digital

RapidPrint 500
Multiprotocol Micro Server for Printers

Configuration Guide

EK-DSTRP-CG. A01
Digital Equipment Corporation
Maynard, Massachusetts

October, 1996

Class A Equipment

European Common Market

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.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Avertissement!

Cet appareil est un appareil de Classe A. Dans un environnement résidentiel cet appareil peut provoquer des brouillages radioélectriques. Dans ce cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.

Japan

この装置は、第一種情報処理装置（商工業地域において使用されるべき情報処理装置）で商工業地域での電波障害防止を目的にした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しています。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

USA

This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference.

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

Canadian EMC Labeling Requirements

Product labels must have to have Canadian specific EMC compliance text on the labels. Both the English and the French-Canadian text must appear on the same label and the label must be placed on the apparatus concerned.

The suggested text, which will be incorporated into all new labeling designs by Frank Cornine, the Labeling Domain Manager, is:

- "This Class [*] digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations."
- "Cet appareil numerique de la class [*] respecte toutes les exigences du Reglement sur le materiel broilleur du Canada."

NOTE:

- Insert either, but not both, of the above statements as appropriate for the equipment requirements.
- In the French-Canadian text, some letters are accented.

According to the ICES-003 standard, page 4 section 6.2 states:

"A written notice indicating compliance must accompany each unit of digital apparatus to the end user. The notice shall be in the form of a label that is affixed to the apparatus. Where because of insufficient space or other restriction it is not feasible to affix a label to the apparatus, the notice may be in the form of a statement included in the user's manual. A suggested text for the notice, English and in French, is provided in the Annex."

Declaration of Conformity

(accordingly to ISO/IEC Guide 22 and EN 45014)
Manufacturer's Name: Digital Equipment Corporation
Manufacturer's Address: 200 Forest Street, Marlboro, MA USA
declares, that the product:
Product Name: *RapidPrint 500* Multiprotocol Micro Server for Printers
Model Number(s):

RapidPrint 500 10BaseT: DSTRP-AA, DSTRP-CA, DSTRP-A3, DSTRP-C3
RapidPrint 500 10Base2: DSTRP-BA, DSTRP-DA, DSTRP-B3, DSTRP-D3

conforms to the following Standards:
RapidPrint 500 10BaseT
Safety: EN 60950:1988 + A1, A2
EMC: EN 55022:1988 class A EN 50082-1:1992 IEC 801-2:1991/prEN55024-2:1992-4kV CD, 8kV AD IEC 801-3:1992/prEN55024-3:1991-3V/m IEC 801-4:1988/prEN55024-4:1992-0.5kV Signal Lines 1kV Power Lines
RapidPrint 500 10Base2
Safety: EN 60950:1988 + A1, A2
EMC: EN 55022:1988 class B EN 50082-1:1992 IEC 801-2:1991/prEN55024-2:1992-4kV CD, 8kV AD IEC 801-3:1992/prEN55024-3:1991-3V/m IEC 801-4:1988/prEN55024-4:1992-0.5kV Signal Lines 1kV Power Lines IEC 801-5:1993/prEN55024-5:1992-1kV Common Mode 0.5kV Differential Mode, 1kV Network Cable
Supplementary Information:
"The product complies with the requirements of the ***Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC****."*
Manufacturer's Contract:
The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors which may appear in this guide.

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.

Warning: Changes or modifications to this device not explicitly approved by 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 doît accepter n'importé quelle interférence reiue qui peut causer une opération indésirable.

Contents

1 - Introduction

1.1 Overview

The *RapidPrint 500* is a multiprotocol print server that provides shared network access to printers for a variety of network protocols and operating systems. There are two models of the *RapidPrint 500*:

- The *RapidPrint 500* 10BaseT models provide a twisted pair (10BaseT) connector for network connections.
- The *RapidPrint 500* 10Base2 models provide a ThinWire (10Base2) connector.

Both servers have a printer port to which network systems can spool print jobs. The *RapidPrint 500* models queue multiple pending jobs and service those jobs in the order in which they are received from the hosts.

NOTE: *The RapidPrint 500 does not allow outgoing connections to RapidPrint 500 hosts. It is intended solely to service requests from network hosts.*

The *RapidPrint 500* supports the Bitronics interface (IEEE 1284 nibble mode). This interface, created by Hewlett-Packard and standardized by IEEE, is an extension to the standard Centronics interface (IEEE 1284 compatibility mode). Printers which support Bitronics (for example, Digital's LN17, DEClaser 3500, and DEClaser 5100) allow bidirectional communication via the parallel port.

1.1.1 Protocols

A network protocol is a method of communicating over the Ethernet. Each protocol specifies a certain arrangement of data in the Ethernet packets, and provides different services for its users. The *RapidPrint 500* supports the AppleTalk (EtherTalk), LAN Manager, Local Area Transport (LAT), TCP/IP, and NetWare (IPX) protocols.

The *RapidPrint 500* can use and interpret all five protocols at once, and can queue print requests from hosts using any of the five protocols simultaneously.

1.1.2 Configuration

It is possible (depending on the network) to power up the *RapidPrint 500* and have it work properly with no additional configuration on the *RapidPrint 500.* Most protocols can use the three default print services on the *RapidPrint 500* with no further configuration.

The EZCon configuration software (shipped with the *RapidPrint 500* on the distribution CD-ROM) is the recommended way to configure the *RapidPrint 500.* EZCon has a point-and-click interface that guides you through the configuration.

NOTE: *Instructions for using EZCon are on the CD-ROM.*

Although EZCon is the recommended way to configure the server, the unit can also be configured using any of the following methods:

- By logging into the *RapidPrint 500* over the network via AppleTalk, LAT, NCP/TSM, NetWare, or telnet/rlogin
- Via BOOTP replies from a TCP/IP network host; these replies can be used to define the IP address, loadhost, and download filename
- Via RARP replies from a TCP/IP host; these replies can be used to define the IP address
- By downloading a configuration file containing *RapidPrint 500* commands from a LAT, NetWare, or TCP/IP host at boot time

1.2 About the Reference Manual

For detailed conceptual explanations, refer to the *RapidPrint 500 Reference Manual.* A browsable HTML version, PDF version, and PostScript version of the *RapidPrint 500 Reference Manual* are on the CD-ROM.

NOTE: *To obtain an optional printed copy of the RapidPrint 500 Reference Manual, print it from your CD-ROM or contact your local sales representative.*

2 - Installation

2.1 Overview

This chapter describes how to install the *RapidPrint 500* in a network and attach it to a print device. The chapter assumes a basic understanding of how to install devices on a network. Read the chapter completely before continuing.

2.2 RapidPrint 500 Panels

The front panel of the RapidPrint 500 is slightly different for the 10BaseT and 10Base2 models.
The front panel of each model has the components described in Table 2-1.

Table 2-1: RapidPrint 500 Panels

Front Panel Component	Function
Test button	The Test button has two purposes: • Prints a test/status page. To print a test page, press the button briefly. • Forces the *RapidPrint 500* to return to the factory default configuration. Hold down the Test button for 5 seconds after plugging in the *RapidPrint 500.*
PWR LED (the green LED)	On the 10BaseT model, this green LED indicates a good network connection. On the 10Base2 model, this green LED indicates power (PWR).
ACT LED	The ACT (Activity) LED gives information about what the*RapidPrint 500* is doing; for example, when code is downloaded as the unit boots, the LED blinks green quickly.

The rear panel has a 36 pin 1284B printer connector.
The power, network, and printer connectors are described in Section 2.3.

NOTE: *Throughout this manual, the green LED is referred to as the PWR LED.*

Each model of the *RapidPrint 500* comes with or without a power cord. See Table 2-2.

Table 2-2: Model Numbers

10BaseT (Twisted Pair)		10Base2 (ThinWire)	
With Power Cord	**No Power Cord**	**With Power Cord**	**No Power Cord**
Model DSTRP-AX	Model DSTRP-BX	Model DSTRP-AY	Model DSTRP-BY

NOTE: *The only difference between the AX/BX models and the AY/BY models is that the BX and BY models do not have a power cord; the rest of the components are the same.*

2.3 Installation

This section describes how to do the following:

- Connect to the printer
- Connect to the Ethernet
- Supply power

2.3.1 Connect to the Printer

Connect the printer connector on the back of the *RapidPrint 500* directly to your printer's connector.

2.3.2 Connect to the Ethernet

For *RapidPrint 500* 10BaseT models, connect your twisted pair Ethernet cable to the RJ45 connector on the 10BaseT.
For *RapidPrint 500* 10Base2 models, connect your thin coaxial Ethernet cable to the BNC connector on the 10Base2.

2.3.3 Supply Power

Attach one end of the power cable to the *RapidPrint 500*; plug the other end into a wall outlet. There is no power switch on the *RapidPrint 500*; power comes on automatically when the unit is plugged in. Be sure to be careful when handling the unit.

> **NOTE:** *The RapidPrint 500 power supply is 6 volts. Using an incorrect power supply with the RapidPrint 500 can damage the unit.*

Check to see if the LEDs on the front of the server light. If they do not, unplug the server and check the power. If you are using the *RapidPrint 500* 10BaseT, check the supply and Ethernet connection. Plug the server in again. If the LEDs still do not light, refer to Appendix B, *Troubleshooting.*

> **NOTE:** *On the RapidPrint 500 10BaseT models, the PWR LED is solid green if there is a valid connection to a network. On the RapidPrint 500 10Base2, the PWR LED is solid green when the unit is plugged into a power source.*

2.3.3.1 Power-up Diagnostics

The *RapidPrint 500* boot-up procedure consists of the following steps. In normal operation, these steps require a total of approximately 45 seconds to complete.

