's front panel **Default Resolution** submenu.

Installing the printer description files

The following instructions are for installing printer description files for using applications that do not use the Windows 95 or Windows NT PPD's.

To install printer description files:

- 1. Insert the *Elite XL Software and Documentation CD-ROM* into your CD-ROM drive.**
- 2. At the root directory (C:\>), type the following command and path name for the application you are using and press the Enter key. (Note: Depending on where you have installed any of these applications, the path names may be different).**

- **Adobe Illustrator 4.0:**

Type `copy d:*.ppd c:\ai4\ppd` to install the PPD file.

- **Adobe PageMaker 6.0:**

Type `copy d:*.ppd c:\pm6\src\usenglish\ppd4` to install the PPD file.

- **Aldus FreeHand 4.0 or PageMaker 5.0:**

Type `copy d:*.ppd c:\aldus\usenglish\ppd4` to install the PPD file.

- **Aldus FreeHand 3.1 and earlier:**

Type `copy d:\ppd3*.* c:\aldus\usenglish\ppds` to install the PPD and PDX files.

- **Macromedia FreeHand 5.0:**

Type `copy d:*.ppd c:\fh5\usenglish\ppd` to install the PPD file.

- **QuarkXPress:**

Type `copy d:*.pdf c:\xpress` to install the PDF file.

TCP/IP Software Guide

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Introduction

This chapter details the configuration of a GCC Elite XL (608, 616, 808, 1208, 1208S) for printing over Ethernet running the TCP/IP network protocol. All of the software required for printing over TCP/IP to the Elite XL is contained in the printer; additional (optional) TCP/IP software is included on the *Elite XL Software and Documentation CD-ROM* that came with your Elite XL.

The requirements for TCP/IP printing with an Elite XL are:

- **The Elite XL must be equipped with Ethernet (most models are).**
- **ROM version 2.7 or later.**
- **16 MB of RAM installed in the printer.**

Software overview

The TCP/IP software includes:

TCP/IP protocol stack: This is the primary TCP/IP software. It is contained within the Elite XL.

Internal lpd - The printer contains an implementation of lpd, the Berkeley UNIX spooler. Lpd's on other machines can forward print jobs to the lpd in the printer, with no additional software. For most sites, this is the preferred way to use the printer. UNIX System V Release 4 has a different spooler, but it can be configured to communicate with any Berkeley spooler, including the one in the printer. **Note:** Use of the internal lpd requires that a hard drive be connected to the printer.

telnet server - The printer contains a telnet (remote login) server which allows you to communicate with the printer via a telnet client running on your computer. This provides direct interaction with the printer's PostScript interpreter. Most computers running TCP/IP have telnet clients available.

The following TCP/IP filters are contained on the *Elite XL Software and Documentation CD-ROM* in a folder named **UNIX**.

Three of the filters, **tcpif**, **tcpof**, and **unix_pcl**, are provided as C source. A third filter, **texttcpif**, is provided as a Bourne shell script. Use of these filters is optional.

tcpif - tcpif is an lpd input filter that runs on UNIX machines. It bypasses the printer's internal spooler and sends the final print data to the printer through a direct TCP connection. This makes it possible for a UNIX lpd to process print data with optional filter and formatting programs; the printer's internal lpd does not support filters. The tcpif filter is compatible only with the Berkeley UNIX printing system - lpr and lpd.

unix_pcl and **texttcpif** - These UNIX filters allow UNIX text files to be printed properly by the Elite XL's PCL interpreter.

tcpof - Enables you to add header pages at the beginning of print jobs.

Documentation note: Unless otherwise specified, the terms *spooler*, *lpd*, *printer's spooler*, *internal spooler*, and *master spooler* all refer to the Berkeley UNIX print spooler named *lpd*.

Installing the optional filters

Copies of the optional filters are contained in a folder named **UNIX** on the *Elite XL Software and Documentation CD-ROM*.

1. **Copy the binary file "filters.tar" to the Unix machine that will be the master spooler for the Elite XL. Please note that file transfers should be done in binary mode.**
2. **Use the Unix program "tar" to unpack the file. This will create a directory named "filters" containing several files. The following command may be used on most Unix machines:**

```
tar xvf filters.tar
```

Refer to the Makefile for details on compiling and installing the filters.

Setting up the printer on a TCP/IP network

Follow these steps to set up the Elite XL on the network:

- **Decide where the printer will be physically located on the network and connect it to your Ethernet network.**
- **Configure the printer's front panel with information about your network.**
- **Select a *hostname* for the printer and enter it, along with the printer's IP address, into your network's *host table*.**
- **Confirm the network connection with the UNIX program *ping*.**

Placing the printer

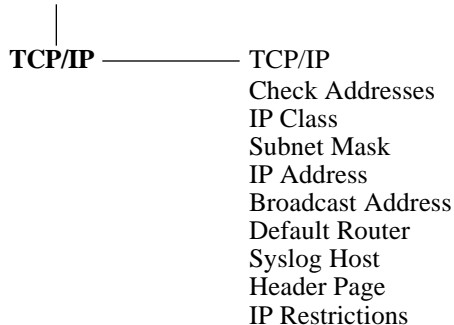
The physical placement of the printer is entirely dependent on your site. The printer should be convenient to most users.

Configuring the front panel TCP/IP parameters

You will need to configure the printer from the front panel with a number of parameters to enable TCP/IP operation.

