



Print Server Installation Guide

For EPS2-100 and EPS4-100 Fast Ethernet Print Servers



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WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against such interference when operating in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this guide, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause interference in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.

Cet appareil doit se soumettre avec la section 15 des statuts et règlements de FCC. Le fonctionnement est subjecté aux conditions suivantes:

- (1) Cet appareil ne doit pas causer une interférence malfaisante.
- (2) Cet appareil doit accepter n'importe quelle interférence reçue qui peut causer une opération indésirable

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1 - Introduction

The Lantronix multi-port Fast Ethernet Print Servers (EPS2-100 and EPS4-100) are multiprotocol print servers that provide shared network access to printers for a variety of network protocols and operating systems. The EPS2-100 and EPS4-100 support the AppleTalk (EtherTalk), LAN Manager, Local Area Transport (LAT), IPX (NetWare), and TCP/IP protocols. Both servers queue multiple pending jobs and service those jobs in the order that they are received from the hosts.

NOTE: *In this manual, both the EPS2-100 and the EPS4-100 servers will be referred to as “the EPS” or as “the Server” unless a distinction needs to be made between the models.*

1.1 How to Use This Manual

This guide is structured as follows:

- Chapter 2, *Installation*, explains how to physically install the Server.
- Chapter 3, *Getting Started*, explains the minimum configuration needed to operate the Server.
- Chapters 4 through 8 cover protocol-specific setup needed to install print queues and otherwise use the Server.

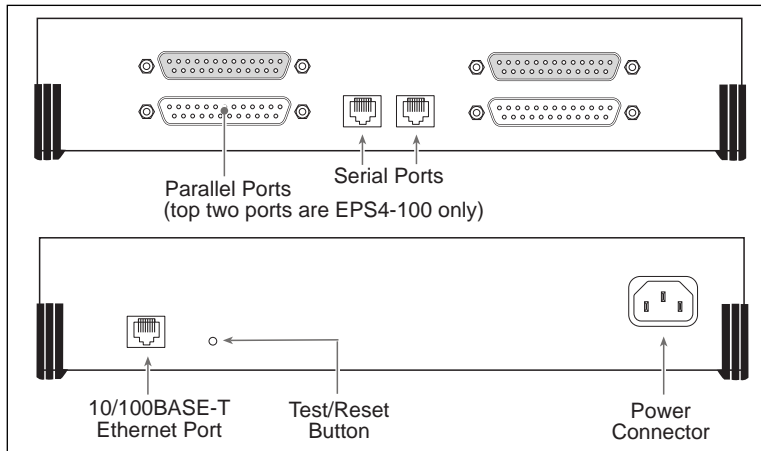
Read chapters 2 and 3 in order, then proceed to the protocol-specific chapter that relates to your network.

2 - Installation

2.1 Product Description

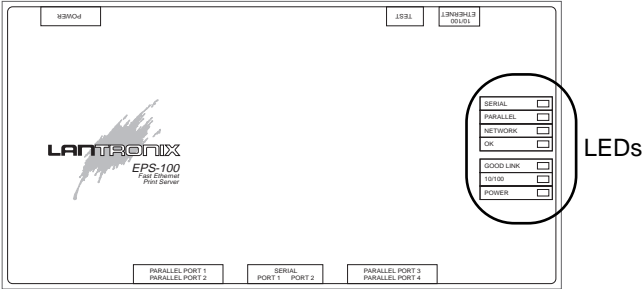
The front panel of the EPS has two RJ45 ports and either two DB25 ports (EPS2-100) or 4 DB25 ports (EPS4-100). The back panel of the EPS has one 10/100BASE-T port, a Test/Reset button, and a power plug.

Figure 2-1: The EPS Front and Back Panels



The EPS has 7 LEDs on the top panel

Figure 2-2: EPS LED Location



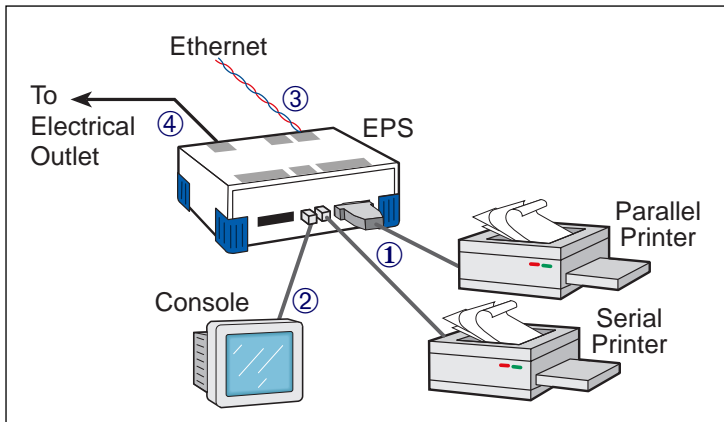
LED functionality is explained in Table 2-1.

Table 2-1: LED Functionality

| LED | Function During Normal Operation |
|------------|--|
| SERIAL | Blinks yellow to indicate serial port activity. |
| PARALLEL | Blinks yellow to indicate parallel port activity. |
| NETWORK | Blinks yellow to indicate Ethernet activity. |
| OK | Lights green (blinks occasionally) to indicate the unit is functioning properly. |
| GOOD LINK | Lights solid green to indicate a working Ethernet connection (either 10BASE-T or 100BASE-T). |
| 10/100 | Lights solid green to indicate a 100BASE-T Ethernet connection. If the other LEDs are functioning normally and this LED is not lit, it means that the connected network is 10BASE-T. |
| POWER | Lights solid green to indicate that the unit has power. |

2.2 Installation

The following diagram shows a properly-installed EPS



To install the server, complete the following steps in order. Refer to the numbers in the figure for help.

1. Connect at least one printer to the EPS using an available serial or parallel port.
2. If desired, connect a terminal to port 1 (the console port) to receive diagnostic and initial configuration messages.
3. Connect the EPS to the 10/100BASE-T network.

NOTE: *The default serial port settings are 9600 baud, 8 bit characters, and no parity.*

4. Attach one end of the power cable to the EPS; plug the other end into an electrical outlet. Power will come on automatically.
5. Allow 45 seconds for the unit to fully boot. The OK LED should be lit to show the unit is functioning properly.

If you have connected a 10BASE-T cable to the Server, the Link LED should be solid green. If you have connected a 100BASE-T cable, The Link and 100MBit LEDs should both be solid green. If not, check your network connection.

6. Print a Test page by pressing the Test/Reset button.

NOTE: *If the Power LED does not light or the Test page does not print, refer to Appendix B, Troubleshooting.*

7. Install EZWebCon on your 32-bit Windows PC to configure your Server. The EZWebCon software is located on the CD-ROM. See *EZWebCon Configuration* on page 3-2 for more information.



3 - Getting Started

It is important to consider the following points before logging into and configuring the EPS:

- The EPS IP address must be configured before any TCP/IP functionality is available. (See *Setting the IP Address* on page 4-2.)
- There are two important passwords on the EPS: the privileged password and the login password.

Changing any server, service, or port setting requires privileged user status. The default privileged password is **system**.

The login password is required for remote console logins. The default login password is **access**.

NOTE: *If you would like to change either the privileged or login password, either use EZWebCon or refer to the Print Server Reference Manual located on the CD-ROM.*

3.1 EZWebCon Configuration

The EZWebCon configuration software is the recommended way to configure the EPS. EZWebCon is a graphical user interface that guides first time users through the initial configuration process and allows experienced users to update and change any configurable parameters. There are two important things to note about EZWebCon:

- Your Server must have an IP address before EZWebCon can log into it for configuration purposes. See *Setting the IP Address* on page 4-2 for instructions.
- EZWebCon requires a Java Virtual Machine (JVM) on the client. Lantronix provides JVM installers for Solaris and 32-bit Windows users, as well as source code and instructions for compiling it for use on other systems.

The EZWebCon software is located on the distribution CD-ROM. All instructions for installing EZWebCon are provided in the README file. For assistance once EZWebCon is running, refer to the EZWebCon on-line help.

NOTE: *EZWebCon is also available from the Lantronix FTP and BBS servers. See Appendix D for more information about logging into the FTP and BBS servers.*

3.2 Incoming Logins

Incoming logins made via EZWebCon can be used to configure the server. Incoming LAT and TCP/IP logins can also be used.

Incoming Telnet is enabled by default to allow TCP/IP connections. To change this setting, use the **Define Server Incoming** command described in the *Command Reference* chapter of the *Print Server Reference Manual* located on CD-ROM.

Incoming logins do not prompt for a login password; therefore, you may wish to disable them. If it is undesirable to disable incoming logins, the Server can be configured to prompt for a password with the **Define Server Incoming Password Enabled** command.

3.3 Services

With few exceptions, a **service** must be created before print queues can be configured on the EPS. A service is a resource accessible to network hosts. A Lantronix service is also known as a **remote printer** name or **remote queue** name on many operating systems.

The EPS offers a default service on each port. The service names are EPS_XXXXXX_YY where XXXXXX represents the last six numbers of the unit's Ethernet address and YY is the port name, for example EPS_XXXXXX_S1 (serial port) or EPS_XXXXXX_P1 (parallel port).

NOTE: *The default service names are based on the server name; therefore the server name must be no more than 13 characters.*

Getting Started

The default services on the serial ports have the TCP/IP, NetWare, LAN Manager, and AppleTalk protocols enabled. Parallel port services have TCP/IP, NetWare, and LAN Manager enabled. LAT is disabled by default on all services provided by the Server because many network managers object to the frequent LAT service announcements. AppleTalk is disabled on parallel port services because AppleTalk requires Bitronics mode, which is disabled by default.

If you need to modify a default service, use EZWebCon or see the *Server Configuration* chapter of the *Print Server Reference Manual* located on the CD-ROM.