1. The *RapidPrint 500* runs through a set of power-up diagnostics for approximately 10 seconds. The PWR LED remains solid green, the ACT LED shows varying patterns corresponding to the test being run.
2. The *RapidPrint 500* tries to obtain TCP/IP configuration information via BOOTP and RARP. This takes approximately 10 seconds if no hosts answer the requests. During this step, the ACT LED blinks yellow approximately 3 times per second as network requests are transmitted.

   > **NOTE:** *For more information about BOOTP and RARP, refer to your operating system's documentation.*

3. The *RapidPrint 500* determines if the code in the Flash ROMs is valid. If the code is valid, it loads that code and begins normal execution. This takes approximately 20 seconds.
4. When the unit is running normally, the ACT LED blinks once every 2 seconds. (If data is being transmitted, the LED blinks yellow, rather than green.)

2.4 Was the Installation Successful?

If the *RapidPrint 500* appears to be working (the ACT LED is blinking once every two seconds) and the unit is connected to the network, there are various ways to confirm that the unit is working correctly:

- Print a test page by pressing the Test button.

  NOTE: *The printer must be able to print a text file*

- If the *RapidPrint 500* was configured with an IP address, telnet to the console port from a TCP/IP host.
- Use the EZCon utility (provided on the enclosed distribution CD-ROM) to show available print servers.
- From a VMS host, the *RapidPrint 500* will be accessible from NCP or TSM.
- From Windows NT, the *RapidPrint 500* will reply to NT machines that scan for DLC printers.

When you are satisfied that the *RapidPrint 500* is working properly, proceed to Chapter 3, *Getting Started*. If the server does not boot properly, see Appendix B, *Troubleshooting.*

3 - Getting Started

3.1 Overview

This chapter describes how to get the *RapidPrint 500* online and running. There are two ways to log into the *RapidPrint 500*:

- Incoming (Remote) Logins: EZCon is the preferred method of login and configuration.
- Remote Console Logins: Connections to port 7000 can be made by LAT users and TCP/IP users via a telnet connection.

It is important to consider the following points before logging into and configuring the *RapidPrint 500*:

- The *RapidPrint 500* IP address must be initially configured before using a telnet connection to further configure the *RapidPrint 500.*
- Only one person at a time can be logged into the remote console port, regardless of the protocol being used. This prevents several people from simultaneously attempting to configure the *RapidPrint 500.*
- Although all other login sessions can be disabled, remote console logins cannot be disabled. Therefore, the system manager will always have access to the unit.
- Logging into the remote console port does not automatically create privileged user status. You must use the **Set Privileged** command to configure the unit.

The remote console port is password protected.

- Default login password is **access**
- Default privileged password is **system**

NOTE: For more information on passwords, see page 10-1.

3.2 Command Syntax

3.2.1 Set/Define Commands

Set and **Define** commands appear frequently in this manual; therefore, it is important to know the difference between them. **Set** makes an immediate change, but is not permanent. **Define** makes a permanent change, but does not take effect until the *RapidPrint 500* is rebooted or until the affected port is logged out.

NOTE: *For more information on the Set and Define commands and similar command constructs, refer to the RapidPrint 500 Reference Manual on the distribution CD-ROM.*

3.2.2 Command Format

The commands in this manual and the *RapidPrint 500 Reference Manual* are in the following format:

- Optional parameters are enclosed in brackets [].
- Curly braces {} indicate that one and only one of the enclosed items must be used.
- User-supplied parameters, such as a particular *port number* or *host name,* are shown in *italics.*

Commands can be entered in upper, lower, or mixed case.

3.3 IP Address Configuration

The *RapidPrint 500* IP address must be initially configured before using a telnet connection to further configure the*RapidPrint 500.* To initially set the IP address, you can use the following methods:

- Directed ping packet
- BOOTP reply
- RARP reply
- Command line (**`Local>`**) interface via MOP, Netware, or AppleTalk
- EZCon login via Netware or AppleTalk

All methods of setting the IP address are described in the following sections; choose the method that is most convenient for you.

To access the *RapidPrint 500,* hosts must be capable of resolving the*RapidPrint 500* IP address. Configuring this capability can be done in the host's **`/etc/hosts`** file or via a nameserver. For configuration instructions, refer to the host's documentation.

3.3.1 Using a Directed Ping Packet

If the *RapidPrint 500* has no IP address, it sets its address from the first directed IP ICMP (ping) packet it receives. To generate such a packet, create an entry in the host's ARP table. The following command format shows how to create an entry in the host's ARP table. Note that this requires superuser privileges.

> **NOTE:** *Windows NT and Windows 95 users must ping another host before adding the ping packet to the ARP table.*

`# arp -s` *`xxx.xxx.xxx.xxx`* `00:80:a3:` *`xx:xx:xx`*

Substitute the intended IP address and the hardware address of the*RapidPrint 500*, then ping the server:

`# ping` *`xxx.xxx.xxx.xxx`*

The *x*'s denote the IP address.

> **NOTE:** *If a router is between the server and the ARP host, this procedure does not work!*

When the server receives the ping packet, it notices that its own IP address is not set and sends out broadcasts to see if anyone else is using this address. If there are no duplicates, the server uses this IP address and responds to the ping packet.

> **NOTE:** *The RapidPrint 500 does not save the IP address permanently; it is set temporarily to enable EZCon to communicate with the server, or to allow an administrator to log into the RapidPrint 500 remote console port via a telnet utility.*

To save the IP address, log into the remote console port using a telnet utility. Specify the *RapidPrint 500* IP address and 7000 as the port number for your connection.
The *RapidPrint 500* displays the remote console port prompt (#). To successfully log into the port, enter the login password at this prompt. The default login password is **access**. To change this password, see *System Passwords* on page 10-1.
To make the IP address permanent, use the **Define Server IPaddress** command.

```
% telnet  xxx.xxx.xxx.xxx 7000
Trying  xxx.xxx.xxx.xxx
Connected to  xxx.xxx.xxx.xxx
Escape character is '^]'

# access  (not echoed)

Digital DSTRP Version n.n/n (yymmdd)

Type Help at the 'Local_>' prompt for assistance.


Enter Username>  xxxx

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

NOTE: *If you use NCP/TSM, Telnet when you enter the* ***Set Privileged*** *command, the* `LOCAL>>` *prompt is displayed (instead of* `LOCAL>`*).*

If you use the EZCon utility and select the ***Terminal*** *icon, the prompt is displayed as* `LOCAL>` *instead of* `LOCAL>>`.

3.3.2 Using a BOOTP or RARP Reply

At boot time a host-based BOOTP or RARP server can respond to an *RapidPrint 500* request for an available IP address. For information about configuring the BOOTP or RARP servers, see the host documentation.

Many BOOTP servers do not reply to a BOOTP request if the download filename in the configuration file does not exist. If this is the case, create a file with the pathname specified in the configuration file.

By default, the *RapidPrint 500* attempts BOOTP and RARP queries. You can disable these queries by doing either of the following:

- Within EZCon, use the **Maintenance:Server Boot Parameters** menu.
- At the `Local>` prompt (accessible via EZCon or a telnet login, enter the **Define Server BOOTP Disabled** and **Define Server RARP Disabled** commands.

3.3.3 Using the Command Line Interface

To define the IP address at the local prompt (`Local>`), log into the *RapidPrint 500* via EZCon and press Return.

A `Username>` prompt is displayed. After you enter a username, there is a `Local>` prompt. To set the IP address at this prompt, you must be the privileged user. See *Privileged Password* on page 10-1. When you have privileged access, use the **Set/Define Server IPaddress** command:

`Local>> DEFINE SERVER IPADDRESS` *`xxx.xxx.xxx.xxx`*

3.4 EZCon Logins and Configuration

The EZCon software, shipped with the *RapidPrint 500* on the distribution CD-ROM, is the easiest way to log into and configure the *RapidPrint 500.* EZCon guides you through configuration using a point-and-click interface.

NOTE: *NetWare users must be running Windows version 3.1 or later with the NetWare VLM or a Winsock compliant TCP/IP stack.*

AppleTalk, NetWare, and TCP/IP versions of EZCon are shipped with the *RapidPrint 500* on the distribution CD-ROM. To use the CD-ROM, refer to the instructions on the CD-ROM case. To install EZCon, refer to the appropriate EZCon README file.
All instructions for using EZCon are listed in each README file. For assistance once EZCon is running, refer to the EZCon online help.

3.5 Remote Console Logins

Remote console logins are supported from AppleTalk, LAT, NCP/TSM, NetWare, and TCP/IP. All remote console login methods are in the following sections.

NOTE: *Windows NT users must use TCP/IP. It is the only way to log into the unit.*

3.5.1 AppleTalk Console Connections

AppleTalk users can make remote console connections via EZCon for Macintosh. EZCon for Macintosh is included on the distribution CD-ROM.

3.5.2 NetWare Console Connections

NetWare users can make remote console connections via EZCon for Windows. EZCon for Windows is included on the distribution CD-ROM.

3.5.3 TCP/IP Console Connections

The *RapidPrint 500* enables a TCP/IP user to configure the server via a single telnet or rlogin connection to the remote console port. The remote console port is designated as port **7000**.

To make a connection to this port, use the **telnet** or **rlogin** command.