The front panel menu items for TCP/IP are found in the Elite XL's **Interfaces** menu under a submenu named **TCP/IP**:

Interfaces



Two additional TCP/IP related items are located in the Elite XL's **Emulations** submenu; a new submenu named **Port Emulations** has been added which contains the following settings:

```

  LPD
  TCP Direct
  
```

Configure the Elite XL front panel submenus as follows:

- **Enable *IP Restrictions* if required and enter 1-4 mask/address pairs.**
- **Set *TCP/IP* to Enabled**
- **Select a *Check Addresses* setting.**
- **Enter an *IP class*.**
- **Enter a *Subnet mask*. If subnetting is not used leave the default settings unchanged.**
- **Enter an *IP address* for the printer.**
- **Enter a *Broadcast address*. Leave the default setting unchanged unless you wish to use a different Broadcast address.**
- **Enter the *IP address* for a *default router* if one is used.**

- Enter the IP address of a computer running the Berkeley syslog daemon (Syslog Host). The syslog daemon records error and warning messages sent by the printer. (Optional)
- Select a Header page setting.

Important: The information necessary to configure your printer for TCP/IP operation should be available from your network administrator. Appendixes A and B offer an outline of TCP/IP and TCP/IP addressing, but the information is only an overview. If you are unfamiliar with the requirements for TCP/IP address configuration, refer to your TCP/IP network documentation or contact the person(s) responsible for setting up your network.

TCP/IP submenu descriptions

The following table gives a brief functional description of the Elite XL's front panel TCP/IP submenus.

TCP/IP Submenu	Functional description
TCP/IP:	Determines whether print jobs will be accepted over TCP/IP. The options are Enabled and Disabled , with Enabled being the default. Press the + key to change the option; press the Enter key to save your selection.
IP Class:	Depending on your network configuration, the address class will be either A, B, or C. Use the + and – keys to change the address class; press the Enter key to save your selection.
Check Addresses:	Determines whether TCP/IP address settings must be legal addresses or if they can be set arbitrarily. The options are Enabled and Disabled, with Enabled being the default.
Subnet Mask:	Enter a subnet mask if subnetting is used. The subnet mask setting depends on your network configuration. If subnetting is not used leave the default unchanged; the default value is, for each address class, that value that means there is no subnetting. The subnet mask is displayed in hexadecimal. The + key adds a 1 bit to the right of the existing 1's; the – key removes the rightmost 1. In other words, the + key turns the leftmost 0 bit to a 1, and the – key turns the rightmost 1 bit to a 0.

- IP Address:** The printer's IP address is displayed in dotted decimal notation (e.g., 129.47.6.144). Edit one byte at a time, using the + and – keys to increase or decrease the byte's value. The **Enter** key moves you to the next byte. You may depress and hold down the keys for faster transitions. Only valid addresses for the class and subnet mask, or zero, are allowed.
- Broadcast Address:** The IP broadcast address is displayed in dotted decimal. The recommended broadcast address, all 1's, is displayed as 255.255.255.255. The + and – keys step through a list of values. Press the **Enter** key to save your selection. (Depress and hold down the keys for faster transitions.)
- Default Router:** If you are using a router, enter its IP address; otherwise leave the default address (zero) unchanged. The default router is required to be on the same net and subnet as the printer; attempts to change the net or subnet number have no effect, if **Check Addresses** is Enabled (see page 4-6).
- Syslog Host:** If you use a syslog host enter its IP address; otherwise leave the default address (zero) unchanged. The syslog host's address is displayed in dotted decimal, and edited the same way as the printer's IP address.
- Header Page:** This item determines whether a header page is generated by the printer's internal spooler and printed at the front of each print job. The option may be set to **Enable** or **Disable**. The default is **Enable**.
- IP Restrictions:** If you want to allow IP connections to the printer only from certain hosts, Enable IP Restrictions (see page 4-20). This option may be set to **Enable** or **Disable**. The default is **Disable**, allowing anyone to connect to the printer.

The following TCP/IP related items are found in the Port Emulations submenu of the **Emulations** menu:

- Lpd:** This item determines whether the Elite XL's internal lpd port will automatically switch between PostScript and PCL. The options are **Auto switch, PostScript only**, or **PCL only**, with **Auto switch** being the default.

TCP: This item determines whether the Elite XL's TCP direct port will automatically switch between PostScript and PCL. The options are Auto switch, PostScript only, or PCL only, with Auto switch being the default.

Note: Port Emulations will only appear if the Emulations menu is set to **Auto switch**.

Important: If the Elite XL has less than 16 Mbytes of RAM installed, you will encounter frequent **complexity errors** due to insufficient memory if both PCL and PostScript are enabled. If you encounter this problem, either add more memory or switch the Elite XL to **PostScript only** or **PCL only** in the **PS/PCL Sensing** menu. Refer to the *Elite XL User's Manual* for more information.

Changes to the syslog host address and the header page setting take effect immediately. For the changes to the printer's own IP parameters and the default router's address to take effect, wait 5 seconds after you have made your selections, then turn the printer off, wait 10 seconds, and then turn the printer back on.

Note: The Elite XL's configuration page reports the front panel settings. Some TCP/IP items in the **Emulations** menu (TCP, ASCII, and Telnet) and in the **Interface** menu (Port: 515, Queue Name: Elite XL, TCP: Port 3300, TCP ASCII: Port 3302, and Telnet: Port 23) are not available through the front panel. These items are informational only and cannot be changed.

Identifying the printer to the network

Select a *hostname* for the printer and add the name, along with the printer's IP address, to the *host table* your network uses. Common types of host table are a file on each host, Sun's NIS (formerly Yellow Pages), and the distributed Domain Name Service. This will make the printer's hostname known to other hosts on the network.