4 - TCP/IP Configuration

The EZWebCon configuration software is the easiest way to configure the EPS. The following sections cover IP address configuration and print configuration methods for TCP/IP hosts.

NOTE: *The Server needs an IP address before you can use EZWebCon. See page 4-2 for instructions.*

The EPS provides two major methods of printing via TCP/IP: Berkeley remote LPR and RTEL host software.

Neither Windows for Workgroups nor Windows 95 support LPR directly; however, there are third party solutions available. For more information about recommended peer-to-peer printing solutions, see the Lantronix *Windows 95 FAQ* on the CD-ROM or the Lantronix web site.

4.1 Setting the IP Address

The EPS IP address must be configured before any TCP/IP functionality is available.

To set the IP address, use one of the following methods: EZWebCon; a directed Ping packet; a DHCP, BOOTP, or RARP reply; or commands entered at the command line (Local>) interface.

4.1.1 Using EZWebCon

The EPS must have an IP address before you can log into it using EZWebCon. To assign the IP address from EZWebCon:

1. Start EZWebCon. Instructions for installing, running, and using EZWebCon can be found on the distribution CD-ROM.
2. Click on the Lantronix logo menu in the bottom left corner of the EZWebCon window, then select **Assign IP Address to Server**.
3. Fill in the following information:
 - A. The last three bytes of the EPS's hardware address. The hardware address is printed on the bottom of the Server.
 - B. The desired IP address.

- C. The subnet, if you wish to use a subnet other than the default.
 - D. The IP address of the TFTP server you wish to use, if desired.
4. Click **OK**.
 5. Cycle power on the server. EZWebCon will let you know whether the configuration was successful.

4.1.2 Using a Directed Ping Packet

The ARP/ping method is available under UNIX, Windows 95, and Windows NT. If the EPS has no IP address, it will set its address from the first directed IP packet it receives.

NOTE: *The ARP/ping method only works during the first two minutes of EPS operation. After two minutes, an alternate method must be used or the EPS must be rebooted.*

On a **UNIX** host, create an entry in the host's ARP table and substitute the intended IP address and the hardware address of the server, then ping the server. This process typically requires superuser privileges.

```
# arp -s 192.0.1.228 00:80:a3:xx:xx:xx
% ping 192.0.1.228
```

In order for the ARP command to work on **Windows**, the ARP table on the PC must have at least one IP address defined other than its own. If the ARP table is empty, the command will return an error message. Type `ARP -A` at the DOS command prompt to verify that there is at least one entry in the ARP table.

If there is no other entry beside the local machine, ping another IP machine on your network to build the ARP table. This has to be a host other than the machine that you're working on. Once there is at least one entry in the ARP table, use the following commands to ARP the IP address to the EPS and make the EPS acknowledge the IP assignment.

```
C:\ ARP -S 192.0.1.228 00-80-A3-XX-XX-XX  
C:\ PING 192.0.1.228
```

NOTE: *There should be replies from the IP address if the ARP command worked.*

When the EPS receives the ping packet, it will notice that its IP address is not set and will send out broadcasts to see if another node is using the specified address. If no duplicate is found, the server will use the IP address and will respond to the ping packet.

The EPS will not save the learned IP address permanently; this procedure is intended as a temporary measure to enable EZWebCon to communicate with the server, or allow an

administrator to Telnet into the EPS. Once logged in, the administrator can enter the **Change IPaddress** command to make the address permanent.

```
% telnet 192.0.1.228

Trying 192.0.1.228

Lantronix Version n.n/n (yymmdd)
Type Help at the 'Local_>' prompt for assistance.

Enter Username> gopher
Local> SET PRIVILEGED
Password> system (not echoed)
Local>> DEFINE IPADDRESS 192.0.1.228
```

Any host wishing to access the EPS will have to be told the EPS's IP address. This is typically configured in the unix file **/etc/hosts** or via a nameserver. Refer to the host's documentation for additional information.

4.1.3 Using a DHCP, BOOTP, or RARP Reply

At boot time a host-based DHCP, BOOTP, or RARP server can respond to an EPS request for an available IP address. For information about configuring the DHCP, BOOTP, or RARP server, see your host documentation.

4.1.4 Using the Command Line Interface

1. Connect to the serial port (Port 1) using a terminal emulation program. The serial settings should be 9600 baud, 8 bits, 1 stop bit, no parity.
2. Become the privileged user and enter the new IP address.

```
Local> SET PRIVILEGED
Password> system (not echoed)
Local>> DEFINE SERVER IPADDRESS 192.0.1.201
```

4.2 Notes About LPR

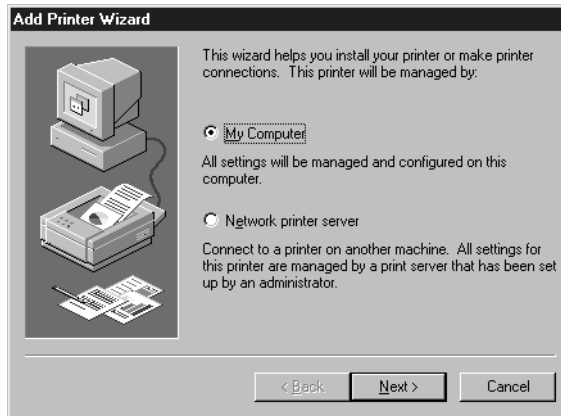
There are four important things to note about the LPR printing method:

1. Because of the way the LPR protocol is typically implemented on the host, the processing options and banner page are sent after the job data itself. **The EPS will print a banner page at the end of a job, and cannot support most of the LPR options.** If it is necessary to have the banner page at the beginning of the printout, install and use the RTEL software. If banners are not needed, they can be disabled.
2. The EPS cannot print multiple copies of the print job when using the “-#n” lpr option.
3. If two print queues on the host refer to two services on the same EPS, they must use separate spooling directories.
4. No special purpose input or output filters can be used when printing via LPR. If this functionality is necessary, use the named pipe interface program in the RTEL print queue configuration software.

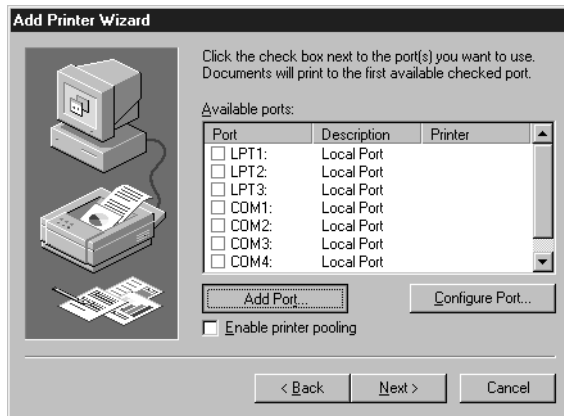
4.3 LPR on Windows NT 4.x

NOTE: *This installation assumes that TCP/IP, Simple TCP/IP, and Microsoft TCP/IP printing have been installed on the Windows NT host.*

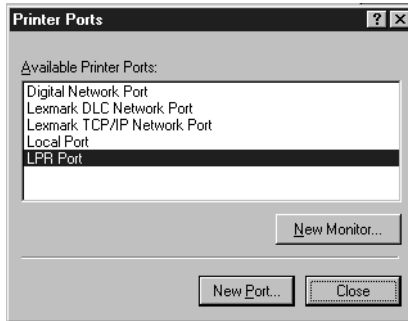
1. In the Control Panel, double-click the **Printers** icon.
2. Double-click the **Add Printer** icon.
3. In the window that appears, choose **My computer** and click **Next**.



4. Select the **Add Port** button and click **Next**.

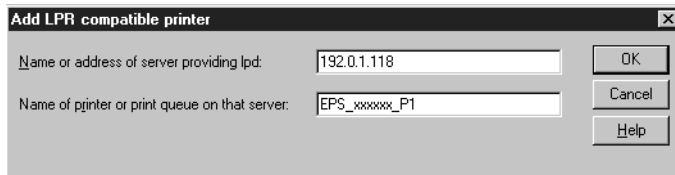


5. Select **LPR Port**.

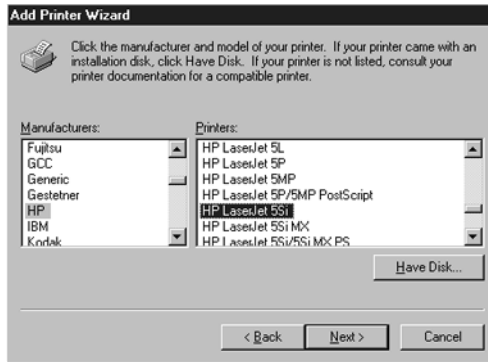


NOTE: *If LPR Port is not an option, refer to your Windows NT documentation for instructions on installing the "Microsoft TCP/IP Printing" service.*

6. Enter the name or IP address of your EPS on the first line, and enter the name of your EPS print service on the second line.



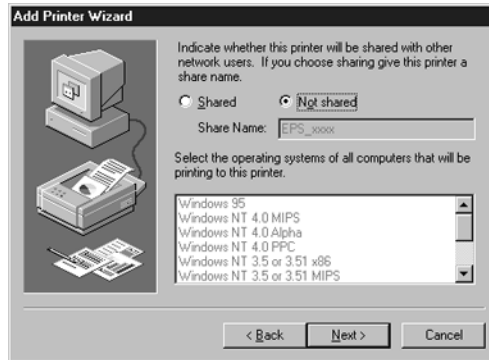
7. Select the manufacturer and printer type.



8. Enter the queue name.



9. If applicable, choose **Shared** and select the type of operating system that the printer will be working with. (First confirm that the print queue is working.)