```
% telnet xxx.xxx.xxx.xxx 7000
Trying xxx.xxx.xxx.xxx
Connected to xxx.xxx.xxx.xxx
Escape character is '^]'

# access  (not echoed)

Digital DSTRP Version n.n/n (yymmdd)

Type Help at the 'Local>' prompt for assistance


Enter Username> xxxx
```

Note that the # prompt requires that the login password be entered before the connection can be made. The default login password is **access**. To change this password, see *Login Password* on page 10-2.

3.5.4 VMS Console Connections

From a VMS host machine, you can use NCP or TSM to make a connection to the remote console port.

NOTE: *The NCP name cannot exceed six characters.*

First, create an entry in the NCP database for the *RapidPrint 500.* Then enter the NCP **Connect** command to establish a session.

NOTE: *The parameters shown below are user-supplied parameters. These parameters will be different for you.*

```
$ RUN SYS$SYSTEM:NCP
NCP> SHOW KNOWN CIRCUITS
Known Circuit Volatile Summary as of <date time>
Circuit State
QNA-0 on
NCP>
NCP> SET NODE  server_name Address  server_address (1.1 -
63.1023) Name  server_name (1-6 characters)
NCP> SET NODE  server_name SERVICE CIRCUIT  QNA-0
NCP> SET NODE  server_name HARDWARE ADDRESS 00-80-A3-  xx-xx-xx
NCP> EXIT
$ RUN SYS$SYSTEM:NCP
NCP> CONNECT NODE  server_name

# access  (not echoed)

Digital DSTRP Version n.n/n (yymmdd)

Type Help at the 'Local>' prompt for assistance.


Enter Username>  xxxx
```

NOTE: *For more information on configuring the NCP database and establishing a remote console connection, see the NCP and TSM documentation.*

The NCP **Set** commands create the database entry only in the temporary database. To make an entry in the permanent database, use the NCP **Define** commands.

3.6 Controlling Incoming Logins

By default, incoming LAT connections are **disabled**. To change these settings, use the **Set/Define Server Incoming** command.

Incoming logins do not require that the user enter a login password; therefore, you may want to disable incoming logins as a security measure. If it is undesirable to disable incoming logins, the *RapidPrint 500* can be configured to require a login password for incoming connections with the **Set/Define Server Incoming Password** command.

```
Local>> SET/DEFINE SERVER INCOMING    string
```

The **Set/Define Server Incoming** command can have the parameters shown in Table 3-1.

Table 3-1: Set/Define Server Incoming Command Parameters

Parameter	Function
`Telnet`	Enables Telnet logins
`LAT`	Enables LAT logins
`Both`	Enables both Telnet and LAT logins
`None`	Disables both Telnet and LAT logins

Enabling LAT logins automatically creates a service. A service is a resource on the *RapidPrint 500* that allows LAT users to connect to the *RapidPrint 500* by using the **`Connect`** command. The default name of this service is `MPS_`*`xxxxxx`*.

NOTE: *The xxxxxx represents the last six hexadecimal digits of the RapidPrint 500 Ethernet address.*

This service is created automatically when the unit boots if incoming LAT connections are enabled. To change the service name, change the *RapidPrint 500* name. See *Server and Service Names* on page 10-2.

If outgoing LAT connections on a VMS host are enabled, use the following command to connect to the *RapidPrint 500*:

```
$ SET HOST /LAT MPS _xxxxxx
```

4 - Services

4.1 Overview

With few exceptions, setting up a print queue on the *RapidPrint 500* requires the use of a service. A **service** is a resource accessible to network hosts; for example, a Novell user can queue print jobs to a service.

The *RapidPrint 500* has three default services for use with the parallel port. These services are sufficient for most users. Default services cannot be edited; therefore, if you cannot use the default services, you must configure custom services (see page 4-3).

Once you enable or create the appropriate services for your system, you can use those services to connect to the *RapidPrint 500* and queue print jobs.

4.2 Default Services

The *RapidPrint 500* comes with the following default services that reference the parallel port:

MPS_*xxxxxx*_TEXT	Queue all text print jobs to this service.
MPS_*xxxxxx*_PCL	Queue all binary print jobs to this service. For example, plotter or PCL files.
MPS_*xxxxxx*_PS	Queue all PostScript print jobs to this service.

NOTE: *The xxxxxx notation represents the last six hexadecimal digits of the RapidPrint 500 Ethernet address.*

NOTE: *You can change MPS_xxxxxx. The default service names are based on the server name. If you change the server name, the new name must be no more than 12 alphanumeric and/or underscore characters.*

For information on changing default server names, see Chapter 10.

When the *RapidPrint 500* boots, all default services are available. To disable (or later enable) a service, use the **Set/Define Service Default** command. The command syntax is:

```
Local>> DEFINE SERVICE DEFAULT POSTSCRIPT DISABLED
```

4.2.1 Characteristics

Characteristics specify how the *RapidPrint 500* appears to network hosts and how it treats print data.

Each default service has characteristics that are enabled. The service characteristics cannot be changed on default services.

If you need to use a service that has different characteristics, you must configure a custom service. When a custom service is created, it has a list of characteristics that are enabled; unlike default services, these services can be changed. See *Custom Services* on page 4-3.

Table 4-1 shows which characteristics are enabled on the default services.

Table 4-1: Characteristics that are Enabled on the Default Services

Service	Enabled Characteristics
MPS_*xxxxxx*_TEXT	Banner , Connections , FormFeed , LAN Manager , NetWare , Queuing , RTEL
MPS_*xxxxxx*_PCL	Binary , Connections , LAN Manager, NetWare , Queuing , RTEL
MPS_*xxxxxx*_PS	Connections , LAN Manager , NetWare , PostScript , Queuing , RTEL

NOTE: *Descriptions of all possible service characteristics are given in the Characteristics section on page 4-3.*

4.3 Custom Services

A custom service consists of two primary “building blocks”:

- Characteristics
- Protocols

Since the default services cannot be edited, you may need to create a custom service. For example, if you are using the NetWare protocol, and the FormFeed characteristic prevents you from using a default service, you must configure a custom service with FormFeed disabled.

4.3.1 Characteristics

Characteristics describe global properties of the service. There are two types of characteristics:

- User-specified characteristics
- Status, which is determined by the server

User-specified characteristics include the following:

- Service name
- SOJ (Start-of-Job) or EOJ (End-of-Job) string
- Identification string
- Banner
- Binary
- FormFeed
- Password
- Postscript
- PSConvert
- TCP Port
- Telnet Port

Status characteristics include:

- Ports
- Rating

Each of these characteristics is described below.

> **NOTE:** *The default state of these characteristics applies to custom services, not necessarily to the RapidPrint 500 default services.*

4.3.1.1 Service Name

Each service name can be up to 12 alphanumeric and/or underscore characters.

4.3.1.2 EOJ (End-of-Job) or SOJ (Start-of-Job) String

NOTE: *The commands that you may need to enter in EOJ and SOJ strings are printer-specific and are not covered in this manual.*

Each service may have a Start-of-Job and/or End-of-Job string. SOJ strings are sent to the printer before each print job. EOJ strings are sent to the printer after every print job. These strings are typically used to force the printer into a particular mode (such as PostScript or PCL).

4.3.1.3 Identification String

Each service may have an identification string. This string typically contains a more verbose description of the service and is displayed by LAT when a **Show Services** command is issued. It is ignored by all other protocols.

4.3.1.4 Banner

This characteristic only affects banner pages that the *RapidPrint 500* generates when printing via LPD or NetWare. If a host generates its own banner, the *RapidPrint 500* treats it as print data. Banner is enabled by default.

NOTE: *Users should disable the Banner and FormFeed characteristics for PostScript queues.*

4.3.1.5 Binary

If the Binary characteristic is enabled, the *RapidPrint 500* does not perform character processing on the data. When Binary is disabled, the *RapidPrint 500* expands linefeeds into carriage return/linefeeds and performs tab expansion for LPD jobs. This characteristic is typically enabled for printing graphics jobs (PCL or plotter files). Binary is disabled by default.

4.3.1.6 FormFeed

If FormFeed is enabled, the server appends a formfeed to the end of LPD and NetWare jobs. FormFeed is enabled by default.

> **NOTE:** *Users should disable the Banner and FormFeed characteristics for PostScript queues.*

4.3.1.7 Password

Specifies a 1-to 6-character service access password that the user must supply in order to connect to the service. This characteristic is disabled by default.

4.3.1.8 PostScript

If enabled, the *RapidPrint 500* sends a small PostScript job to the printer before the user's print data to force auto-selection printers into PostScript mode. It also attempts to confirm that the printer finished a job before starting the next one. If the printer attached to this service is to be used only for PostScript, this option must be enabled. PostScript is disabled by default.

4.3.1.9 PSConvert

This characteristic allows a PostScript printer attached to the *RapidPrint 500* to print jobs that are not PostScript. When a file is queued to a service with the PSConvert attribute enabled, the file is encapsulated within a PostScript job. When printed, the file looks as if it was printed on a line printer. PSConvert is disabled by default.

4.3.2.10 TCP Port

Associates a numeric TCP socket (between 4000 and 4999) with the service. Connections to this socket are accepted only if the service is currently available. This is an 8-bit clean connection.

4.3.1.11 Telnet Port

Associates a numeric TCP socket (between 4000 and 4999) with the service. Telnet IAC interpretation will be done on the connection. Connections to this socket are accepted only if the service is currently available.

4.3.1.12 Ports

Ports shows that the service is associated with Port1.

4.3.1.13 Rating

The rating describes the current state of the service; the *RapidPrint 500* determines the rating based upon whether or not the port associated with the service is in use. A non-zero value means that the service is available. A rating of zero means that the service is either in use or not available.

4.3.2 Protocols

Each service has a protocol list associated with it; this list controls which protocols can access the service. Table 4-2 describes the protocol parameters.

Table 4-2: Protocol Parameters

Protocol	Parameter
AppleTalk	`ENABLED` or `DISABLED`. Enables or disables AppleTalk access to the service. Default is **disabled**.
LAN Manager	`ENABLED` or `DISABLED`. Enables or disables LAN Manager (NetBIOS/NetBEUI) access to the service. Default is **enabled**.
LAT	`ENABLED` or `DISABLED`. Enables or disables LAT access to the service. Default is **disabled**.
NetWare	`ENABLED` or `DISABLED`. Enables or disables NetWare (IPX) access to the service. Default is **enabled**.
RTEL	`ENABLED` or `DISABLED`. Enables or disables RTEL access to the service. Default is **enabled**.

4.4 Service Command Format

To create a new service, use a unique service name with the **Set/Define Service** command.

> **NOTE:** *All Set/Define Service commands require being the privileged user on the server. See System Passwords on page 10-1 for details on becoming the privileged user.*

The format for **Set/Define Service** command is shown below.