Note: Hostnames are *not* the same as a printer's AppleTalk name, which is displayed on the front panel. However, it is recommended to keep the two names the same or similar, to reduce confusion.

Confirming the network connection

Use the UNIX program *ping* to confirm the printer's availability on the network. If this doesn't work, recheck the Ethernet cable connection and the values you entered through the front panel. Also, make sure you turn the printer off and back on after setting the front panel values.

Introduction to printing over a TCP/IP network

The printer's TCP/IP software is intended to be used with the Berkeley Unix print spooler, lpd. However, compatible printing systems, such as the one available with AT&T System V Release 4, may also be configured to forward print jobs to the printer's internal spooler. Macintoshes and IBM-PC and compatibles (DOS, Windows, Windows 95) can also be configured (using 3rd-party software) to send print jobs to the Elite XL's internal spooler, and Windows NT has this capability built-in to the operating system.

Print jobs can be sent to the printer in two ways:

(1) Print jobs are forwarded to the printer's internal spooler (lpd).

This method offers:

- **Easy set up and use.**
- **No requirement for custom software (i.e., tcpif).**
- **The ability for the printer to receive jobs (in the background and while printing) from multiple nodes simultaneously.**
- **Use of a defacto printing standard, with software available on many platforms.**

This method is the easiest to use, and recommended for most sites. However, it requires that a hard drive be attached to the printer's SCSI port in order to provide space for spooled files.

(2) Print jobs are spooled on a "master" Berkeley spooler located on a UNIX machine and are then sent to the printer via the *tcpif* input filter.

This method offers a number of options that are not possible using the internal spooler:

- **Optional processing can be performed on print data by the sending lpd.**
- **The size of print jobs is not limited to the free space of a hard disk attached directly to the printer.**
- **Network access to the printer can be controlled.**

Printing with the internal lpd

Sending jobs to the printer's internal lpd is the most convenient method of printing over TCP/IP to your printer. All that is necessary is to:

- **Attach a hard disk to the Elite XL's SCSI port.**
- **Create a spool directory on each machine that will use the printer.**
- **Configure the internal spooler by adding the printer's hostname and any attributes to the file `/etc/printcap` on each machine that will use the printer.**

Note: The above steps apply to Berkeley Unix machines. Forwarding software for other platforms may require additional steps.

Attaching a hard disk to the printer

In order to use the Elite XL's internal spooler, you must attach a hard disk to the printer's SCSI port. The hard disk is used for temporary storage of spooled files. A currently attached hard disk that is being used for font storage, can also be used for spooling provided there is sufficient space for spooled files. Refer to the "Fonts" chapter of the *Elite XL User's Manual* for more information using a hard disk with the Elite XL.

Note: Although the Elite XL supports multiple hard disks for font storage, the printer's lpd will not function correctly in this configuration. We recommend using a single hard disk large enough for all fonts and spooling.

Creating a spool directory

You must create a spool directory on each computer that will use the printer. The spool directory is used to temporarily hold print jobs until they are sent to the printer. Typically this directory will be named `/usr/spool/<printername>` or `/var/spool/lpd/<printername>`. This directory should be owned by user daemon and group daemon, and should be protected 775. Because of the large size of graphics jobs, the spool directory should be on a disk with tens of megabytes of free space.

Note: The above procedure applies to Berkeley Unix machines. Forwarding software for other platforms may require additional steps.

Configuring the internal spooler

The UNIX lpd is configured through the system text file `/etc/printcap`. The printcap file contains printer descriptions, each having a name and a number of attributes with two-character names. You will need to add an entry to the printcap file, identifying your printer and its attributes, on each computer that will use the printer. The file can be edited by the superuser with any text editor. A sample printcap entry looks like this:

```
honolulu:\
:lp=:rm=honolulu:rp=EliteXL:\
:sd=/var/spool/lpd/honolulu:mx#0:\
:lf=/var/adm/lpd-errs:
```

This printcap entry uses the printer's internal spooler. Both the hostname and the printcap name of the printer are "honolulu." The following capabilities are used in the printcap entry:

- lp** (line printer) - The name of the local device to which the printer is attached. This capability is not used, as the printer is not a local device.
- rm** (remote machine) -The hostname of the printer.
- rp** (remote printer) - The name of the printer that will do the printing; in this case, "Elite XL."
- sd** (spool directory)- the pathname of the spool directory (see previous section).
- mx** (maximum file size) -Set to zero (unlimited), as graphics jobs can be very large.
- lf** (log file) - The pathname of the file that will record errors encountered by the UNIX spooler and filters.

Sending print jobs to the internal spooler

After you have created a spool directory and printcap entry you are ready to print using the **lpr** command. Incoming jobs are spooled and queued on the printer's internal hard disk, and printed in the order received. However, print jobs received through other channels, such as the serial and parallel ports, may be printed between lpd print jobs. Multiple jobs can be received simultaneously; jobs can be received while the printer is printing.

When printing to the Elite XL, PostScript and PCL can be mixed in multiple files in a single lpr job (each file must be all in one language or the other).

Note: The filter **unix_pcl**, included with the TCP/IP software, allows UNIX text files to be printed correctly by the PCL interpreter on the Elite XL. UNIX text files do not have a carriage return before a line feed. **unix_pcl** causes line feeds in UNIX text files to be treated as carriage return/line feed by the PCL interpreter. **unix_pcl** is included as C source. The code is compatible with most versions of the UNIX system (see "Using texttcpif" for additional information). After compilation, the filter is typically invoked on the command line as follows:

```
unix_pcl <filename | lpr -Pprintername
```

Printing with a master (Berkeley) spooler with tcpif

Tcpif is an "input filter" that enables the printer to receive print jobs over a **direct TCP connection** from a UNIX lpd acting as a "master spooler." The master spooler accepts print jobs forwarded to it from other lpd's on the network. The

main advantage of bypassing the printer's internal lpd is that optional processing (i.e., filtering) can be performed on print data before it is sent to the printer.