10. Test the printer.



4.4 LPR on UNIX Hosts

The Berkeley remote printing system is supported on many machines, and is simple to configure.

This section describes how to configure LPR print queues on generic UNIX hosts such as SUN hosts. There are slight variations in LPR configuration for AIX, HP, and SCO hosts, as will be explained in the following sections.

1. Install a print queue on your host by adding the EPS name and IP address to the `/etc/hosts` file:

```
192.0.1.88      EPS_XXXXXX
```

2. Add the host print queue to the `/etc/printcap` file:

```
eps_prt|Printer on LAB EPS:\  
:rm=EPS_XXXXXX:\  
:rp=EPS_XXXXXX_TEXT:\  
:sd=/usr/spool/lpd/eps_prt:
```

The punctuation shown is required, and no extra spaces should be added.

This will create a host queue named **eps_prt**. The **rm** parameter is the name of the EPS in the host's address file, the **rp** parameter is the name of the service as it exists on the EPS, and the **sd** parameter specifies the name of a directory used to hold temporary spooling files.

3. Create a world-writable spooling directory using the **mkdir** command.

```
# mkdir /usr/spool/lpd/eps_prt
# chmod 777 /usr/spool/lpd/eps_prt
```

4. If desired, use the **mx** option to allow unlimited size files to be printed and the **sh** option to prevent header pages from being generated. See the host's documentation or man pages for more information on the format of the printcap file and how to create the spool directory.
5. Print to the queue using normal **lpr** commands:

```
% lpr -Peps_prt /etc/hosts
```


4.4.1 LPR on AIX Hosts

LPR has only been tested on AIX versions 3.2 and higher. The System Management Interface Tool (SMIT) allows you to enable LPD printing and create print queues.

To create a print queue:

1. At the host prompt type *smit*.
2. Choose **Print Spooling**.
3. Choose **Manage Print Server** and **Start the Print Server Subsystem (lpd daemon)**.
4. In the Start the Print Server Subsystem dialog box, type *both* in the first field.
The message “The lpd subsystem has been started” will appear. Click **Done**.

To add a print queue:

1. From the main window choose **Print Spooling**.
2. Choose **Manage Print Server** and **Manage Print Queues**.
3. Choose **Add a print queue**.
4. From the dialog box that appears choose **remote**.

5. From the next dialog box choose **Remote Printing**.
6. The **Add a Standard Remote Print Queue** dialog box will appear. Enter the following information.
 - The name of the print queue,
 - The name of the EPS unit,
 - The name of the EPS service,
 - The type of print spooler on the remote server, and
 - A description of the printer on the remote server.

A dialog box will appear with the message “Added print queue **eps_prt**.”

NOTE: *If you are unable to use SMIT, see the Print Server Reference Manual for UNIX commands for setting up print queues.*

7. Print to the queue using normal lp syntax.

```
% lp -deps_prt filename
```

4.4.2 LPR on HP Hosts

The System Administration Manager (SAM) allows you to create print queues.

NOTE: *If you are unable to use SAM, the Print Server Reference Manual located on the CD-ROM described UNIX commands that can be used to set up print queues.*

To create a print queue:

1. At the HP prompt type *sam*.
2. From the main application window choose **Printers and Plotters**.
3. Choose **Printers/Plotters** from the Printers and Plotters window.
4. In the pull-down menu select **Remote Printer/Plotter** from the **Actions** menu.
5. The Add Remote Printer window will appear. SAM will prompt you for:
 - The printer name (the name of the print queue),
 - The remote system name (the EPS name),
 - The remote printer name (the EPS service),
 - The remote cancel model, and
 - The remote status model.

4.4.3 LPR on SCO UNIX Hosts

LPR is supported in SCO V3.2 release 4 with TCP/IP Version 1.2 and greater.

To configure a print queue using LPR:

1. Issue the **mkdev rlp** command. This will install the Berkeley remote printing files and executable programs.

NOTE: *The **mkdev rlp** command should only be issued once, or serious problems will occur. If this happens, contact SCO technical support.*

You can print to this queue using normal lp syntax once the remote printer is set up.

To create a remote printer:

1. Issue the **rlpconf** command.
2. Answer the questions that follow. See the figure on the next page for more information.

Remote Printing Configuration

Enter information for remote printers or local printers accepting remote printing requests

Please enter the printer name (q to quit): backupprinter

Is printer backupprinter a remote printer or a local printer? (r/l) r

Please enter the name of the remote host that backupprinter is attached to: EPS_XXXXXX

The backupprinter is connected to host EPS_XXXXXX.

Is this correct? (y/n) y

Would you like this to be the sys.default printer? (y/n) y

Make sure your hostname appears in EPS_PRT's /etc/hosts.equiv or /etc/hosts:lpd file.

Make sure backupprinter appears in /etc/printcap (in BSD format).

Make sure backupprinter has a spool directory on EPS_PRT.

Putting the printer in printer description file and creating spool directory... done

Updating LP information... done

The printer name is your EPS service name. The remote host name is the name of your EPS as it is listed in your hosts file.

During initial configuration, the queue name must be the same as the remote printer name. However, you may change the queue name later by manually editing the printcap file.

4.5 RTEL Functionality

If the LPR method of printing is not adequate for an application (for example, if you need banners before jobs, or more flexibility), configure the Lantronix-supplied RTEL software on the host. After installing the software configuring the connections to the EPS, you can use normal UNIX print commands and queue utilities such as `lpc` and `lpstat`.

NOTE: *RTEL binaries are provided for many systems. Source code is also provided for use on non-supported systems.*

To print to the EPS using special formatting or using third-party software packages, you may have to create “print pipes” on the host. The RTEL software provides this functionality by providing a UNIX named-pipe interface.

To recreate the RTEL source files:

1. Copy the file `RTEL_SRC.TAR` from the distribution CD-ROM to the UNIX host. Ensure that a binary copy is performed.
2. Untar the archive.
3. See the README files in the created directories that describe the contents of the RTEL distribution and man pages that describe the actual software functionality.

4.6 Unix Host Troubleshooting

Table 4-1: TCP Troubleshooting

| Area to Check | Explanation |
|---|---|
| The Server IP address and name are entered in the host file | Telnet to the Server using the name in the host file and verify that the Server name is resolvable and that the Server is reachable via the network. |
| Jobs that appear in the host queue reach the Server | From within the LPC administrative utility, enter these commands to clear and reset the host queue: abort queue_name clear queue_name enable queue_name start queue_name. |



5 - NetWare Configuration

The EZWebCon configuration software is the easiest way to configure the EPS. The following sections cover print configuration methods for NetWare hosts.

NOTE: *The Server needs an IP address before you can use EZWebCon. See the Setting the IP Address section on page 4-2 for instructions.*

This chapter explains creating NDS print queues with NetWare Administrator and with the PCONSOLE Quick Setup option. To create NDS print queues, you must be running NetWare version 4.x with NDS capabilities.

If you are running NetWare versions 2.x, 3.x, or version 4.x with bindery emulation, you may configure bindery print queues using QINST (bindery only) or PCONSOLE. For more information, see the *NetWare* chapter of the *Print Server Reference Manual*, located on CD-ROM.

5.1 Obtaining an NDS License

If you wish to create NDS print queues, you must read and complete an NDS registration form via one of the following methods:

- Using a forms-capable Internet browser, navigate to the Lantronix World Wide Web site (located at URL <http://www.lantronix.com>) and find the **NDS Registration** link.
- Send email to **nds-info@lantronix.com**. You will receive a blank registration form that can be completed and returned to Lantronix.
- If you don't have Internet access, contact a Lantronix Technical Support representative for assistance. Contact information is provided in *Appendix A*.

1. License NDS on your server using the string obtained from Lantronix.

```
Local>> DEFINE PROTOCOL NETWARE DSLICENSE licensestring
```

2. Define the directory service tree in which the Server is located.

```
Local>> DEFINE PROTOCOL NETWARE DSTREE foodco
```

NOTE: *For an explanation of the structure of the NetWare Directory Service tree, see your host documentation.*

3. Define the directory service context in which the Server is located.

```
Local>> DEFINE PROTOCOL NETWARE DSCONTEXT ou=kiwi.ou=exotic.o=fruit
```

4. Enter the **List Protocol NetWare Access** command to ensure that at least one of the file servers in the directory service tree is in the access list.
5. If desired file server is not in the access list, add it.

```
Local>> DEFINE PROTOCOL NETWARE ACCESS fileserver
```

6. Reboot the EPS.

```
Local>> INITIALIZE DELAY 0
```

5.2 Creating Print Queues Using NetWare Administrator Quick Setup

The NetWare Administrator management utility allows you to manage network resources, such as queue-based print services, in a tree structure. You can either use the Quick Setup option or individually create printing-related objects.

To create a print queue with the Quick Setup option.

NOTE: *NetWare Administrator can be used for both NDS and bindery print queues.*

1. Start NetWare Administrator.
2. In the **Directory Tree** windows, select the context in which to install the printer.
3. From the Menu Bar, select **Tools: Print Services Quick Setup**.
4. In the **Print Server Name** field, enter the name of your Lantronix server (viewable by entering the **Show Server** command at the Local> prompt).
5. In the **Printer Name** field, enter the name of the desired print *service* configured on your Lantronix server.
6. In the **Print Queue Name** field, enter the name of the print queue to create. The name should be meaningful to you; it will not affect Server configuration.
7. Click **Create**.
8. Reboot the EPS.

5.3 Creating NDS Print Queues Using PCONSOLE

1. Log in as Admin on the file server you will be changing.
2. Type **PCONSOLE** at the X: prompt to start the utility.

For example, if your file server is mapped to the F: drive, you would use the **F:** prompt.

3. From the main menu choose **Quick Set-Up**.
4. PCONSOLE will prompt you for information with which to configure the print queue.