```
⎡    SET     ⎤
⎨            ⎬  SERVICE servicename option [ text ]
⎣  DEFINE    ⎦
```

In the command format, *option* can be **SOJ**, **EOJ**, a function (such as **POSTSCRIPT**), or a protocol (such as **LAT**). *Text* can be the status (such as **ENABLED**), any other descriptive string, or the keyword **NONE**. The keyword **NONE** clears any string already in place.

A string can consist of alphanumeric characters, or hexadecimal character pairs preceded by a backslash. Strings are converted to all uppercase, unless they are enclosed in quotes. If you need to add any character other than a letter (A-Z, a-z), you must locate the character on a ASCII chart and enter that number as a hexadecimal value. For example:

```
Local>> DEFINE SERVICE MPS_PRT SOJ “startchar”
Local>> DEFINE SERVICE MPS_PRT EOJ “\23\4e\9atext”
```

> **NOTE:** *If you are using PostScript printing on an auto-sensing printer, you may not need to enter EOJ or SOJ strings to force the printer into PostScript mode; enabling the PostScript characteristic (see page 4-5) should do this. For more details, refer to your printer’s documentation.*

The following **Set/Define Service** command creates a service named BACKUPPRINTER with LAT enabled.

```
Local>> DEFINE SERVICE BACKUPPRINTER LAT ENABLED
```

The following command creates a service named MPS_PRT ; this service has POSTSCRIPT and PSCONVERT enabled.

```
Local>> DEFINE SERVICE MPS_PRT POSTSCRIPT ENABLED PSCONVERT
ENABLED
```

4.4.1 Setting Up Custom Services for an LG Printer from LAT

To set up a custom service, enter the **Set/Define Service** command in the following format:

```
⎡    SET     ⎤
⎨            ⎬  SERVICE servicename option [ text ]
⎣  DEFINE    ⎦
```

Example:

In the following example, LGSERVE is the service name and LAT is the option.

```
Local>> DEFINE SERVICE LGSERVE LAT ENABLED TEXT ENABLED
FORMFEED DISABLED BINARY ENABLED
```

4.4.2 Servers for PostScript Printers from LAT Using DCPS

To set up a custom service, enter the **Set/Define Service** command in the following format:

```
⎡    SET     ⎤
⎨            ⎬  SERVICE servicename option [ text ]
⎣  DEFINE    ⎦
```

Example:

```
Local>> DEFINE SERVICE MPS_PRT POSTSCRIPT ENABLED FORMFEED
DISABLED BINARY ENABLED
```

4.5 Displaying Service Characteristics

The **Show Service Local Characteristics** command displays current characteristics associated with all services on a server.

NOTE: *To display characteristics for a specific service, specify the service name instead of* `LOCAL`.

```
Local> SHOW SERVICE LOCAL CHARACTERISTICS
Service: MPS_PRT Ident:
Rating: 255 Ports: 1
Characteristics: Banner Rtel PostScript Formfeed NetWare
SOJ: startchar EOJ: endchar
```

5 - AppleTalk Configuration

5.1 Overview

This chapter describes print configuration for AppleTalk hosts. To configure the server, use the EZCon point-and-click interface. To obtain the `Local>>` prompt via EZCon, click on the **Terminal** icon.

AppleTalk, NetWare, and TCP/IP versions of the EZCon software are shipped with the *RapidPrint 500* on the distribution CD-ROM.

Macintosh users can use the AppleTalk or TCP/IP version of the EZCon software. All instructions for using EZCon are in each README file. For assistance once EZCon is running, refer to the EZCon online help.

5.2 Bitronics Interface

The *RapidPrint 500* advertises its printer as a LaserWriter; therefore, printing from a Macintosh requires a PostScript printer and bidirectional communication with that printer. The *RapidPrint 500* supports the Bitronics interface (IEEE 1284 nibble mode). This interface, created by Hewlett-Packard and standardized by IEEE, is an extension to the standard Centronics interface (IEEE 1284 compatibility mode). Printers that support Bitronics (for example, Digital's LN17, DEClaser 3500, and DEClaser 5100) allow bidirectional communication via the parallel port.

To enable Bitronics on the *RapidPrint 500* parallel port, use the following commands:

```
Local>> DEFINE PORT 1 BITRONICS ENABLED
Local>> LOGOUT PORT 1
```

5.3 Macintosh Custom Service

To print from a Macintosh, create a custom service with both AppleTalk and PostScript enabled. You cannot use the default PostScript service because AppleTalk is not enabled on the service and default services cannot be edited. In the following example, a custom service called **MPS_PTR** is created using the **Set/Define Service** command.

```
Local>> DEFINE SERVICE MPS_PTR APPLETALK ENABLED POSTSCRIPT
ENABLED
```

NOTE: *A Macintosh must have the LaserWriter driver installed; if it is not installed, LaserWriters will not be available in the Chooser.*

Once you create the custom service, the service should be visible in the Chooser of any Macintosh that is in the same zone as the *RapidPrint 500.* If you have multiple zones on your network, the service appears in the default zone specified by the AppleTalk router.

Once you locate the service in the Chooser, select it and complete the appropriate setup options. Close the Chooser window and print a test page of text to the Macintosh service.

5.4 AppleTalk Zones

If there is a router on the network, the *RapidPrint 500* appears in the default zone specified by the router. The zone can be changed from the default zone by using the following command:

NOTE: *Macintosh machines that do not support EtherTalk do not need an Ethernet card or a LocalTalk-to-EtherTalk router to use the RapidPrint 500.*

```
Local>> DEFINE PROTOCOL APPLETALK ZONE "  zone"
```

NOTE: *The RapidPrint 500 does not accept AppleTalk print jobs for 60 seconds after booting if no router is present on the network.*

If the *RapidPrint 500* is attached to a network without an AppleTalk router, all AppleTalk devices (including the *RapidPrint 500*) appear in the default zone in the Chooser.

5.5 PostScript Printing

5.5.1 LaserPrep

The LaserPrep application makes print files much smaller, which saves bandwidth. Using LaserPrep requires that each Macintosh printing to the *RapidPrint 500* must be running the same version of LaserPrep. Print jobs can be lost if different versions of LaserPrep are being used; reloading the LaserPrep file repeatedly can prevent jobs from printing reliably.

5.5.2 Printing Bitmap Graphics

If files that contain embedded bitmap graphics print incorrectly, it is because the bitmaps are actual binary data. Binary data cannot be printed via a parallel interface. Files that contain embedded bitmap graphics successfully print text; however, graphics or drawings appear garbled.

Most major application packages have provisions to print using either "binary PostScript" (for printers connected to the network via LocalTalk) or "ASCII PostScript" (for printers connected to the network via a parallel port).

If the application you are using does not have this provision, contact the application vendor. They may have an upgraded version or a "patch" that you can apply to add the "ASCII PostScript" function.

5.6 Creating a DCPS Queue Using AppleTalk

To create a DCPS queue to the *RapidPrint 500* by using AppleTalk, enter the AppleTalk node name and optionally the AppleTalk zone in the form APPLETALK/ *printername*`@`*zone*`@`*type* as parameter 2 (P2) in SYS$STARTUP:DCPS$STARTUP.COM.

The variables have the following meanings:

- *Printername* is the AppleTalk node name assigned to the *RapidPrint 500*. This value is required.
- *Zone* is the AppleTalk zone that includes the *RapidPrint 500*. This value is optional. The default is the AppleTalk zone for the network segment of the OpenVMS VAX system on which the print queue is running.
- *Type* describes the printer's accessibility. This value is optional. Generally, *type* is LaserWriter.

Example:

```
$ @SYS$STARTUP:DCPS$EXECUTION_QUEUE -
APPLEQ-                                    ! P1    Execution queue
                                                   name
"""APPLETALK/LaserWriter pro 600""" -      ! P2    Device name
DCPS_LIB -                                 ! P3    Logical name for
                                                   library search list
```