In order to print using a master spooler you need to:

Note: Tcpiif is compatible only with the Berkeley UNIX printing system - lpr/lpd.

- **Choose a computer on the network whose lpd will be the master spooler.**
- **Create a spool directory on the machine chosen as the master spooler and on each machine that will use the printer.**
- **Edit the printcap files:**
Add the printer's hostname and attributes to the `/etc/printcap` file on the master spooler.
- **Add the name of the master spooler to the `/etc/printcap` file on each computer that will forward print jobs to the master spooler.**

Creating a spool directory on the master spooler

You must create a spool directory on the machine designated as the master spooler *and* on each machine that will forward print jobs to the master spooler.

The spool directory is used to temporarily hold print jobs until they are sent to the printer. Typically, these directories will be named `/usr/spool<printername>` or `/var/spool/lpd/<printername>`. The spool directory should be owned by user daemon and group daemon, and should be protected 775. Because of the large size of graphics-intensive print jobs, the spool directory should be on a disk with tens of megabytes of free space.

Editing the *printcap* files

The lpd on the master spooler *and* the lpd's on each machine that will forward jobs to the master spooler for printing are configured through the UNIX system text file `/etc/printcap`. The file can be edited by the **superuser** with any text editor. The printcap file contains printer descriptions, each having a name and a number of attributes with two-character names.

The following examples show printcap entries for an Elite XL named "proof" with a master spooler located on a UNIX machine named "mercury."

The master spooler (mercury) will use the following printcap entry:

```
proof:\
:lp=/dev/null:if=/usr/local/bin/tcpif_proof:\
:sd=/var/spool/lpd/proof:mx#0:\
:lf=/var/adm/lpd-errs:
```

Each computer that will forward jobs to the master spooler (mercury) will use the following printcap entry:

```

proofe:r:\
  :lp=:rm=mercury:rp=proofe:r:\
  :sd=/var/spool/lpd/proofe:r:mx#0:\
  :lf=/var/adm/lpd-errs:

```

Mercury (the master spooler) accepts print jobs over the network, does any optional processing desired, and then, using `tcpif`, sends the final print data to the printer named `proofe:r`.

After you have created the necessary spool directories and added the printer to the `printcap` files, you are ready to print with the `lpr` command.

Printing text files with `texttcpif`

If you are sending UNIX text files to the Elite XL's PCL interpreter, the `printcap` file on the master spooler and each forwarding `lpd` need to be configured in the `printcap` file so that text will print correctly. If UNIX text is sent unmodified to a PCL printer, each line of text will appear below and to the right of the previous line.

GCC supplies an `lpd` input filter named `texttcpif` that sends print data across the net to the printer and tells the Elite XL's PCL interpreter that the data is UNIX-style text, so it will print properly. Only PCL (not PostScript) can be sent through `texttcpif`. Therefore, it is recommended that you use a second `printcap` entry with a different name that tells the UNIX spooler to use `texttcpif`. For example, an Elite XL named "honolulu" is given a second `printcap` entry with the name "honolulu_text." The UNIX machine named "mercury" acts as a master spooler. UNIX machines around the network forward text jobs to mercury:

```

honolulu_text:\
  :lp=:rm=mercury:rp=honolulu_text:\
  :sd=/var/spool/lpd/honolulu_text:mx#0:\
  :lf=/var/adm/lpd-errs:

```

Mercury uses the input filter `texttcpif` to process the print job and then sends it to the printer:

```

honolulu_text:\
  :lp=/dev/null:if=/usr/local/bin/texttcpif_honolulu:\
  :sd=/var/spool/lpd/honolulu_text:mx#0:\
  :lf=/var/adm/lpd-errs:

```

Using `tcpof`

The `tcpof` filter is an output filter that enables you to append a cover page to the front of `pcl` print jobs. In the example below, the previous `printcap` entry has been

edited to include processing by the tcpof filter.

```
honolulu_text:\
:lp=/dev/null:if=/usr/local/bin/texttcpif_honolulu:\
:of=/usr/local/bin/tcpof_honolulu:\
:sd=/var/spool/lpd/honolulu_text:mx#0:\
:lf=/var/adm/lpd-errs:
```

For details on how to compile tcpif, tcpof, unix_pcl, and texttcpif and configure them for your installation, refer to the Makefile located in the Filters folder on the *Elite XL Software and Documentation CD-ROM*.

Using telnet with the Elite XL

The TCP/IP software includes a *telnet server* that enables you to use *telnet client*, a standard protocol for remote login, to connect to the Elite XL. The telnet server accepts connections from telnet clients and connects the remote user to the printer's PostScript interpreter. This is treated as a "print job," so connections must wait until the printer is idle. Once connected, other print jobs must wait until the telnet connection is closed.

The telnet server is intended for administration and debugging, not for printing. Telnet clients are widely available.

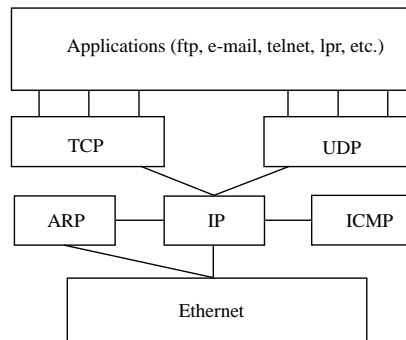
Appendix A: TCP/IP overview

TCP/IP is a mature and widely used set of network protocols designed by network researchers at US universities; the research was funded by the federal government. TCP/IP is intended primarily to connect significant numbers of cooperating, general-purpose computers across both short and long distances.