The print server name is the name of your EPS (EPS_XXXXXX). The new printer name is the service name (for example, EPS_XXXXXX_Text). The new print queue can be any name. The print queue volume is the name of the file server from which the printer receives print requests. The remaining fields can be left in their default settings.

NOTE: *In the above text, xxxxxx represents the last 6 digits of your EPS's hardware address. The hardware address is printed on the unit's label.*

5. Press the **F10** key to save the print queue information.
6. Reboot the EPS.

5.4 NetWare Host Troubleshooting

Table 5-1: NetWare Host Troubleshooting (Bindery Mode)

| Area to Check | Explanation |
|--|---|
| The server and queue names in PCONSOLE match the print server name and its service name? | Use PCONSOLE to check. |
| The Server's NetWare access table | Use the Show Protocols NetWare Access command. Scanning too many file servers can cause a delay between jobs. Configure the access list to only scan for jobs on the file servers of interest. |

Table 5-2: NetWare Host Troubleshooting (NDS)

| Area to Check | Explanation |
|--|---|
| The Server's NetWare access table | Use the Show Protocols NetWare Access command. By default, only local file servers are scanned for queues. |
| The login password on the Server and the queue password on the file server | The passwords must match or the Server will not be able to log into the file servers to scan for jobs. |

Table 5-2: NetWare Host Troubleshooting (NDS), cont.

| Area to Check | Explanation |
|--|---|
| The print server has successfully attached to the queue | Type NETSTAT at the Local> prompt. This will display information about file servers, printers, and queues that the print server has found. If a queue is in JobPoll, the print server has successfully attached to the queue. |
| The DSTree, DSContext, and DSLicense | Type Show Protocol NetWare NDS . This command shows the tree and the context that you have configured, a failure code, and an NDS error code for each server. DSTree is the directory service tree on which the print server is located. DSContext is the context where the print server is located; it must match the context on the file server (The DSContext must be of the following form: ou=fruit.o=exotic). DSLicensed should be <i>yes</i> . |
| Printer and queue changes have propagated through the NDS tree | It may take a few minutes for the changes to propagate. If the print server doesn't attach, reboot the server. |

Table 5-3: NDS Errors from the File Server

| Failure code | Failure code meaning | Remedy |
|--------------|--|---|
| 0xffffda7 | Object could not be found in the given context | Check the print server name, DScontext, and DStree to make sure that the printer server is set up correctly with PCONSOLE. |
| 0xffffda5 | The requested attribute could not be found | Use PCONSOLE to make sure that the print server has associated printers and that the printers have associated queues. |
| 0xffffd69 | DS Database is locked | An administrator is probably updating the database. Wait a few minutes and issue the Set Protocol NetWare Reset command. |
| 0xffffd63 | The password is invalid | The password for the print server object under PCONSOLE must match the Server's login password. If the login password on the Server is left as the default (access), there should be no password for the print server object. |
| 0xffffd54 | Secure NCP violation | Turn down the NCP packet signature level so that it is not required from the server. |

Table 5-4: NDS Printing Errors

| Bit | Failure Code Meaning | Remedy |
|------------|--------------------------------------|--|
| 1 | Server out of memory | Turn the Server off, wait a few seconds, and turn it back on. Disable unused protocols and/or remove file servers without print queues from the NetWare access list. |
| 2, 3 | Unexpected response from file server | Report the problem to Lantronix Technical Support. |
| 4 | No printers found for the Server | Ensure that there are printers for the print server, and the printer names match the service names on the print server. |
| 5 | No printer queue found | Ensure that the printers have associated queues. |
| 6 | Login failed | Ensure there is a print server object configured with the same name as the Server. |
| 7 | Authentication failed | Ensure the Server login password is the same as the print server object password. If the Server is using the default password (access), there should be no print server object password. |
| 8 | Server cannot attach to queue | Check the NDS partitions, replicas, and volumes to ensure the file server where the queue lives has the correct information about the Server and printers. |



6 - LAT Configuration

The EZWebCon configuration software is the easiest way to configure the EPS. The following sections cover print configuration methods for LAT hosts.

NOTE: *The Server needs an IP address before you can use EZWebCon. See the Setting the IP Address section on page 4-2 for instructions.*

NOTE: *To use LAT you must obtain a LAT license from your dealer or Lantronix and use the Set/Define Protocol LAT License command on your EPS.*

LAT print queues can be created by printing to a port or printing to a service. Printing directly to a port requires no EPS configuration.

NOTE: *Printing directly to a port is the easiest method for printing to the EPS. If you would like instructions for printing to a service, see the Print Server Reference Manual on the CD-ROM.*

6.1 Printing Directly to a Port

1. Create a LAT application port that references the Server port.

```
$ RUN SYS$SYSTEM:LATCP
LATCP> CREATE PORT LTAnnn/APPLICATION
LATCP> SET PORT LTAnnn/NODE=EPS_XXXXXX/PORT=Port_n
LATCP> EXIT
```

2. Create and start a print queue that uses the LAT application port.

```
$ INITIALIZE/QUEUE/START/ON=LTAnnn:/PROCESSOR=LATSYM
/RETAIN=ERROR queue_name
```

3. Add the commands to the SYS\$MANAGER:LAT\$STARTUP.COM file so the required LAT devices will be recreated after each host reboot.

NOTE: *LAT terminal device characteristics may have to be changed to correctly print certain files. See your VMS documentation for more information.*

4. Print to the queue.

```
$ PRINT/QUEUE=queue_name filename.txt
```

6.1.1 LAT Host Troubleshooting

By default, the LAT error message codes on the host are not translated into text error messages. If a LAT job fails and appears in the queue with an eight-digit hex result code, the code can be translated by issuing the following commands:

```
$ SHOW QUEUE/FULL/ALL queue_name
(note the error code nnnnnnnn)
$ SET MESSAGE SYS$MESSAGE:NETWRKMSG.EXE
$ EXIT %Xnnnnnnnn
```

Table 6-1: Troubleshooting LAT Configurations Using a Port

| Area to check | Explanation |
|--|-------------------------------------|
| The specified node name matches the Server's node name | Use the Show Server command. |
| The specified port name matches the port's name | Use the List Port 1 command. |



7 - AppleTalk Configuration

The EZWebCon configuration software is the easiest way to configure the EPS. The following sections cover print configuration methods for AppleTalk hosts.

NOTE: *The Server needs an IP address before you can use EZWebCon. See the Setting the IP Address section on page 4-2 for instructions.*

NOTE: *Macintoshes that do not support EtherTalk will need either an Ethernet card or a LocalTalk-to-EtherTalk router to use the EPS.*

7.1 Bitronics

The EPS advertises its printer as a LaserWriter. Therefore, printing from a Macintosh is only possible with a PostScript printer and bi-directional communication between the EPS and that printer.

NOTE: *MacOS 8.1 can also print via LPD. See the Print Server Reference Manual located on CD-ROM for configuration instructions.*

The EPS supports the Bitronics interface, an extension to the standard Centronics interface. Printers that support Bitronics allow bi-directional communication via the parallel port. To enable Bitronics on an EPS parallel port, use the **Define Port *n* Bitronics Enabled** command.

7.2 Macintosh Services

Before attempting to print from a Macintosh, ensure that AppleTalk and PostScript are both enabled on at least one service. Once the service is configured, it will appear in the Chooser in the same zone as the EPS. Select the service in the Chooser and complete the appropriate setup options. Then close the Chooser window and print a test page of text to the Macintosh service.

7.3 AppleTalk Zones

If there is a router on the network, the EPS will appear in the default zone specified by the router. To change the default zone use the **Define Protocol AppleTalk Zone** command.

If the EPS is attached to a network without an AppleTalk router, all AppleTalk devices (including the EPS) will appear in the default zone in the Chooser.

NOTE: *If no router is present on the network, the EPS will not accept AppleTalk print jobs for 60 seconds after booting.*

7.3.1 AppleTalk Host Troubleshooting

Table 7-1: AppleTalk Host Troubleshooting

| Area to Check | Explanation |
|--|---|
| The printer is available to be selected in the Chooser | Make sure the printer is in the right zone. |
| Bidirectional communication | Lock the printer in PostScript mode and issue the Test Service PostScript Count n command. This sends a job to the printer and waits for the response. |



8 - LAN Manager/DLC Configuration

The EZWebCon configuration software is the easiest way to configure the EPS. This chapter explains DLC configuration for Windows NT 4.x hosts. Windows 95 does not support DLC printing (see Chapter 4, TCP/IP Configuration, for more information).

NOTE: *The Server needs an IP address before you can use EZWebCon. See the Setting the IP Address section on page 4-2 for instructions.*

NOTE: *Printing using an LPD client is the preferred method for sending print jobs to the EPS. To print using the TCP/IP protocol see the Using the Command Line Interface section on page 4-8.*

8.1 DLC Configuration

8.1.1 Server Configuration

To use the DLC protocol, you must have one service with the DLC characteristic enabled. Use the **Define Service servicename DLC Enabled** command. The DLC characteristic may be associated with only one service on a given EPS.

8.1.2 Host Configuration

To send print jobs from a Windows NT host to the EPS, add the EPS as a Windows NT printer.

1. Double-click the **Printers** icon in the Control Panel.
2. Double-click the **Add Printer** icon.
3. In the window that appears select **My Computer** and click **Next**.
4. Select the **Add Port** button.
5. Select **Hewlett-Packard Network Port** and click **New Port**.

If Hewlett-Packard port is not one of the available options, you must install DLC printing from your Windows NT system disks. DLC is not installed by default.

6. Enter the Server's hardware address. It is printed on the Server's bottom label.
7. Select **Job-based**.
8. Select the manufacturer and printer type.
9. Enter the queue name.
10. If applicable, choose **Shared** and select the operating system the printer will be working with. (First confirm that the print queue is working.)
11. Test the printer.