```
"SIDES=1" -                                    ! P4    Default queue
                                                       parameters
"" -                                           ! P5    Default queue
                                                       qualifiers
"" -                                           ! P6    Communication
                                                       speed
"" -                                           ! P7    Device
                                                       characteristics
"" -                                           ! P8    Verify on/off
```

For more information, see the*DCPS System Manager's Guide*.

6 - NetBIOS Configuration

6.1 Overview

The EZCon configuration software is the easiest way to configure NetBIOS print queues on the *RapidPrint 500*. AppleTalk, NetWare, and TCP/IP versions of EZCon are shipped with the *RapidPrint 500* on the distribution CD-ROM. All instructions for using EZCon are listed in each README file. For assistance once EZCon is running, refer to the EZCon online help.

NOTE: *Windows for Workgroups cannot reliably print jobs to the RapidPrint 500 via LAN Manager. It is recommended that Windows for Workgroups users spool their print jobs to a Windows NT, NetWare, or UNIX host and print from that machine.*

6.2 Windows NT Users

Windows NT users can print using either the Digital Network Port or the NetBIOS protocol. To send print jobs from a Windows NT host to the *RapidPrint 500*, the *RapidPrint 500* must be added as a Windows NT printer.

NOTE: *The RapidPrint 500 does not support NetBIOS over TCP/IP.*

All default services can be used for NetBIOS printing. If you use a custom service, ensure that the LAN Manager characteristic is enabled.

To print from NetBIOS, perform these steps:

1. Double-click the **MS-DOS** prompt icon to open a command session.
2. Use the **Net Use** command to redirect the lpt port to the *RapidPrint 500* service. Redirecting allows you to use a service on the *RapidPrint 500* as if it were on the host machine. Choose one of the lpt ports to redirect. Typically the ports to choose from will be lpt1, lpt2, lpt3, or lpt4. Before you select a port, ensure that it does not currently have a printer connected to it.

   `C:> NET USE LPT n: \\MPS_xxxxxx\MPS_xxxxxx_TEXT`

   NOTE: *The value of n can be 1 through 8.*

The Windows NT system attempts to connect to the *RapidPrint 500*. (If it cannot connect to the *RapidPrint 500*, it informs you of the problem.) At this point, all references to LPT*n* (the port specified with the **Net Use** command) go to the service that you created. For testing purposes, you can try to use a **Copy** command, if the *RapidPrint 500* is ready to accept data.

3. To make the LPT redirect permanent, use the following command:
   ```
   C:> NET USE /PERSISTENT:YES
   ```
   When the host is rebooted, the LPT redirect is remembered; the host automatically attempts to connect to the *RapidPrint 500*.
4. Type **`Exit`** to exit the MS-DOS shell.
5. Double click the **NT Print Manager** icon in the **Main** window on the desktop.
6. Click **Create Printer** from the **Printer** menu.

   NOTE: *If the printer driver is not already installed, you will need the Windows NT installation media.*

7. In the **Printer Name** box, enter the name of the queue on the NT host.
8. Click the **Driver** menu arrow; select the required printer driver from the pull-down menu.
9. (Optional) Enter a description in the **Description** box.
10. Click the **Print To** menu arrow to view its pull-down menu, and select the LPT port you want to redirect.
11. Click **OK** in each print dialog displayed.
12. If you want this printer to be the default printer, click the **Default** menu arrow on the Print Manager's title bar and scroll to the printer's name.

6.3 Potential Windows NT Problems

If you followed the setup instructions in this section, Windows NT printing should run smoothly. However, two potential problems are listed below:

- When Windows NT determines that insufficient progress is being made on a print job, it will automatically time out (force you to abort or retry) print jobs. By default, the timeout period is set to 45 seconds. If you have a slow printer, this timeout period may not be long enough; Windows NT may time out your print job when it is queued to the *RapidPrint 500.* To change the timeout period, see the **Settings** dialog box in Windows NT. (On some versions of Windows NT editing the timeout period does not actually change the 45 second timeout period.)

  NOTE: *When a timeout occurs, Windows NT will try to restart the entire job. If you are unable to change your timeout period, it is recommended that you use the Digital Network Port.*

- Windows NT supports printing via AppleTalk and LAN Manager. At this time, the *RapidPrint 500* and NT AppleTalk implementations are not compatible; the *RapidPrint 500* cannot accept AppleTalk jobs from Windows NT hosts.

7 - LAT Configuration

7.1 Overview

Creating a LAT print queue can be done for printing directly to a *RapidPrint 500* port, or for printing to a service.
Printing directly to a port is the simplest method of creating a LAT print queue because it does not require configuration of the *RapidPrint 500.*
Printing using a service requires some *RapidPrint 500* configuration, however, it allows you to have multiple printers service the same VMS queue. The LAT characteristic must be enabled on the service being used.

7.2 Printing Directly to a Port

This is a two-step process.

1. Create a LAT application port that references the *RapidPrint 500* parallel port on the LAT host.
2. Create a print queue that uses the LAT application port.

The LAT application port is a device that allows programs to treat a LAT connection as a physical port for input and output. For example, a printer might be configured to use port LTA3419, which might be connected ("mapped") to port 1 of the *RapidPrint 500.* The LAT port can be mapped to either a service or an exact port on the *RapidPrint 500.*

Use the following commands to create a LAT application port and then set it to the appropriate node and port:

```
LATCP> CREATE PORT LTA nnn/APPLICATION
LATCP> SET PORT LTA nnn/NODE=MPS_xxxxxx/PORT=Port_1
LATCP> EXIT
```

The *nnn* is any unused LAT port number (use the **Show Ports** command to see which port numbers are in use). VMS users can then use port LTA*nnn* as a port to the *RapidPrint 500.*

LATCP ports are not permanently configured on a host. Add the commands necessary to create required LAT devices to the SYS$MANAGER:LAT$STARTUP.COM file so that they will be recreated after each host reboot.

> **NOTE:** *See the VMS documentation for more information about terminal characteristics.*

Note that LAT terminal device characteristics may have to be changed to print some files correctly. For example, by default the VMS terminal driver will change form feeds into an equivalent number of line feeds. To disable this behavior, enter the following command:

```
$ SET TERMINAL/PERM/FORM LTA nnn:
```

To create and start a LAT queue on the host that uses this LAT application port, enter the following:

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

A print request would then look like the following:

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

7.3 Printing Using LAT Services

Printing using a LAT service requires the creation of three items:

- LAT service on the *RapidPrint 500*
- LAT application port that references the *RapidPrint 500* print resource
- Print queue that uses the LAT application port

> **NOTE:** *LAT is disabled on all of the RapidPrint 500 default services because many network managers object to the frequent LAT service announcements. If LAT connections to a service are desired, a service must be created; the default PostScript, Binary, and Text services cannot be used. (See page 4-3.)*

LAT services can be created and connected to using the **`Set/Define Service`** command. An example is shown below:

```
Local>> DEFINE SERVICE MPS_PRT LAT ENABLED
```

A LAT device can then be created using the following commands:

```
$ RUN SYS$SYSTEM:LATCP
LATCP> CREATE PORT LTA nnn/APPLICATION
LATCP> SET PORT LTA nnn/NODE=MPS_xxxxxx/service=MPS_PRT
LATCP> EXIT
```

The rest of the procedure for creating the print queue is the same as shown above.

7.4 Printing Using DCPS Software

This section describes:

- Enabling Bitronics
- Creating a DCPS queue to the*RapidPrint 500*

7.4.1 Enabling Bitronics

The DCPS software supplied by Digital requires a bidirectional data path. This is available only if the printer supports the Bitronics interface (IEEE 1284 nibble mode). See your printer's documentation for more information.

NOTE: *Bitronics mode must be enabled on the printer. For example, on the DEClaser 3500, select Bidirectional=On* in the Parallel menu.*

Printers that support Bitronics (for example, Digital's LN17, DEClaser 3500, and DEClaser 5100) allow bidirectional communication via the parallel port. The *RapidPrint 500* supports the Bitronics interface. To enable Bitronics on the *RapidPrint 500* parallel port, use the following commands:

```
Local>> DEFINE PORT 1 BITRONICS ENABLED
Local>> LOGOUT PORT 1
```

7.4.2 Creating a DCPS Queue Using LAT

To create a DCPS queue to the *RapidPrint 500* by using LAT, enter the LAT port name in the form `SERIAL/ lat_port_name` as parameter 2 (P2) in `SYS$STARTUP:DCPS$STARTUP.COM`.

Example:

```
$ @SYS$STARTUP:DCPS$EXECUTION_QUEUE -
LATPRTRQ -                    ! P1   Execution queue name
"""SERIAL/LTA5001:""" -       ! P2   Device name
DCPS_LIB -                    ! P3   Logical name for library search list
"SIDES=1" -                   ! P4   Default queue parameters
"" -                          ! P5   Default queue qualifiers
"" -                          ! P6   Communication speed
"" -                          ! P7   Device characteristics
"" -                          ! P8   Verify on/off
```

For more information, see the *DCPS System Manager's Guide*.

8 - NetWare Configuration

8.1 Overview

This chapter describes the print configuration for NetWare hosts.
To configure print queues, use the EZCon point-and-click interface. To obtain the `Local>>` prompt via EZCon, click on the **Terminal** icon.
To configure NDS print queues on the *RapidPrint 500*, see the *Creating NDS Print Queues* section. To create NDS (NetWare Directory Services) print queues, you must be running NetWare version 4.0 or greater.
If you are running versions 2.x, 3.x, or version 4.0 with bindery emulation, see the section titled *Creating Bindery Print Queues*. Bindery print queues can be configured using EZCon, PCONSOLE, or QINST.

8.2 EZCon

AppleTalk, NetWare and TCP/IP versions of EZCon are shipped with the *RapidPrint 500* on the distribution CD-ROM. All instructions for using EZCon are listed in each README file. For assistance once EZCon is running, refer to the EZCon online help.

> **NOTE:** *NetWare users must be running Windows version 3.1 or later with the NetWare VLM, or with a Winsock compliant TCP/IP stack.*

8.3 NetWare Access List

By default, the *RapidPrint 500* only scans local file servers (file servers one hop away) for print queues to service. File servers on non-local Ethernets (for example, with a IPX router between them and the *RapidPrint 500*) can be enabled using the following commands:

```
Local>> DEFINE PROTOCOL NETWARE ACCESS   fileserver
Local>> INIT DELAY 0
```

The **Set/Define Protocol NetWare Access** command configures a list of file servers that the *RapidPrint 500* contacts for print jobs. The **Init Delay 0** command reboots the box.

To enable scanning for jobs on all file servers in the extended network, replace the file server name with the keyword **All**. However, on an extended (wide or local area) network with many file servers, specifying **All** can severely impact the time between jobs, and the overall printing and network performance.

NetWare traffic can be minimized by removing unused file servers from the access list. To remove a file server from the list, use the **Clear** and **Purge** commands.

- **Clear** removes an entry from the list immediately, but does not remove it permanently.
- **Purge** removes an entry from the list permanently, however, the entry is not removed until the server is rebooted.

Examples of the Clear and Purge commands are given below:

NOTE: *A single asterisk (*) can be used to represent a string of characters in the Clear and Purge commands.*

```
Local>> CLEAR PROTOCOL NETWARE ACCESS    fileserver
Local>> PURGE PROTOCOL NETWARE ACCESS    fileserver
```

8.4 Creating NDS Print Queues

If you are using NDS, the Quick Setup option is the easiest way to create print queues with PCONSOLE with NetWare v4.x or greater.

8.4.1 PCONSOLE Print Queue Setup

Do the following:

1. Register to use NDS bycalling 1-800-365-0696 or accessing http://www.printers.digital.com on the Internet.
2. To allow NDS on the RapidPrint 500, use:
   `Local>> DEFINE PROTOCOL NETWARE DSLICENSE` *`string`*
   where *`string`* is the license number received during registration.

Perform the following procedures on each file server that needs to access the *RapidPrint 500* queues.

1. Log in as Admin on the file server you will be changing and type **`PCONSOLE`** at the `F:` prompt to start the utility.
2. From the **Main** menu, choose **Quick Setup**.
3. The Quick Setup window is displayed:

```
Print server: MPS _xxxxxx
New printer: MPS _xxxxxx_TEXT
New print queue:
Print queue volume:
Banner type:
Printer type:
    Location:
    Interrupt:
    Port:
```

   The fields have the following meanings:

   - Print server (`MPS_`*`xxxxxx`*) is the name of your *RapidPrint 500*.
   - New printer name (`MPS_`*`xxxxxx`*`_TEXT`) is the service name.
   - New print queue can be any name. For example, `MPS_PRT`.
   - Print queue volume is the name of the file server from which the printer receives print request. For example, `MPS_SERV`.

   The remaining fields can be left in their default settings.

4. Once you complete all the fields in the Quick Setup window, press **F10** to save the print queue information.

8.4.2 Print Server Configuration

Perform the following steps:

1. Use the **Define Protocol NetWare DSTree** command to define the directory service tree on which the print server is located.
   ```
   Local>> DEFINE PROTOCOL NETWARE DSTREE    foodco
   ```
2. Use the **Define Protocol NetWare DScontext** command to define the directory services context where the print server is located.
   ```
   Local>> DEFINE PROTOCOL NETWARE DSCONTEXT
   ou=kiwi.ou=exotic.o=fruit
   ```

   NOTE: *For an explanation of how the NetWare Directory Service tree is structured, see your host documentation.*
3. Enter the **Show Protocol NetWare Access** command to ensure that at least one file server in the directory services tree is in the access list.

   By default the access list is set to `Local`, which includes all file servers that are not across a router. To add to this list, enter the **Define Protocol NetWare Access** command.
   ```
   Local>> DEFINE PROTOCOL NETWARE ACCESS    fileserver
   ```
4. Use the **Init Delay 0** command to reboot the *RapidPrint 500.*
   ```
   Local>> INIT DELAY 0
   ```
   It may take up to two minutes for the print server to attach to the queue. If the queue does not attach, see *NetWare Host Troubleshooting* on page B-8.
5. Enter the **`Netstat`** command. This displays information about file servers, printers, and queues that the print server found. If a queue is in JobPoll, the print server successfully attached to the queue. If the print server is not attached to the queue, refer to *NetWare Host Troubleshooting* on page B-8.

8.5 Creating Bindery Print Queues

8.5.1 Using QINST

The QINST utility requires that you are logged into the **Supervisor** (NetWare 2.2/3.11) or **Admin** (NetWare 4.0) account on the target file server. To use the utility, copy the QINST.EXE file from the distribution CD-ROM into the **Public** directory on the file server, ensure that it is in the executable path, and type **QINST**.

When using NetWare version 4.0 and greater, the QINST program requires access to UNICODE tables to provide character translation. To ensure the utility runs properly, copy QINST into the NetWare **Public** directory or ensure that the PATH variable includes the required UNICODE tables.

NOTE: *If you want to enable Bindery emulation, refer to your NetWare documentation.*

NOTE: *If you have problems using QINST, use the PCONSOLE instructions on page 8-6 to install the print queue.*

The following example shows creating a Novell print queue named MPS_PRT.

```
F:\> \Public\QINST Q-Install Ver.   n.m.
Logged in as ADMIN Installing on GONZO, NetWare V3.xx
Enter the name of the print server.
: MPS_xxxxxx <CR>
Enter the name of the queue to create.
: MPS_PRT <CR>
Adding print queue MPS_PRT on volume GONZO_SYS
Enter the service name on MPS  _xxxxxx which will service this
queue.
: MPS_xxxxxx_TEXT
Adding print server MPS _xxxxxx. Please wait...
Attaching MPS _xxxxxx to MPS_PRT
Adding print server MPS _xxxxxx_TEXT. Please wait...
Attaching MPS _xxxxxx_TEXT to MPS_PRT
Print queue installed successfully. Resetting MPS   _xxxxxx.
Resetting print server.
```

```
Install another queue [y/n]? n
F:\>
```

Use the **nprint** command to print a job to the *RapidPrint 500*.

```
F:\> NPRINT C:\AUTOEXEC.BAT /QUEUE=MPS_PRT
```

8.5.2 Using PCONSOLE

The QINST utility is the preferred method for creating Bindery print queues. However, the PCONSOLE utility can also be used.

Perform these major steps on each file server that will need to access *RapidPrint 500* queues.

- Install the *RapidPrint 500* as a print server on the NetWare file server.
- Create print queues on the file server and attach them to the *RapidPrint 500*.

RapidPrint 500 re-polls the file servers for the updated queue information.

> **NOTE:** *The following steps refer to NetWare v3.11, but are similar for v4.x and v2.x.*

To install a print server, complete the following steps:

1. Log in as the privileged user on the file server you will be changing and type **PCONSOLE** at the F: prompt to start the utility.
2. Create an entry for the print server on the Novell file server.
   A. Select **Print Server Information** from the **Available Options** menu (use the cursor keys to move to it and press **Enter**). A list of current print servers is shown.
   B. Press **Insert** to create a new entry, add the *RapidPrint 500*, and press **Enter**. This is the name that the *RapidPrint 500* will log in as when querying the file server's print queues. If the *RapidPrint 500* name is changed, the file server(s) must be updated.

      > **NOTE:** *If the login password on the RapidPrint 500 is changed, a new password will have to be entered for the server. Highlight the RapidPrint 500 name and press Enter to show the Print Server Information menu. Select the Change Password option and enter the new login password of the RapidPrint 500.*

C. Press **Insert** to add the name of the service that will service the queue, (**MPS_*xxxxxx*_TEXT, MPS_*xxxxxx*_PCL,** or **MPS_*xxxxxx*_PS**) and press **Enter**.

D. Press **Escape** to return to the **Available Options** menu.

To create a print queue on the file server and associate it with the *RapidPrint 500* service, complete these steps:

1. Select the **Print Queue Information** menu option under **Available Options**; then press **Enter**. This shows a list of any existing print queues on the file server.
2. Press **Insert** to create a new queue on the file server, type the new queue name, and press **Enter**. The name does not have to be related to the name of the *RapidPrint 500* resources, but should be short and convenient for users to remember.
3. Highlight the name of the queue just entered and press **Enter** to configure the queue.
4. Select **Queue Servers** (NetWare 4.0 users, select **Print Servers** in the **Print Queue Info** box), and press **Enter** to specify which network print servers can print jobs from this print queue. The list will be empty since none have been selected.
5. Press **Insert**. The MPS_*xxxxxx*, MPS_*xxxxxx*_TEXT, MPS_*xxxxxx*_PCL, or MPS_*xxxxxx*_PS resource entered above should appear in a selection list.

   Add the *RapidPrint 500* name (MPS_*xxxxxx*). (The *RapidPrint 500* name is used to log in.) Highlight the MPS_*xxxxxx* name and press **Enter**.
6. Press **Insert** again. Select either the text (MPS_*xxxxxx*_TEXT), binary (MPS_*xxxxxx*_PCL), or PostScript (MPS_*xxxxxx*_PS) service name and press **Enter**.
7. Press **Escape** to return to the list of print queues.
8. Press **Escape** to return to the **Available Options** menu.
9. Press **Escape** repeatedly to exit the PCONSOLE utility.
10. Access EZcon and click on the **Terminal** icon; the Local> prompt is displayed.

11. At the `Local>` prompt, become the superuser on the *RapidPrint 500* by typing **SU** at the password and then pressing **Return** at the password prompt.
12. Use the **Set Server NetWare Reset** command to reset your print server.

8.6 NetWare Queue Password

The NetWare queue does not require a password. However, if the login password on the *RapidPrint 500* is changed, NetWare print queue setups must also be changed to reflect the new password.

9 - TCP/IP Configuration

9.1 Overview

This chapter describes print configurations for TCP/IP hosts.
The *RapidPrint 500* provides two major TCP/IP printing methods:

- Berkeley remote LPR software
- RTEL host software

Both methods provide queuing of jobs if the *RapidPrint 500* is busy with another job.
The remote LPR software allows the *RapidPrint 500* to look like a host that can print files.
The supplied RTEL software, which requires installation and configuration on the host, provides more capabilities than remote LPR. It allows the host's lp or lpr printing system to transparently use the *RapidPrint 500* print devices, and allows the creation of named pipe devices on the host that map to the *RapidPrint 500* parallel port. See the documentation included with the distribution CD-ROM for a full discussion of RTEL functionality and configuration.

NOTE: *Windows 95 users should follow the configuration instructions on page 9-15.*

Raw TCP/IP socket connections can be used with custom queuing software to create queues on the *RapidPrint 500.*

9.2 LPR on UNIX and Windows NT

The Berkeley remote printing system is supported on many machines
On a UNIX host, add the host print queue name into **/etc/printcap**, and then specify the remote node name (the host name of the *RapidPrint 500*) and the service name on the *RapidPrint 500*.
In Windows NT, select **LPR Port** as the print destination and enter the *RapidPrint 500* host name and service name in the appropriate dialog box.

> **NOTE:** *There are variations in the LPR configuration for AIX, HP, SCO, Solaris, ULTRIX, UNIX, and Windows NT hosts; after reading this section, refer to the following sections for configuration information.*

> **NOTE:** *Neither Windows for Workgroups nor Windows 95 support LPR directly, but there are third party solutions available.*

To add a print queue for a *RapidPrint 500*, add the *RapidPrint 500* name and IP address to the **/etc/hosts** file, in the following format:
xxx.xxx.xxx.xxx MPS_*xxxxxx*
Edit the **/etc/printcap** file and add an entry in the following form:
```
MPS_PRT|Printer on LAB MPS:\
:rm=MPS_xxxxxx:\
:rp=MPS_xxxxxx_TEXT:\
:sd=/usr/spool/lpd/MPS_PRT:
```
Note that the punctuation shown is required, and that no extra spaces should be added. This creates a host queue named **mps_prt**. The **rm** parameter is the name of the *RapidPrint 500* in the host's address file, the **rp** parameter is the name of the service as it exists on the *RapidPrint 500*, and the **sd** parameter specifies the name of a directory used to hold temporary spooling files.
Create the spooling directory by using the **mkdir** command; the directory should be world writable.
```
# mkdir /usr/spool/lpd/MPS_PRT
# chmod 777 /usr/spool/lpd/MPS_PRT
```
In addition, the **mx** option allows unlimited size files to be printed and the **sh** option prevents 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.
After adding the queue entry to the printcap file, use the **lpc status** command to display the queue:
```
% lpc status
MPS_PRT:
       queuing is enabled
       printing is enabled
       no entries
       no daemon present
```
Print to the queue using normal **lpr** commands:

```
% lpr -PMPS_PRT /etc/hosts
```

9.3 Notes About LPR

Following are important things to note about the LPR printing method:

- Due to the way the LPR protocol is typically implemented on the host, the processing options and the banner page are sent after the job data. So the *RapidPrint 500* prints banner pages at the end of a job and cannot support most LPR options. If it is necessary to have the banner page at the beginning of the printout, install and use the RTEL software.

  NOTE: *The RapidPrint 500 prints banners at the end of each print job.*

- The *RapidPrint 500* cannot print multiple copies of the print job when the **"-#<copies>"** lpr option is used.
- If banners are not needed, they can be disabled on custom services using the following *RapidPrint 500* command:
  `Local>> DEFINE SERVICE MPS _xxxxxx_TEXT BANNER DISABLED`

  NOTE: *Banners cannot be disabled on default services (for example, the default text service, MPS_xxxxxx_TEXT).*

- Many LPR spoolers are not intelligent about using multiple queues on one host. If two queues on the print host refer to two services on the same *RapidPrint 500*, they must use separate spooling directories. If only the default directory is used, data from the two queues can be intermixed or sent to the wrong *RapidPrint 500* service.
- 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 software.

9.3.1 LPR on AIX

LPR is available on machines running IBM's AIX operating system versions 3.2 and higher. Print queues on AIX hosts can be configured using either UNIX commands or the SMIT (System Management Interface Tool) application.

9.3.1.1 Using UNIX Commands

Using LPR on AIX hosts involves a slightly different configuration procedure. The queue configuration file is **/etc/qconfig** and the format of the entry is different. Note the lack of colons (:) and the required white space.

```
MPS_PRT:
        device = MPS_PRTd
        up = TRUE
        host = MPS_xxxxxx
        s_statfilter = /usr/lpd/bsdshort
        l_statfilter = /usr/lpd/bsdlong
        rq = MPS_xxxxxx_TEXT
MPS_PRTd:
        backend = /usr/lpd/rembak
```

Note that the device name is simply the queue name with **d** appended.

9.3.1.2 Using SMIT

SMIT allows you to enable LPD printing and create print queues.

1. At the host prompt, type **`smit`**.
2. From the **Main** window, 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. Click **OK**.

   'The lpd subsystem has been started' appears in the Output section of the next window. Click **Done**.

To add a print queue, perform the following steps:

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, choose **remote**.
5. From the next dialog box, choose the type of remote printing.
6. Add the information shown in Table 9-1 to the **Add a Standard Remote Print Queue** dialog box:

Table 9-1: Adding a Print Queue

Field	Value
Name of QUEUE to add	MPS_PRT
HOSTNAME of remote server	MPS_*xxxxxx*
Name of QUEUE on remote server	MPS_*xxxxx*x_PCL
TYPE of print spooler on remote server	BSD
DESCRIPTION of printer on remote server	docuprinter

A dialog box appears with the message `Added print queue .`

To print, use the normal **lp** syntax:

```
% lp -dMPS_PRT  filename
```

9.3.2 LPR on HP/UX

LPR is supported in HP/UX Version 9.0 and greater. Print queues on HP hosts can be configured using either UNIX commands or the SAM (System Administration Manager) application.

9.3.2.1 Using UNIX Commands

To configure a print queue using LPR, become the superuser on your host and issue the following commands:

```
# /usr/lib/lpshut
# /usr/lib/lpadmin -pMPS_PRT -v/dev/null -mrmodel \
-ocmrcmodel -osmrsmodel -ormMPS  _xxxxxx -orpMPS_xxxxxx_PCL
# /usr/lib/accept MPS_PRT
# /usr/bin/enable MPS_PRT
# /usr/lib/lpsched
```

NOTE: *The remote printer name can only be 14 characters, so the default text service name will not work.*

The commands perform the following functions:

- The **lpshut** command stops the HP spooling system, so do not enter that command when print jobs are active.
- The **lpadmin** command adds the print queue.
- The **accept** command tells the queuing system that the queue is accepting requests.
- The **enable** command enables the print queue so it can start printing.
- The **lpsched** command restarts the queuing system.

To print to this queue, use the normal**lp** syntax:

```
# lp -dMPS_PRT  filename
```

9.3.2.2 Using SAM

The System Administration Manager allows you to create print queues.

1. At the HP prompt, type **sam**.
2. From the **Main** application window, choose **Printers and Plotters**. Click **Open**.
3. Choose **Printers/Plotters** from the **Printers and Plotters** window.
4. In the **Actions** pull-down menu, select **Add Remote Printer/Plotter**.
5. Enter the information shown in Table 9-2.

Table 9-2: Configuring a Print Queue

Field	Value
Printer name	MPS_PRT
Remote system name	MPS_*xxxxxx*
Remote printer name	MPS_*xxxxxx*_TEXT
Remote cancel model	rcmodel
Remote status model	rsmodel

9.3.3 LPR on SCO UNIX

LPR is supported in SCO V3.2 release 4 with TCP/IP Version 1.2 and greater. To configure a print queue using LPR, issue the following command:

```
# mkdev rlp
```

This installs the Berkeley remote printing files and executable programs.

> **NOTE:** Enter t*he **mkdev rlp** command only once. If you enter the command repeatedly, serious problems result with the machine. If this occurs, contact SCO technical support.*

To create a remote printer, use the following command:

```
# rlpconf
```

This command asks the following questions and creates a printcap entry for the specified queue:

```
Enter information for remote printers or local printers
accepting remote printing requests
Please enter the printer name (q to quit): MPS   _xxxxxx_TEXT
Is printer MPS _xxxxxx_TEXT a remote printer or a local
printer? (r/l) r
Please enter the name of the remote host that MPS   _xxxxxx_TEXT
is attached to: MPS_PRT
The MPS_xxxxxx_TEXT is connected to host MPS_PRT.
Is this correct? (y/n)
Would you like this to be the sys.default printer? (y/n) n
Make sure your hostname appears in mps   _xxxxxx's
/etc/hosts.equivor or /etc/hosts:lpd file.
Make sure MPS _xxxxxx_TEXT appears in /etc/printcap (in BSD
format).
Make sure MPS _xxxxxx_TEXT has a spool directory on MPS_PRT.
Putting MPS _xxxxxx_TEXT in printer description file and
creating spool directory... done
Updating LP information... done
```

Keep in mind that the printer name must be the same as the service name on the *RapidPrint 500*. If you want to change the printer name later, change it manually by editing the printcap file.

To print to this queue, use the normal **lp** syntax:

```
# lp -dMPS_xxxxxx_TEXT  filename
```

9.3.4 LPR on Solaris

The following commands configure a BSD print queue on a Solaris 2.3 system. These commands require that you are the superuser and in the bourne shell.