TCP/IP is closely associated with the UNIX operating system—largely because the University of California at Berkeley has included solid implementations in their UNIX since 4.2BSD in 1984, and Berkeley gives away their source code. Many other implementations of UNIX and TCP/IP are derived from Berkeley's. However, TCP/IP software is available on a wide variety of computers and operating systems, including Apple Macintoshes, IBM PC's, most UNIX workstations, Digital Equipment Corporation VAXes running VMS, and some mainframes.

TCP/IP actually includes a number of cooperating protocols. The core protocols are TCP, UDP, IP, ICMP, ARP (on Ethernet and similar nets), and one or more routing protocols (most commonly RIP.) The protocols are, like most sets of network protocols, arranged hierarchically, where each layer supplies services to the layer above it and uses the layer below it as a tool.

The TCP/IP protocol hierarchy, when running on Ethernet, is structured as follows:



IP (Internet Protocol) supplies unreliable *datagrams* (messages) among hosts running TCP/IP across multiple networks connected by routers. (Routers are special-purpose computers connected to two or more networks, that forward IP datagrams from one network to another.) IP is the core of the TCP/IP protocols. An IP host is identified by a 32-bit address, unique in the world, containing a network number and a host number within that network. IP datagrams can travel great distances.

UDP (User Datagram Protocol) supplies messages among *ports* on different hosts. The UDP protocol defines a set of virtual destinations called *protocol ports*. These ports are further defined as either well-known port assignments or dynamically bound ports. The well-known ports are numbered 1-255 and specific ports are assigned to certain widely used TCP/IP applications (e.g., telnet uses port 23).

TCP (Transmission Control Protocol) supplies virtual connections, and two-way, reliable, ordered streams of bytes, with flow control, between ports on different hosts. Data transfer is made reliable with checksums, sequence numbers, acknowledgments, and retransmission.

ARP (Address Resolution Protocol) maps from IP addresses to Ethernet addresses.

ICMP (Internet Control Message Protocol) is used internally by the network protocols for control and error messages.

RIP (Routing Information Protocol) is one of several protocols used by routers to exchange information about routes. It runs over UDP.

Applications are programs that want to talk to each other across the network. They do so by calling TCP or UDP. The most widely used network applications are electronic mail, remote login, file transfer, file sharing, and remote printing.

Appendix B: TCP/IP addressing

This appendix provides an overview of the various TCP/IP address types, their structure, and their assignment in the context of different network configurations.

IP address

An IP address is a 32-bit number divided into two parts: a network number, and a host number that identifies a specific device (computer, printer, etc.), within that network. The network number is on the left and the host number is on the right. The boundary between the network number and the host number can move. The network number can use one, two, or three bytes (and correspondingly, the host number can use three, two, or one byte). The position of the boundary is determined by the IP *address class*. There are three IP address classes: Class A, Class B, and Class C. (Classes D and E exist, but are not currently used.)

IP address class

A Class A IP address uses one byte for the network number and three bytes for the host number. A Class B address uses two bytes for the network number and two bytes for the host number. A Class C address uses three bytes for network number and one byte for the host number. The first few bits of the address determine its class, as follows:

Class	first bit(s) of first byte	First byte will be
A	0	0 - 127
B	10	128 - 191
C	110	192 - 223

IP addresses are represented as four separate bytes, expressed in decimal, separated by periods. This is known as *dotted decimal* notation. The following are examples of dotted decimal notation:

1.0.3.4	Class A, network 1, host 0.3.4
137.24.9.5	Class B, network 137.24, host 9.5
199.33.4.2	Class C, network 199.33.4, host 2

IP address restrictions

Each IP address consists of the class bits and two separate binary numbers (network number and host number). There are some restrictions on the values of these numbers. Neither the network number nor the host number can be designated as zero or all 1's. Zero is reserved; all 1's is the broadcast value. Also, there is a special case IP address, known as the software loopback address. The loopback address is the Class A network number consisting of all ones (i.e., network number 127). Messages sent to any address at net 127 will come back immediately, without ever going out onto the physical network.

IP subnet masks

The original IP addressing scheme has been modified to allow a single logical network (the IP network) to be divided into multiple physical networks. This is done by redefining some of the bits from the *host number* to constitute a subnet number. The designation of a subnet is optional. However, where subnetting is used, each IP address consists of three parts:

IP address = <net number><subnet number><host number>

Note: The values zero and all one's are reserved in the subnet number, as they are in the net number and host number fields.

The number of host bits used to designate a subnetwork can vary. The bits are determined by a second 32-bit number associated with an IP address; this number is called the subnet mask. The mask has 1 bits in the positions corresponding to the network and subnet numbers (including the class bits), and zero bits corresponding to the host number.

The IP specification for designating a subnet does not require that the subnet bits immediately follow the network number, or that they be contiguous. However, the Elite XL does.

Since zero and all ones are reserved values, fields that can contain only those two values are useless. In other words, all fields must be at least two bits wide (although the subnet field need not exist).