A - Contact Information

If you are experiencing an error that is not listed in the *Troubleshooting* appendix or if you are unable to fix the error, contact your dealer or Lantronix Technical Support at (800) 422-7044 or (949) 453-3990. Technical Support is also available via Internet email at **support@lantronix.com**.

When you report a problem, please provide the following information:

- Your name, and your company name, address, and phone number
- Lantronix Server model number
- Lantronix Server serial number
- Software version (use the **Show Server** command to display)
- Network configuration, including the information from a **Netstat** command
- Description of the problem
- **Debug** report (stack dump), if applicable
- Status of the unit when the problem occurred (please try to include information on user and network activity at the time of the problem)

Contact Information

LANTRONIX

15353 Barranca Parkway, Irvine, CA 92618 USA

Phone: 949/453-3990

Fax: 949/453-3995

World Wide Web: <http://www.lantronix.com>

North American Direct Sales: 800/422-7055

North American Reseller Sales: 800/422-7015

North American Sales Fax: 949/450-7232

Internet: sales@lantronix.com

International Sales: 949/450-7227

International Sales Fax: 949/450-7231

Internet: intsales@lantronix.com

Technical Support: 800/422-7044 or 949/453-3990

Technical Support Fax: 949/450-7226

Internet: support@lantronix.com

B - Troubleshooting

B.1 Power-Up Troubleshooting

There are several possible error situations if the LEDs do not flash.

Table B-1: Error Messages

| Message | Diagnosis/Remedy |
|---|--|
| Power-up diagnostic failure (hardware failure) | Note which LED is blinking and its color, then contact your dealer or Lantronix Technical Support. |
| The Server boots but does not try to load the Flash ROM code | Press the Test button. A brief description of the problem will be queued to the parallel port and printed. |
| Network Error: The ACT LED will blink yellow 2-3 times per second | <p>A. Make sure the Ethernet network cable is properly connected and reboot the server.</p> <p>B. If option A fails to resolve the problem, reload Flash ROM. <i>See Appendix D.</i></p> |

B.2 Printing Problems

Table B-2: General Printing Problems

| Area to Check | Explanation |
|--------------------------------|--|
| Physical connection | To test a non-PostScript printer use the Test Port 1 Count 100 command. This command will send 100 lines of test data out the parallel port. |
| Service characteristics | Use the Show Service Local Characteristics command from the Server's Local> prompt to see if the desired service is available and to verify that the appropriate protocols are enabled on the service. |
| The IP address | The IP address must be unique on the network. Many problems will occur when there are duplicate IP addresses on the network. |
| Queue Status and Port counters | <p>Use the Monitor Queue command to ensure queue entries appear in the job list. If an entry does not appear, refer to the appropriate host section in this Appendix.</p> <p>Use the Monitor Port # Counters command to verify that the counter is incrementing with each job. If it is not, verify the connection between the Server and the printer.</p> |

B.3 BOOTP Troubleshooting

If the BOOTP request is failing and you have configured your host to respond to the request, check these areas:

Table B-3: BOOTP Troubleshooting

| Area to Check | Explanation |
|---|---|
| BOOTP is in your system's <i>/etc/services</i> file | BOOTP must be an uncommented line in the <i>/etc/services</i> file. |
| The Server is in the loadhost's <i>/etc/hosts</i> file | The Server must be in this file for the host to answer a BOOTP or TFTP request. |
| The download file is in the correct directory and is world-readable | The download file must be in the correct directory and world-readable. Specify the complete pathname for the download file in the BOOTP configuration file or, add a default pathname to the download filename. |
| The Server and host are in the same IP network | Some hosts will not allow BOOTP replies across IP networks. Either use a host running a different operating system or put the Server in the same IP network as the host. |

B.4 DHCP Troubleshooting

Table B-4: DHCP Troubleshooting

| Area to Check | Explanation |
|---|---|
| DHCP is enabled on the Server. | Use the Define Server DHCP Enabled command. If you manually enter an IP address, DHCP is automatically disabled. |
| Make sure the DHCP server is operational. | Check to see that the DHCP server is on and is functioning correctly. |
| Did the Server get its IP address from the DHCP server? | Refer to the DHCP Manager on your DHCP server for information about addresses currently in use. If the DHCP server does not list your Server's IP address, there may be a problem. |

B.5 RARP Troubleshooting

Table B-5: RARP Troubleshooting

| Area to Check | Explanation |
|--|--|
| The Server's name and hardware address in the host's <code>/etc/ethers</code> file | The Server's name and hardware address must be in this file for the host to answer a RARP request. |
| The Server's name and IP address in the <code>/etc/hosts</code> file | The Server's name and IP address must be in this file for the host to answer a RARP request. |
| The operating system | Many operating systems do not start a RARP server at boot time. Check the host's RARPD documentation for details, or use the <code>ps</code> command to see if there is a RARPD process running. |

B.6 PostScript Problems

PostScript printers will silently abort jobs if they detect an error.

Table B-6: PostScript Troubleshooting

| Area to Check | Explanation |
|---|--|
| The Server is communicating with the printer | <p>To test a PostScript printer use the Test Port 1 PostScript Count 2. This command will send 2 pages of PostScript data out the parallel port. Watch the indicators on the printer to verify that the Server is communicating with the printer.</p> <p>If the printer is capable of bidirectional communication, use the Test Service EPS_XXXXX_PS PostScript Count 5 command. This will transfer data both to and from the printer. Autoselection must be disabled and the printer must be configured as a PostScript printer for this test to succeed.</p> |
| The printer is configured to use 8-bit characters | If special characters or bitmaps are not printing correctly, the printer may be incorrectly configured to use 7-bit characters. |
| Service Characteristics | Issue the Show Service Characteristics command. If the service rating is zero, the parallel port is in use. Verify that the PostScript characteristic and appropriate protocols have been enabled on the service. |

Table B-6: PostScript Troubleshooting, cont.

| Area to Check | Explanation |
|---------------|---|
| Port Counters | <p data-bbox="486 325 1087 419">If PostScript jobs appear to print but nothing comes out of the printer, verify the amount of data sent from the host. Issue the appropriate print command from the host system. After the job has completed, use the Show Port 1 Counters command.</p> <p data-bbox="486 445 1031 539">The <i>bytes output</i> value should be approximately 171 bytes greater than the size of the file on the host system. These numbers are only approximate, but will show that data is flowing to the printer.</p> |

B.6.1 Bitmap Graphics

If files that contain embedded bitmap graphics print incorrectly, it is because the bitmaps are being sent as actual binary data and binary data cannot be printed via serial or parallel interfaces.

Most major application packages have provisions to print using either “binary postscript” (for printers connected to the network via LocalTalk) or “hex postscript” (for printers connected to the network via a serial port or parallel port). If your application does not have this provision, ask the application vendor for an upgrade version or “patch” that will add the “hex postscript” function.



C - Pinouts

C.1 Parallel Information

Lantronix uses standard Centronics parallel connectors.

For optimum performance of your Server, Lantronix recommends the use of high quality parallel cables. Choose one of the following:

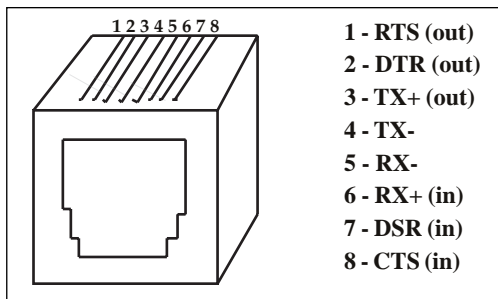
- A Lantronix parallel port cable, part number #500-011 (6 feet).
- Any other brand of **IEEE Std 1284-1994** compliant cable. Compliant cables can easily be identified by the permanent label “IEEE Std 1284-1994 compliant” on the cable itself.

NOTE: *Non-compliant cables have the same type of connectors but different electrical characteristics.*

C.2 Serial Information

Lantronix servers are RS-423 compliant, and are thus limited by the equipment at the remote end of the serial line. If the Server is connected to an RS-232 device, it is subject to RS-232 limits: 15m (50 ft.) in length at 9600 baud, and to 2m (6 ft.) at 115.2K baud, although they will generally work at longer lengths.

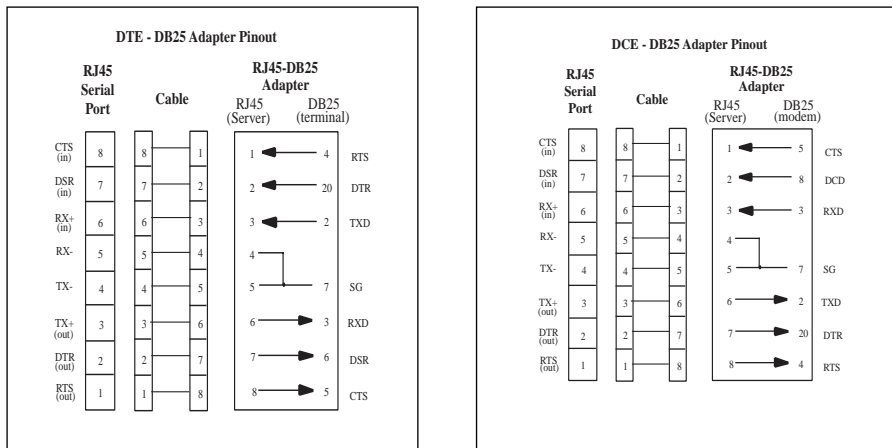
Figure C-1: Pinout of RJ45 Serial Ports



C.2.1 RJ45 to DB25

If you are connecting an RJ45 port to a DTE device (such as a terminal) that has a DB25 connector, you will need to use an RJ45-DTE DB25 adapter. To connect an RJ45 port to a DB25 connector on a DCE device, you will need an RJ45-DCE DB25 adapter. The pinout information for both connections is shown in Figure C-2.