Broadcast address

An IP broadcast address is the IP address the printer uses when it wants to send a message to every node on the local network simultaneously. These messages are transparent to the user. Each of the three fields of an IP broadcast address can contain the broadcast value (all 1's) separately. An IP broadcast address takes one of these forms:

1's	1's	1's	the entire physical net
<net #>	<subnet #>	1's	all hosts, one subnet
<net #>	1's	1's	all hosts, all subnets

The recommended IP broadcast address is 32 bits of 1's or, as expressed in dotted decimal notation, 255.255.255.255. This specifies the physical network that the sending host is on. On an Ethernet, it maps directly to the Ethernet broadcast address, 48 ones. This is the default broadcast address for the Elite XL.

While the above table shows the standard IP broadcast addresses, there are variations that make an expanded table necessary. For example, Version 4.2 of Berkeley UNIX incorrectly used 0 rather than all 1's as the broadcast value. Therefore, the Elite XL allows you to use any of the following broadcast addresses:

1's	1's	1's
<net #>	<subnet #>	1's
<net #>	1's	1's
0	0	0
<net #>	<subnet #>	0
<net #>	0	0

In the above table of broadcast addresses, <net> and <subnet> are extracted from the printer's IP address and subnet mask. The first address type—all 1's—is recommended and is the default. The third type—all subnets of a specified IP net—is not widely implemented, and is not recommended. When subnetting is not used, the possibilities are:

1's	1's
<net #>	1's
0	0
<net #>	0

Appendix C: TCP/IP IP Restrictions

TCP/IP networking is peer-to-peer, which means that any computer on the same network as your printer may connect to the printer. A connection to the printer may be made by using telnet or lpr to send down print jobs, or by using WebAdmin for configuration.

Whether your network is internal to your organization, or connected to the Internet, you may wish to limit access to your printer to certain computers. For example, in the most secure case you may decide that only one particular computer may send TCP/IP print jobs to your Elite XL. A less restricted case would be to allow all those on your subnet to connect, but to block out everyone else on the Internet.

You can restrict IP addresses by entering pairs of IP addresses and masks. For each range of addresses you want to allow, enter one of these pairs. Up to four pairs can be defined. The printer will ignore communications from any IP address that does not match any of the pairs. Be aware that selecting the appropriate pairs requires knowledge of TCP/IP addressing schemes and hexadecimal masks.

For each MASK/ADDRESS pair with a non-zero MASK, an IP address X.X.X.X can connect to the printer if:

MASK & ADDRESS = MASK & X.X.X.X (where & is a bitwise AND operator).

Note: If all the MASK values are set to zero, IP access will not be restricted, even if **IP Restrict** is set to **Enabled**.

For example, on a class A network, if you want to allow any subnet address on the network 100.5, and the address 2.1.4.149 to connect to the printer, set up two mask address pairs as follows:

	Mask	Address
Pair 1	FF.FF.00.00	100.5.0.0
Pair 2	FF.FF.FF.FF	2.1.4.149
Pair 3	00.00.00.00	0.0.0.0
Pair 4	00.00.00.00	0.0.0.0

To enter these choices from the front panel, follow these steps:

- **Take the printer offline by pressing the Online button.**
- ***Repeatedly press the Menu button until the front panel says Interfaces and then press Enter.***
- ***Press the Menu button until the front panel says TCP/IP... Press Enter.***
- ***Repeatedly press the Menu button, until you get to IP Restrictions... and press Enter.***
- ***The Front panel should say Restrict IP: Disabled. Press the + key to change this to Enabled and press Enter.***
- **Enter the first selected IP Restriction Mask the same way you entered the Subnet Mask during TCP/IP configuration. Press Enter.**
- **Enter the first IP Restriction address in the manner you entered other IP addresses above. Press Enter.**
- **Enter up to four mask/address pairs in this manner. Leave unused pairs as zeroes.**
- ***Restart the printer for the restrictions to take effect.***

Using the Elite XL with Ethernet

5

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Introduction

This chapter details the procedures for attaching your Elite XL printer to an Ethernet network. It also discusses how to set up your Elite XL printer for network communications.

Most Elite XL printer models are configured from the factory with Ethernet installed. Elite XL's that include the Ethernet network circuitry can print over Ethernet networks that use the EtherTalk protocol. EtherTalk is Apple's name for the AppleTalk network protocol running over Ethernet cabling. (**Note:** The Elite XL Ethernet network interface is available as a user-installable option for models that do not come with it standard. See Appendix I of the *Elite XL User's Manual*).

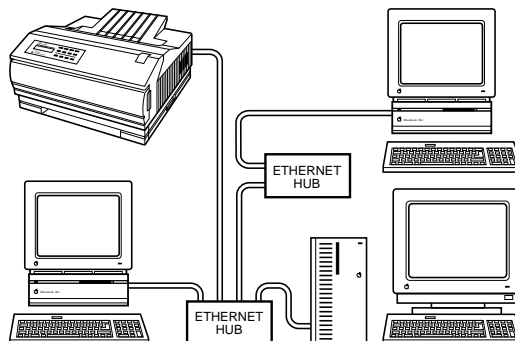
Ethernet network connection

The Ethernet cabling system provides faster and more reliable communications than the LocalTalk cabling system. The XL Ethernet interface has connectors for two types of Ethernet cables: 10BASE-T and 10BASE-2. The following sections provide information about the different methods for connecting the Elite XL to your Ethernet network.

10BASE-T (Unshielded Twisted-Pair or UTP) network connection

The Elite XL connects to 10BASE-T Ethernet via the 10BASE-T (RJ-45) connector on the rear of the printer. The cabling used is Unshielded Twisted-Pair (UTP). A UTP cable consists of four individually twisted pairs of insulated wire that are surrounded by only the outside shell of the cable. Nodes (computers, printers, etc.) on a network using UTP cabling must be connected to a hub in a star topology. Multiple hubs may be connected to each other linearly (using an RG-58 coax backbone) or hierarchically with additional UTP cables, depending on the type of hub.

Please refer to your Ethernet hub documentation for more information about setting up the network.

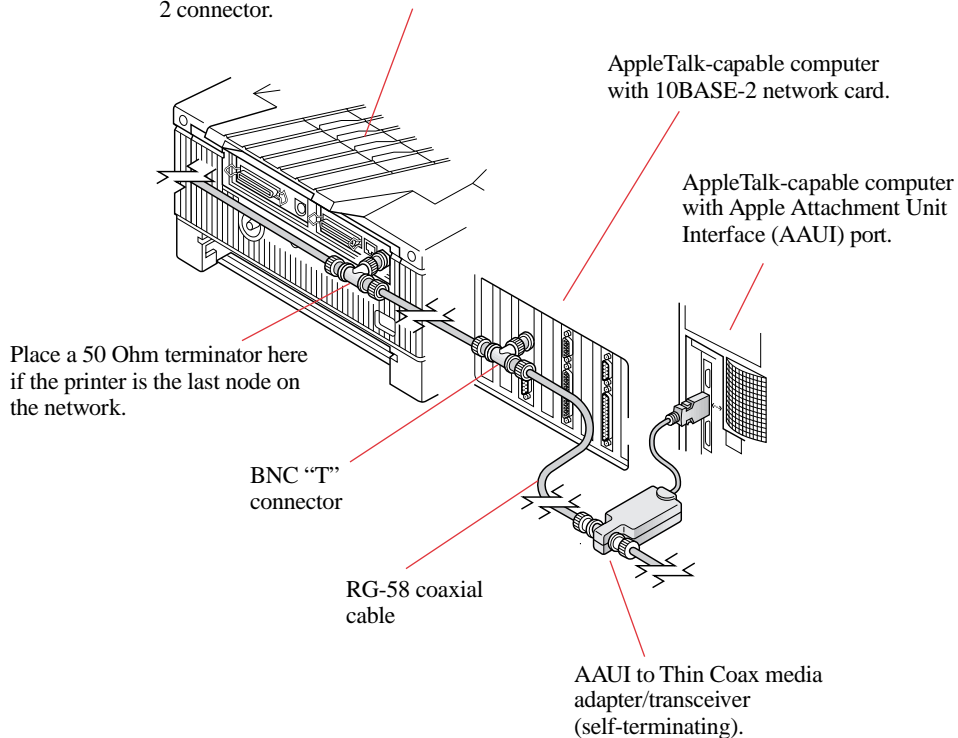


10BASE-2 (RG-58, Thin Coax, or Thinnet) network connection

The Elite XL connects to 10BASE-2 Ethernet via the 10BASE-2 (BNC) connector on the network card. The cabling used is called RG-58 or Thin Coax. RG-58 is a type of coaxial cable consisting of a wire surrounded by insulation and a cylindrical conductor.

A 10BASE-2 network must be connected in a line as opposed to a loop, using RG-58 cable to connect one node to the next. There can be up to 30 nodes, and there must also be a 50 Ohm terminator at each end of the line. The following illustration shows the Elite XL connected to Thin Coax cabling along with the two adjacent nodes.

Elite XL with a BNC "T" connector attached directly to the Ethernet 10BASE-2 connector.



Note: When attaching devices to the thinnet cable, do not be tempted to place a piece of coax between the BNC "T" connector and the BNC connector on the back of the printer or computer in order to facilitate the connection. Forming a connection in this manner can cause communication problems.

Direct Ethernet connection

Because of the increasing availability of Ethernet in personal computers, the possibility of the Elite XL being “directly” networked to a single computer is becoming more common.

Important: When connecting the Elite XL directly to a computer (either Macintosh or IBM PC and compatibles) with Ethernet we strongly recommend that you use the 10BASE-2 connection introduced on the previous page.

Direct Ethernet connection options

In most cases, the Elite XL will be connected to a Macintosh. Some third-party EtherTalk networking cards for IBM PCs and compatibles, containing the connector types detailed in the following sections, are also available. When using these cards, be sure to refer to the documentation included with them before proceeding with the following procedures.

Option 1 - Apple Attachment Unit Interface (AAUI)

The AAUI interface is the standard connector used by Apple in Macintoshes that have Ethernet built-in at the factory. Third-party Macintosh Ethernet cards may also incorporate an AAUI connector.

Items needed:

- Computer with Ethernet and AAUI port
- 1 AAUI to Thin Coax media adapter (also called a transceiver)
- 1 BNC “T” connector
- 1 50 Ohm terminator
- 1 length (at least 6 feet long) of RG-58 coaxial cable