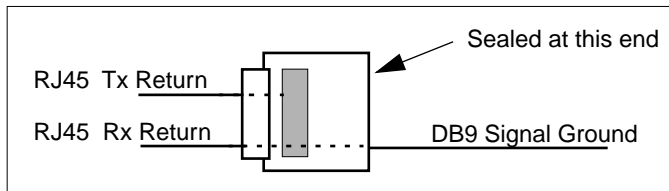
Figure C-2: Pinouts of RJ45-DB25 Connections



The arrows in Figure C-2 represent the direction of the signal. The pinouts assume that the 8-conductor cable connecting the Server and the adapter block is a swapped cable. Both the transmit and receive ground signals on the Server connector are wired to the signal ground on a DB25 adapter.

A crimper block can be used to connect both transmit and receive grounds from the RJ45 cable to the single signal ground on the DB25. The connector internally “splices” the two wires together and provides one wire into the DB25 connector as shown below:

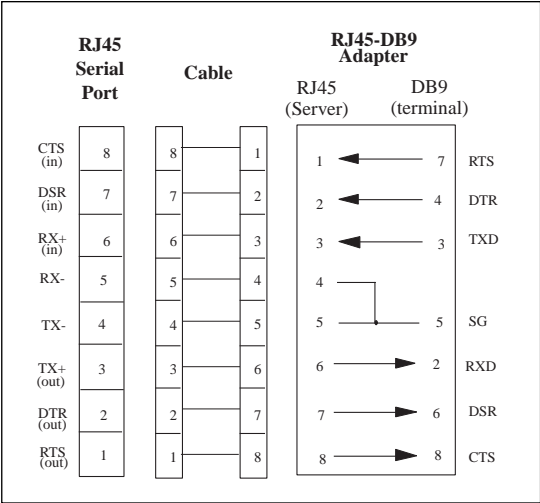
Figure C-3: Wire Splicer



To splice the wires, cut off the end of the wire that does NOT extend through the connector and insert both wires into the connector. Make sure that the wire that **does not** extend through the connector is in as far as possible to ensure a solid connection. Make sure that the wire that **does** extend through the connector extends far enough on the other side to be inserted in to the DB25 connector. Carefully squeeze the connector using a pair of pliers to make sure it is fully latched.

C.2.2 RJ45 to DB9

Figure C-4: RJ45-DTE DB9 Adapter



Pinouts

The arrows in Figure C-4 represent the direction of the signal. The pinouts assume that the 8-conductor cable connecting the Server and the adapter block is a swapped cable. Both the transmit and receive ground signals on the Server connector are wired to the signal ground on a DB9 adapter.

The information about crimping the RJ45 ground wires on page C-4 applies to the DB9 connector as well.

D - Updating Software

Current software files are available on the distribution CD. Software updates and release notes for the Server can be downloaded directly from the Lantronix development systems in one of three ways: via the Lantronix World Wide Web site located at <http://www.lantronix.com>, using anonymous FTP through the Internet, and via dial-up modem.

D.1 Updating Via the Web

The latest version of EPS.SYS can be downloaded from the Lantronix Web site. The following instructions will lead you through the web site to the software file.

1. On the home page, <http://www.lantronix.com>, click on **Free Software Updates**.
2. From the directory that appears, choose **pub/**.
3. From the resulting directory, choose the server acronym.
4. From the resulting directory, choose the software volume.
5. From the final directory, choose EPS.SYS.

NOTE: *As a result of Netscape Navigator's configuration, clicking on the software name will not allow you to download the file. You must save the file as a source document to your host.*

D.2 Updating Using FTP

The server software resides on the Lantronix FTP server (ftp.lantronix.com). Most of these files are binary data, so the binary option must be used to transfer the files. All released files are in the **pub** directory. Always download the README file in the pub directory before downloading anything else; it contains a directory of available versions.

To log into the FTP server, enter a username of **anonymous** and enter your full email address as the password. The following text will be displayed:

```
230-Welcome to the Lantronix FTP Server.  
230-  
230-IMPORTANT: Please get the README file before proceeding.  
230-IMPORTANT: Set BINARY mode before transferring executables.  
220-  
230-Direct questions to support@lantronix.com or 1.800.422.7044  
230-Questions about this ftp account only to ftp@lantronix.com  
230-  
230 Guest login ok, access restrictions apply.  
Remote system type is UNIX. [your type will be displayed here]  
Using binary mode to transfer files.  
ftp>
```

D.3 Updating Using the BBS

The Lantronix system uses high speed modems for the physical connection and allows file transfers using KERMIT, xmodem, ymodem, and zmodem. The modem phone number is (949) 367-1051. The account name is **ets** and the password is **server**.

Remember that the download files (EPS.SYS) and executable images are image data and should only be transferred in binary mode, otherwise the files will be corrupted.

```
SunOS UNIX (nexus)
login: ets
Password: server (not echoed)
Last login: Mon Jun 5 13:21:13 from company.com
SunOS Release 4.1.3_U1 (NEXUS) #2: Fri Dec 2 10:08:39 PST 1997
Welcome to the Lantronix BBS. Type 'h' for help
userid ('new' for new user): new
Welcome, new user! Enter a userid, 1-12 characters, no spaces.
Userid: bob
Enter Passwd: platypus (not echoed)
Confirm Passwd: platypus (not echoed)
User Name: bob
Terminal type (default=vt100):
Email address, if any: bob@widgets.com
--CONTINUED NEXT PAGE--
```

```
Welcome to the "NEW" Lantronix Bulletin Board System.  
To access the files menu, type 'f' at the main menu.  
At the files menu, type 'p' to select a download protocol  
(a=ascii, k=kermit, x=xmodem, y=ymodem, z=zmodem)  
At the files menu, type 'l' to list available software directories.  
Select the board name by entering its number.  
At any menu, press 'h' to receive additional help.  
Press [Return] to continue:
```

D.4 Reloading Software

The Server stores software in Flash ROM to control the initialization process, operation, and command processing. The contents of Flash ROM can be updated by downloading a new version of the operational software via NetWare, TCP/IP, or MOP. Regardless of which protocol is used to update Flash ROM, the following points are important:

- The Flash ROM software is contained in a file called EPS.SYS. The name should not be changed.
- The download file should be world-readable on the host.
- There is a sixteen character length limit for the path name.
- There is a twelve character limit for the filename.

- Define commands must be used because Set configurations are cleared when the Server boots. Use the **List Server Boot** command to check settings before rebooting.

NOTE: *It is very important to check the Server settings before using the Initialize Reload command to ensure that you are reloading the correct software file.*

D.4.1 Reloading Sequence

If DHCP, BOOTP, or RARP is enabled on the Server, the Server will request assistance from a DHCP, BOOTP, or RARP server before starting the download attempts. The Server will then try TFTP, NetWare, and MOP booting, in that order, provided that it has enough information to try each download method.

Downloading and rewriting the Flash ROM will take approximately two minutes from the time the Initialize command is issued. If the download file cannot be found or accessed, the Server can be rebooted with the code still in Flash ROM. As noted in Chapter 2, the OK/ACT LED will blink quickly while the Server is booting (and reloading code) and then slowly when it returns to normal operation.

NOTE: *If you experience problems reloading Flash ROM, refer to Troubleshooting Flash ROM Updates on page D-9.*

D.4.2 NetWare

The EPS.SYS file should be placed in the login directory on the NetWare file server. The Server cannot actually log into the file server (since it knows no username/password); it can only access files in the login directory itself. On the Server, specify the file server name, filename, and path.

```
Local> SET PRIVILEGED
Password> SYSTEM (not echoed)
Local>> DEFINE SERVER NETWARE LOADHOST fileserver
Local>> DEFINE SERVER SOFTWARE SYS:\LOGIN\ EPS.SYS
Local>> INITIALIZE RELOAD
```

D.4.3 TCP/IP

Before the Server downloads the new software, it will send DHCP, BOOTP, and/or RARP queries (BOOTP and RARP queries are enabled by default). Next, the Server will attempt to download the EPS.SYS file using TFTP (Trivial File Transfer Protocol).

If a host provides DHCP, BOOTP, or RARP support, it can be used to set the Server's IP address (all) and loadhost information (BOOTP and RARP only). Add the Server's name,

IP address, hardware address, and download path and filename to the appropriate host file (usually `/etc/bootptab`).

Some BOOTP and TFTP implementations require a specific directory for the EPS.SYS file; in this case the path should not be specified in the bootptab file and the file must be placed in that directory. See your host's documentation for instructions on how to configure the EPS.SYS file in the directory.

If BOOTP cannot be used to configure the Server's IP parameters, configure them by hand using the following commands listed below.

```
Local> SET PRIVILEGED
Password> SYSTEM (not echoed)
Local>> DEFINE SERVER IPADDRESS nnn.nnn.nnn.nnn
Local>> DEFINE SERVER SOFTWARE "/tftpboot/ EPS.SYS"
Local>> DEFINE SERVER LOADHOST nnn.nnn.nnn.nnn
Local>> LIST SERVER BOOT
Local>> INITIALIZE RELOAD
```

NOTE: *For instructions on how to log into the Server and enter these commands, refer to Chapter 6, TCP/IP Configuration.*

The path and filename are case-sensitive and must be enclosed by quotation marks. When attempting to boot across an IP router, you must configure the router to proxy-ARP for the Server, or use the bootgateway feature. For more information, see Set/Define Bootgateway in the *Commands* chapter of the *Print Server Reference Manual* on CD-ROM.

D.4.4 MOP

Copy the EPS.SYS file to the MOM\$LOAD directory. The EPS.SYS filename is the only parameter that the Server needs to reload via MOP. Make sure the service characteristic is enabled on the host's Ethernet circuit, and then reload the server using the **Initialize Reload** command.

NOTE: *If an error message is displayed indicating an invalid record size on the VAX console, the EPS.SYS file was not transferred in binary mode.*

D.5 Troubleshooting Flash ROM Updates

Many of the problems that occur when updating the Flash ROM can be solved by completing the following steps:

Table D-1: Flash ROM Troubleshooting

| Protocol | Area to Check |
|----------|--|
| NetWare | Ensure the file is in the login directory. Since the Server cannot actually log into the file server, it has very limited access to the server directories. |
| TFTP | Check the file and directory permissions. Ensure the loadhost name and address are specified correctly and that their case matches that of the filenames on the host system. Ensure the file and pathnames are enclosed in quotes to preserve case. Ensure that TFTP is enabled on the host; several major UNIX vendors ship their systems with TFTP disabled by default. |

Table D-1: Flash ROM Troubleshooting, cont.

| Protocol | Area to Check |
|----------|--|
| MOP | <p>The Ethernet circuit must have the service characteristic enabled.</p> <p>Ensure that the MOM\$LOAD search path includes the directory containing the EPS.SYS file.</p> <p>Ensure that the files were transferred in Binary mode</p> |

E - Specifications

E.1 Power Requirements

| | |
|---------------------------|---|
| Voltage: | 95 - 250 Volts AC, 3-wire single phase, autoranging |
| Frequency: | 47-63 Hz |
| Operating Current: | 0.8 Amp (maximum) |
| Power: | 25 Watts |

E.1.1 Power Supply Cord

| | |
|-------------------|---|
| Cord type: | 3 conductors, 1.0 mm ² minimum conductor size (approximately 18 AWG) |
| Rated for: | 250 Volts AC, 10 Amps |
| Length: | ≤ 3.0 meters |

E.2 Temperature Limitations

| | |
|-------------------------|------------------------------|
| Operating range: | 0° to 50°C (32° to 122°F) |
| Storage range: | -40° to 66°C (-40° to 151°F) |

**Max temperature
change per hour:** 20°C (36°F)

Rapid temperature changes may affect operation. Therefore, do not operate the Server near heating or cooling devices, large windows, or doors that open to the outside.

E.3 Altitude Limitations

Operating: 2.4 km (8000 ft.)

Storage: 9.1 km (30,000 ft.)

If operating the Server above 2.4 km (8000 ft.), decrease the operating temperature rating by 1°F for each 1000 ft.

E.4 Relative Humidity Limitations

Operating: 10% to 90% noncondensing
(40% to 60% recommended)

Storage: 10% to 90% (noncondensing)

F - Frequently-used Commands

This appendix lists some of the most frequently-used commands of the Print Server command set. More information about the command set, including additional options, can be found in the *Print Server Reference Manual* on the CD-ROM.

Please note the following before continuing:

- Commands are divided into Server (general), Port, and Protocol sections. Within each section, commands are listed alphabetically.
- Commands may require privileged user status. Enter `set Privileged`, then enter the privileged password when prompted.
- When you enter a Define or Purge command, you must reboot the Server for the command to take effect.
- When the abbreviated syntax “{EN|DIS}” is shown, you must choose either **Enabled** or **Disabled** to complete the command.
- When *nn* is shown, enter a single port number, a list of port numbers separated by commas, a range of port numbers separated by dashes, or the word **all**.

F.1 Server Commands

Table F-1: Frequently-used Server Commands

| Command | Option(s) | Description |
|--------------------------------------|------------|---|
| DEFINE SERVER BOOTP | {EN DIS} | Enables or disables querying for a BOOTP host at system boot time. |
| DEFINE SERVER DHCP | {EN DIS} | Enables or disables querying for a DHCP host at system boot time. |
| DEFINE SERVER GATEWAY | ipaddress | Specifies the host to be used as a TCP/IP gateway to forward packets between networks. Enter an IP address. |
| DEFINE SERVER INCOMING option | BOTH | Enables incoming LAT and Telnet connections. |
| | LAT | Enables only incoming LAT connections. |
| | NONE | Disables incoming connections. |
| | TELNET | Enables only incoming Telnet connections. |
| | PASSWORD | Causes the server to prompt for a password for all incoming connections. |
| | NOPASSWORD | Allows connections to be established without prompting for a password. |

Table F-1: Frequently-used Server Commands, cont.

| Command | Option(s) | Description |
|--------------------------------|-----------|---|
| DEFINE SERVER IPADDRESS | ipaddress | Sets the Server's network IP address. |
| DEFINE SERVER LOADHOST | ipaddress | Specifies the TCP/IP host from which the Server requests its run-time code. |
| DEFINE SERVER LOGIN | PASSWORD | Sets a new password that will be required before incoming logins are accepted. You will be prompted for the new password (up to 6 alphanumeric characters, case-insensitive). |
| DEFINE SERVER NAME | "newname" | Specifies a new name for the Server. Names are restricted in length; generally a name of 11 or fewer characters is permissible. |
| DEFINE SERVER NETWARE LOADHOST | server | Specifies the NetWare host from which the Server requests its run-time code. Enter a file server name of up to 11 characters. |
| DEFINE SERVER PRIVILEGED | PASSWORD | Sets a new password that will be required for privileged user status. You will be prompted for the new password (up to 6 alphanumeric characters, case-insensitive). |
| DEFINE SERVER RARP | {EN DIS} | Enables or disables querying for a RARP host at system boot time. |

Table F-1: Frequently-used Server Commands, cont.

| Command | Option(s) | Description |
|-------------------------------------|--------------------|--|
| DEFINE SERVER SOFTWARE "filename" | | Specifies the name or path (TCP) of the software download file. The filename can be up to 11 characters, and the pathname can be up to 26. The Server will add a ".SYS" extension. |
| DEFINE SERVER SUBNET MASK ipmask | | Specifies the subnet mask to be used for the Server. The ipmask must be in n.n.n.n format. |
| HELP option | <nothing> | Displays a list of top-level (general) Help topics. |
| | <keyword> | Displays information about the keyword(s) entered. Multiple keywords must be specified in the order they occur in a command. |
| DEFINE SERVICE "name" PORT num | | Creates a new service and associates it with the specified port. |
| DEFINE SERVICE "name" option | APPLETALK {EN DIS} | Toggles whether the named service can be used to service networks running the specified protocol. RTEL applies to TCP/IP networks. |
| | LANMAN {EN DIS} | |
| | LAT {EN DIS} | |
| | NETWARE {EN DIS} | |
| | RTEL {EN DIS} | |

Table F-1: Frequently-used Server Commands, cont.

| Command | Option(s) | Description |
|--|---------------------|--|
| DEFINE SERVICE "name" option | DLC {EN DIS} | Specifies which service will handle print requests from DLC hosts. DLC can be enabled on one service per Server. |
| | BANNER {EN DIS} | When Enabled, causes the Server to print a banner page before jobs. |
| | BINARY {EN DIS} | When Enabled, the Server will not process data passed through the service. This characteristic should be enabled when printing PCL data. |
| | EOJ string | Causes the Server to send an end-of-job string to the attached device after every job. Enter an end string or the word none . |
| | FORMFEED {EN DIS} | When Enabled, causes the Server to append a formfeed to the end of LPR print jobs. |
| | POSTSCRIPT {EN DIS} | When Enabled, causes the Server to assume the attached device is a PostScript device and act accordingly. |
| | PSCONVERT {EN DIS} | When Enabled, causes the Server to place a PostScript wrapper around each job. |
| | SOJ string | Causes the Server to send a start-of-job string to the attached device before every job. Enter a start string or the word none . |

Table F-1: Frequently-used Server Commands, cont.

| Command | Option(s) | Description |
|--|-------------------|--|
| DEFINE SERVICE "name" option | TCPPOINT string | Specifies a <i>raw</i> TCP listener socket for the service. Enter a socket number (4000 to 4999) or the word none . |
| | TELNETPORT string | Specifies a TCP listener socket for the service. Unlike TCPport, this option performs Telnet IAC interpretation on the data stream. Enter a socket number (4000 to 4999) or the word none . |
| INITIALIZE option | DELAY num | Schedules a reboot after num minutes. Enter a value from 0 to 120. |
| | CANCEL | Cancels an impending initialization. |
| | FACTORY | Reboots the server to its factory default settings. |
| | NOBOOT | Forces the Server to stop in Boot Configuration Mode rather than fully rebooting. |
| | RELOAD | Forces the Server to download new operational code and reprogram its flash-ROM. |
| LOGOUT option | <nothing> | Logs out the current port (the port that issued the command). |
| | PORT num | Logs out the specified port. |

Table F-1: Frequently-used Server Commands, cont.

| Command | Option(s) | Description |
|---|-----------|--|
| PURGE SERVICE option | LOCAL | Removes the definitions of all local services. |
| | "service" | Removes the definition of the specified service. |
| SET PRIVILEGED | | Enters privileged mode, provided the user enters the proper privileged password when prompted. |
| { SHOW MONITOR } QUEUE | | Displays the status of Server queues once (Show) or continually every three seconds (Monitor). |
| { SHOW MONITOR } SERVER | <nothing> | Displays Server information once (Show) or continually every three seconds (Monitor). |
| | COUNTERS | Displays characteristics related to the various counters kept by the Server. |
| { SHOW MONITOR } SERVICE option | <nothing> | Displays characteristics about all configured services once (Show) or continually every three seconds (Monitor). |
| | "service" | Displays only characteristics related to the named service. |
| ZERO COUNTERS option | ALL | Zeroes all port, node, and Server counters. |
| | PORT num | Zeroes port counters for the specified port. |

F.2 Port Commands

In the following commands, *nn* can be a single port number, a list of port numbers separated by commas, a range of port numbers separated by dashes, or the word **all**.