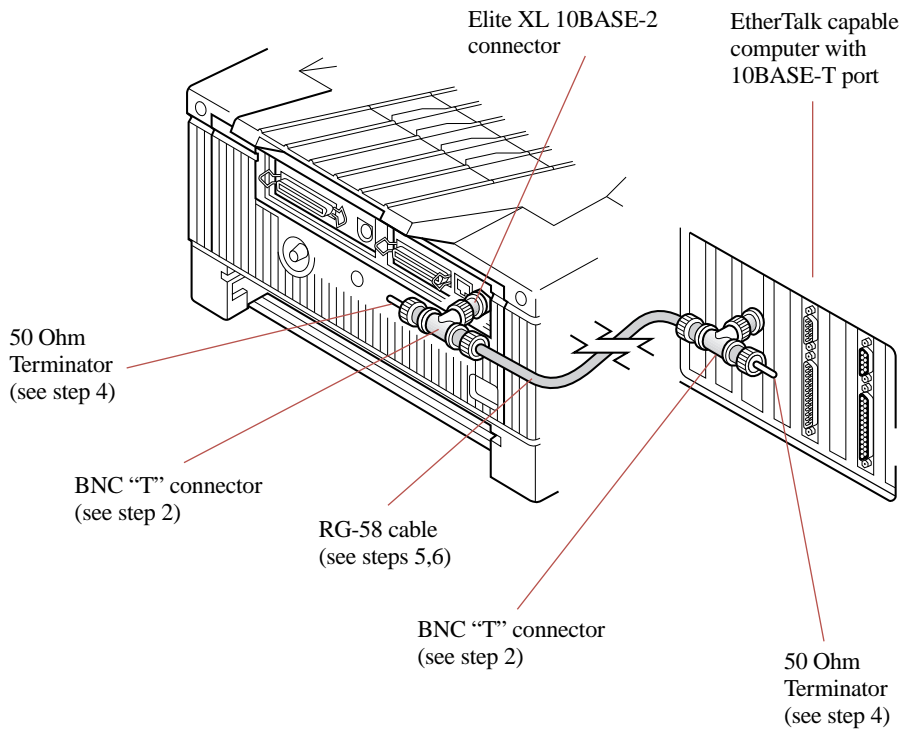
To connect the Elite XL to a computer with an AAUI port:

(Refer to the illustration on the following page.)

- 1. Turn off the computer and printer.**
- 2. Attach the BNC “T” connector to the BNC connector on the Elite XL.**
- 3. Attach a 50 Ohm terminator to one side of the “T” connector.**
- 4. Connect the AAUI connector of the media adapter to the AAUI port on your computer.**

To connect the Elite XL to a computer with a BNC connector:

- 1. Switch off the computer and printer.**
- 2. Attach one of the BNC “T” connectors to the BNC connector on the Elite XL.**
- 3. Attach the second BNC “T” connector to the BNC connector on the computer.**
- 4. Attach a terminator to one side of each of the BNC “T” connectors.**
- 5. Attach one end of the RG-58 coaxial cable to the unterminated side of the BNC “T” connector on the printer.**
- 6. Attach the other end of the RG-58 coaxial cable to the unterminated side of the BNC “T” connector on the computer.**



Configuring the printer for network operation

After you have completed setting the printer up on a network, you should configure the printer to accept print jobs through the EtherTalk port. The printer receives print data through the EtherTalk port which is physically connected to the Ethernet network by one of the printer's network interface connectors (10Base-2 or 10Base-T).

The printer is capable of receiving both PostScript and PCL print jobs simultaneously. However, as configured at the factory, the printer is set to receive only PostScript. If you will be sending only PostScript jobs to the EtherTalk port you may skip this section. If, however, you will be sending both PostScript and PCL or just PCL to the EtherTalk port, you will need to reconfigure some of the printer's front panel menus.

The configuration procedure is a two step process:

- 1. Reset the PS/PCL Sensing submenu:** This submenu controls the printer's overall ability to sense for incoming PostScript and PCL print jobs.
- 2. Reset the EtherTalk port submenu:** This submenu allows you to set the individual EtherTalk port to accept PostScript, PCL, or both.

To change the submenu settings:

- 1. Take the printer offline.**

Press the On Line key once. The front panel window should display "Off Line".

- 2. Set the PS/PCL Sensing menu.**

Press the Menu key until "Emulations" is displayed in the front panel window. Press the Enter key. The window should display "PS/PCL Sensing".

Press the + key to cycle through the three settings: PostScript Only, PCL Only, and Auto Switch.

When the desired setting is displayed in the window, press the Enter key to save the setting. An asterisk (*) will appear in the window confirming the selection.

3. Set the EtherTalk Port submenu.

- With the PS/PCL Sensing submenu still displayed in the window, press the Menu key until “Port Emulations” is displayed in the window.
- Press the Enter key to access the Port Emulations submenus.
- Press the Menu key until “EtherTalk Port:” is displayed in the window. Press the + key to cycle through the three port settings: PostScript Only, PCL Only, and Auto Switch.
- When the desired setting is displayed in the window, press the Enter key to save the setting. An asterisk (*) will appear in the window confirming the selection.

4. Place the printer On Line.

Press the On Line key to place the printer on line. The front panel window should display “Ready”.

If you have questions about the operation of the front panel menu system see Chapter 2 of the *Elite XL User’s Manual*.

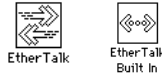
Configuring the Macintosh software

In order for print data to be transmitted to the Ethernet card, the Macintosh needs to be configured for communication over Ethernet.

To configure the Macintosh for Ethernet communication:

- 1. Select Control Panels from the Apple () menu.**
The Control Panels folder appears.
- 2. Double-click the Network control panel.**
- 3. Click EtherTalk.**

Depending on the type of EtherTalk hardware installed in your Macintosh, the correct EtherTalk (Phase 2) icon will look like one of the following:



Note: You must select the EtherTalk Phase 2 icon (two arrows pointing in each direction or two arrowheads connected by a dotted line) as opposed to EtherTalk Phase 1 (one arrow pointing in each direction).

4. Close the network control panel.

Configuring the IBM-PC and compatible software

Please refer to your computer's EtherTalk network card and Windows documentation for configuration instructions.

Network card status LEDs

There are three yellow light-emitting-diodes (LEDs) inset into the face plate of the Elite XL rear bezel. The right LED is lit continuously when a valid Thin Coax (10BASE-2) connection is established. The left LED is lit continuously when a valid UTP (10BASE-T) connection is established.