Table F-2: Port Commands

| Command | Option(s) | Description |
|---|-----------|--|
| DEFINE PORT <i>nn</i> ACCESS option | DYNAMIC | The port can initiate and receive connection requests. |
| | LOCAL | The port can initiate connection requests, and local logins are permitted. |
| | NONE | The port is unusable. |
| | REMOTE | The port can receive host-initiated connection requests. |
| DEFINE PORT <i>nn</i> BITRONICS {EN DIS} | | When Enabled, ensures bidirectional functioning of the parallel port. The attached printer must also support Bitronics mode. |
| DEFINE PORT <i>nn</i> CHARACTER <i>size</i> | | Toggles the port between 7-bit and 8-bit characters (the default). Enter either 7 or 8. |
| DEFINE PORT <i>nn</i> DSRLOGOUT {EN DIS} | | When Enabled, the port will be logged out automatically whenever DSR is deasserted. |
| DEFINE PORT <i>nn</i> DTRWAIT {EN DIS} | | When Enabled, the Server will not assert DTR on the port when it is idle (no user logins or connections). |

Table F-2: Port Commands, cont.

| Command | Option(s) | Description |
|-------------------------------------|------------|--|
| DEFINE PORT nn FLOW option | CTS | Specifies CTS/RTS (hardware) flow control. |
| | {EN DIS} | Activates or deactivates the currently-configured flow-control method. |
| | NONE | Removes the current flow control settings. |
| | XON | Specifies XON/XOFF (software) flow control. |
| DEFINE PORT nn NAME | "newname" | Enter a name of up to 16 alphanumeric characters for the specified port. |
| DEFINE PORT nn PARITY option | parity | Enter even , odd , mark , or space . Specifying mark or space will change the character size to 7 bits. |
| | NONE | Specifies that no parity will be used (the default). |
| DEFINE PORT nn SPEED | baudnum | Sets the port's baud rate. Acceptable baudnum values range from 300 to 115200 baud (or 230000 baud for 100BASE-T Servers). |
| {SHOW MONITOR} PORT nn | | Displays the port's configuration characteristics once (Show) or continually every three seconds (Monitor). Counters and Status keywords can be added. |
| TEST PORT nn option | COUNT rows | Sends an ASCII data stream to the port for the specified number of rows and/or columns. |
| | WIDTH cols | |
| | POSTSCRIPT | Sends a PostScript test page to the port. |

F.3 Protocol Commands

In the following table, `PROTO` is an abbreviation for the optional keyword `PROTOCOL`.

Table F-3: Protocol Commands

| Command | Option(s) | Description |
|---|-------------------|--|
| DEFINE IPSECURITY ipaddress option Note: An ipaddress with a 0 in any segment implies Incoming and Outgoing Disabled. An ipaddress with a 255 in any segment applies to all addresses in that range. Note: Rules are applied in the order in which they are entered. | PORTS nn | Restricts connections to the specified IP address from the specified ports, and connections from the IP address to the specified ports. If no port (nn) is specified, the command applies to all physical and virtual ports. See the Port Commands section for information about port lists. |
| | INCOMING {EN DIS} | Allows or restricts connections and serial port logins from the specified address (on the network) into the Server. |
| | OUTGOING {EN DIS} | Allows or restricts Telnet sessions to the specified address (on the network) from the Server. |
| | BOTH {EN DIS} | Allows or restricts connections to and from the specified address. |
| | PRINTING {EN DIS} | Allows or restricts TCP/IP-based printing for the specified address. |

Table F-3: Protocol Commands, cont.

| Command | Option(s) | Description |
|---|-------------------|---|
| DEFINE PROTO APPLETALK option | {EN DIS} | Enables or Disables the AppleTalk protocol for the Server. |
| | ZONE newzone | Places the Server in a zone other than the default. |
| DEFINE PROTO IP option | {EN DIS} | Enables or Disables the TCP/IP protocol for the Server. |
| | GATEWAY ipaddr | Same as <i>DEFINE SERVER GATEWAY ipaddress</i> , page F-2. |
| | IPADDRESS ipaddr | Same as <i>DEFINE SERVER IPADDRESS ipaddress</i> , page F-3. |
| | LOADHOST ipaddr | Same as <i>DEFINE SERVER LOADHOST ipaddress</i> , page F-3. |
| | NAMESERVER ipaddr | Specifies the IP address of the host that will resolve text host names into their numeric equivalents for TCP/IP connection attempts. |
| DEFINE PROTO LANMAN option | {EN DIS} | Enables or Disables the LAN Manager protocol for the Server. |

Table F-3: Protocol Commands, cont.

| Command | Option(s) | Description |
|---------------------------------------|------------------|---|
| DEFINE PROTO LAT option | {EN DIS} | Enables or Disables the LAT protocol for the Server. |
| | LICENSE string | Enables LAT on multi-port Servers. Enter the license string obtained from Lantronix. |
| DEFINE PROTO NETWARE option | {EN DIS} | Enables or Disables the NetWare (IPX) protocol for the Server. |
| | DSCONTEXT string | Configures the NetWare Directory Services context in which the Server is located. For more information about NDS contexts, see your NDS documentation. |
| | DSLICENSE string | Configures the NetWare Directory Services license needed to enable NDS on your Server. Enter the license string obtained from your dealer or Lantronix. |
| | DSTREE string | Configures the NetWare Directory Services tree in which the Server is located. For more information about NDS trees, see your NDS documentation. |

Table F-3: Protocol Commands, cont.

| Command | Option(s) | Description |
|--|------------------|---|
| DEFINE PROTO NETWARE ENCAPSULATION option {EN DIS} | NATIVE | Configures the Server to use the “native mode” frame format. |
| | ETHER_II | Configures the Server to use Ethernet v2 frame format. |
| | 802_2 | Configures the Server to use 802.2 frame format with NetWare SAPs. |
| | SNAP | Configures the Server to use 802.2 frame format with SNAP SAPs. |
| DEFINE PROTO NETWARE LOADHOST <i>server</i> | | Same as <i>DEFINE SERVER NETWARE LOADHOST server</i> , page F-3. |
| PURGE IPSECURITY option | ALL | Removes the entire IP security table. |
| | <i>ipaddress</i> | Removes entries from the IP security table that are related to the specified IP address. |
| PURGE PROTO NETWARE ACCESS option | ALL | Removes all entries from the NetWare access list. |
| | <i>server</i> | Removes entries from the NetWare access list that are related to the specified file server. |
| {SHOW MONITOR} PROTO <i>protocolname</i> | | Displays operating characteristics of the specified protocol. |



Warranty Statement

Lantronix warrants for a period of FIVE YEARS from the date of shipment that each EPS Ethernet Print Server supplied shall be free from defects in material and workmanship. During this period, if the customer experiences difficulties with a product and is unable to resolve the problem by phone with Lantronix Technical Support, a Return Material Authorization (RMA) will be issued. Following receipt of a RMA number, the customer is responsible for returning the product to Lantronix, freight prepaid. Lantronix, upon verification of warranty will, at its option, repair or replace the product in question, and return it to the customer freight prepaid. No services are handled at the customer's site under this warranty.

Lantronix warrants software for a period of sixty (60) days from the date of shipment that each software package supplied shall be free from defects and shall operate according to Lantronix specifications. Any software revisions required hereunder cover supply of distribution media only and do not cover, or include, any installation. The customer is responsible for return of media to Lantronix and Lantronix for freight associated with replacement media being returned to the customer.

Lantronix shall have no obligation to make repairs or to cause replacement required through normal wear and tear of necessitated in whole or in part by catastrophe, fault or negligence of the user, improper or unauthorized use of the Product, or use of the Product in such a manner for which it was not designed, or by causes external to the Product, such as, but not limited to, power or failure of air conditioning.

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Warranty claims must be received by Lantronix within the applicable warranty period. A replaced product, or part thereof, shall become the property of Lantronix and shall be returned to Lantronix at the Purchaser's expense. ALL RETURN MATERIAL MUST BE ACCOMPANIED BY A RETURN MATERIAL AUTHORIZATION NUMBER ASSIGNED BY LANTRONIX.

Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

**Manufacturer's
Name & Address:** Lantronix, 15353 Barranca Parkway, Irvine, CA 92618 USA

Declares that the product:

Product Name: Ethernet Print Server
**Model
Name/Number:** EPS2-100, EPS4-100

Conforms to the following standards or other normative documents:

Safety: EN60950:1988+A1, A2
**Electromagnetic
Emissions:** EN55022: 1998 (CISPR 22, Class A: 1993, A1: 1995, A2: 1996)
IEC 1000-3-2/A14: 2000
IEC 1000-3-3: 1994

**Electromagnetic
Immunity:** EN55024: 1998 Information Technology Equipment-Immunity Characteristics
IEC 6100-4-2: 1995 Electro-Static Discharge Test
IEC 6100-4-3: 1996 Radiated Immunity Field Test
IEC 6100-4-4: 1995 Electrical Fast Transient Test
IEC 6100-4-5: 1995 Power Supply Surge Test
IEC 6100-4-6: 1996 Conducted Immunity Test
IEC 6100-4-8: 1993 Magnetic Field Test
IEC 6100-4-11: 1994 Voltage Dips & Interrupts Test
(L.V.D. Directive 73/23/EEC)

**Supplementary
Information:** *The product complies with the requirements of the
Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.*
Warning: *This is a Class A product. In a domestic environment, this product may cause
radio interference in which case the user may be required to take adequate measures.*

**Manufacturer's
Contact:** Director of Quality Assurance, Lantronix
15353 Barranca Parkway, Irvine, CA 92618 USA
General Tel: 949/453-3990
Fax: 949/453-3995

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