```
# /usr/lib/lpsystem -t bsd MPS  _xxxxxx
# /usr/lib/lpadmin -p mps_prt -s MPS  _xxxxxx!MPS_xxxxxx_TEXT
# /usr/lib/accept MPS_PRT
# enable MPS_PRT
```

> **NOTE:** *LPR is not reliable on Solaris machines. Users with Solaris hosts should use the supplied RTEL software instead.*

To print to the queue, enter:

```
# lp -dMPS_PRT  filename
```

9.3.5 LPR on ULTRIX

ULTRIX hosts need the following additional information added to the printcap entry:

```
MPS_PRT|Printer on LAB MPS:\
       :lp=:ct=remote:\
       :rm=MPS_xxxxxx:\
       :rp=MPS_xxxxxx_TEXT:\
       :sd=/usr/spool/lpd/MPS_PRT:
```

These additional options show that there is no physical device for this queue and tell the host that this is a remote connection.

To print to this queue, use the normal **lp** syntax:

```
# lpr -PMPS_PRT  filename
```

9.3.6 LPR on Windows NT

The following procedure describes how to configure an lpr print queue.

NOTE: *This installation assumes that the TCP/IP protocol, simple TCP/IP services, and Microsoft TCP/IP printing were installed in Windows NT.*

NOTE: *Verify that you are able to ping or telnet the server from Windows NT before configuring the print queue.*

1. Double click on the program group **Main**.
2. Double-click on the **Print Manager** icon.
3. From the **Printer** Menu, select **Create Printer**.

   NOTE: *If the printer driver is not already installed, you will need the Windows NT installation disks.*

4. In the **Printer Name** box, enter the name of the queue on the NT host.
5. Click the **Driver** menu arrow; select the required printer driver from the pull-down menu.
6. (Optional) In the **Description** box, enter a description.
7. If applicable, choose **Share this printer on the network**. (This is not recommended until the print queue is confirmed to be running properly.) The share name is the first eight characters of the name entered in step 4.
8. In the **Print To** box, scroll down and select **Other**.
9. Choose **LPR Port** and click **OK**.
10. In the dialog box, provide the following information and click **OK**:
    `Add LPR Compatible Printer`
    `Name or address of host providing LPD:`
    `Name of printer on that machine:` (Enter the service name in this field.)
11. A printer-specific dialog box is displayed. Complete the information and click **OK**.
12. If you want this printer to be the default printer, click the **Default** menu arrow on the Printer Manager's title bar and scroll to the printer's name.

    NOTE: *Verify that you have Read/Write permissions on the NTFS file system.*

9.4 RTEL Printing on UNIX Hosts

If the LPR method of printing is not adequate for an application, (banners needed before jobs, more flexibility needed in printing, etc.) RTEL software shipped with the *RapidPrint 500* on the distribution CD-ROM can be configured on the host. After installing the software and configuring connections to the *RapidPrint 500*, normal UNIX print commands can be used and normal queue utilities (lpc, lpstat, etc.) will be usable.

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

To print to the *RapidPrint 500* using special formatting or using third-party software packages it may be necessary to create "print pipes" on the host. The RTEL software provides this capability by providing a UNIX named-pipe interface.

To recreate the RTEL source files, copy the file RTEL_SRC.TAR from the distribution media to the UNIX host. Ensure that a binary copy is performed. Unpack the archive using the following command:

```
# tar xvf rtel_src.tar
```

There will be README files in the created directories that describe the contents of the RTEL distribution and various manual pages that describe the software capabilities.

9.5 Windows NT Configuration

Windows NT systems require:

- Microsoft Windows NT Server, Version 3.51 or later.
- Microsoft Windows Workstation, Version 3.51 or later.

9.5.1 Installing the TCP/IP Software

All the software necessary to the *RapidPrint 500* is included in the Windows NT operating system. Follow the steps below to install the software. You do not need to perform the following procedure if TCP/IP protocol and TCP Printing are already installed.

You must be logged on with administrator privileges to perform the following procedure.

1. Run/Start Windows NT. From the Program Manager, double click on the **Main** icon.
2. Double click on the **Control Pane**l icon.
3. Double click on the **Network** icon.
4. Click **Add Software**.
5. Select **TCP/IP protocol and related components** and click **Continue**.
6. Select the following installation options and click **Continue**:
   - **TCP/IP Network Printing Support**
   - **Simple TCP/IP Services**
7. Enter the path indicating where the Windows NT Operating System files are located and click **Continue**.
8. In the **TCP/IP Configuration** window, select the appropriate Ethernet adapter.
9. Enter the IP address of the PC (obtain from your system administrator).
10. Enter the subnet mask (if applicable).
11. Click on **Advanced**.
12. In the **Default Gateway** box, enter the appropriate IP address (if applicable).
13. Click **OK**. The **TCP/IP configuration** window is displayed.
14. Click **OK**.
15. Restart the PC.

To verify that the TCP/IP software is installed, check that the TCP/IP Protocol appears in the **Installed Network Software** list box of the **Networks Setting** dialog box.

9.5.2 Configuring RapidPrint 500 for Windows NT Digital Network Port

This section describes how to configure the *RapidPrint 500* in the Windows NT environment. It is assumed that the permanent IP address has already been set on the *RapidPrint 500.* If the permanent IP address has not been set, go to the section *IP Address Configuration* on page 3-3.

1. Double click on the program group **Main**.
2. Double click on the **Print Manager** icon.
3. From the **Printer** Menu, select **Create Printer**.
4. In the **Printer Name** box, enter the printer name; it can be up to 32 characters.
5. In the **Driver** box, select **Other** to install; then select the appropriate driver that came with your printer.
6. In the **Description** box, enter an optional description.
7. If applicable, click on the box **Share this printer on the network**. The share name is the first eight characters of the name entered in step 4.
8. In the **Print to** box, scroll down and select **Other**.
9. In the **Print Destinations** window, select **Digital Network Port** and then **OK**.
10. In the **Add Port - Digital Network Port** window, do the following:
    A. Select the port type **Digital RapidPrint Server (via TCP/IP)**.
    B. For **Address of printer**, enter the printer's IP address.
    C. Enter a name for the port. You can enter the same name as the printer name.
    D. Click **Options**.
11. In the **Digital RapidPrint Server Options** dialog box:
    A. Select **Print Banner Page** (optional —for use with PostScript printing only).
    B. Under **Additional Port information**, select **Other** and enter port number **3001**. (Do not use the **Configure** button. This button applies only to the *RapidPrint 200* server, not the *RapidPrint 500.*)
    C. Click **OK**.

12. Click **OK** in the **Add Port** window, then in the **Create Printer** window.
13. You may see an additional dialog box that allows you to set default parameters such as paper size, paper source, etc. When done, click **OK**.

    A window appears with the printer name as the title. Close this window and an icon is displayed in the **Print Manager**.
14. Select this printer as the default printer.
15. Close the **Print Manager**.

The printer is now ready to accept jobs.

9.6 Windows 95 Configuration

This section describes the process needed to enable printing on a Windows 95 system.

9.6.1 Installing the TCP/IP Software

All the software necessary to the *RapidPrint 500* is included in the Windows 95 operating system. Follow the steps below to install the software. You do not need to perform the following procedure if TCP/IP Protocol and Printing are already installed.

1. Run Windows 95.
2. From the Start button, select **Settings**, then **Control Panel**.
3. Double click on the **Network** icon in the **Control Panel** window.
4. In the **Network** dialog box, select the **Configuration** tab. Click **Add**.
5. Select **Protocol** from the network components list and click **Add**.
6. In the **Select Network Protocol** dialog box, select **Microsoft** as the manufacturer and **TCP/IP** as the protocol. Click **OK**.

7. Select **TCP/IP** in the **Network** dialog box. Click **Properties** to specify TCP/IP properties:
   A. Select the **IP Address** tab. Specify the IP address of the PC (obtain it from your system administrator). Specify the subnet mask, if applicable.
   B. Select the **Gateway** tab and enter the appropriate IP address, if applicable.
   C. Select the **DNS Configuration** tab and enable **DNS,** if applicable. Specify a host name and domain.
   D. Click **OK**.
8. Restart the PC.

To verify that the TCP/IP software is installed, reopen the **Network** dialog box and check that **TCP/IP** is in the **Installed Network Components** list.

9.6.2 Configuring the *RapidPrint 500* for Windows 95

This section describes how to configure the *RapidPrint 500* in the Windows 95 environment. It is assumed that the permanent IP address has already been set on the *RapidPrint 500.* If the permanent IP address has not been set, go to the section *IP Address Configuration* on page 3-3.

In Windows 95, local printers that are attached to the network require a network port driver. Windows 95 includes a port driver that is suitable for use with your printer. To install the port driver you need to add the Digital DEClaser 5100/Net printer. This printer includes the port driver. After installing the port driver to enable access to all features of your printer, install the appropriate printer type using the Windows driver disk that comes with your printer. Do the following steps for this procedure:

1. From the **Start** button, select **Settings**, then **Printers**.
2. Open the **Add Printer** icon.
3. Click **Next** on the **Add Printer Wizard**.
4. Choose **Local Printer** and click **Next**.
5. Select **Digital** in the **Manufacturer** list box, and **Digital DEClaser 5100/Net** in the **Printer** list box. Click **Next**.

6. Insert the **Windows 95** CD-ROM or floppy diskette, if necessary. Then click **OK** to copy the files.
7. In the **Add Printer Wizard**, click **Add Port**.
8. In the **Add Port - Digital Network Port** dialog box:
   A. Select port type **Digital RapidPrint Server (via TCP/IP)**.
   B. Under **Port information**, enter the IP address.
   C. Enter the port name.
   D. Click **Options**.
9. In the **Digital RapidPrint Server Options** dialog box:
   A. Select **Print Banner Page** (optional—for use with PostScript printing only).
   B. Under **Additional Port Information**, select **Other** and enter port number **3001**. (Do not use the **Configure** button. This button applies only to the RapidPrint 200, not the *RapidPrint 500*.)
   C. Click **OK**.
10. Click **OK** in the **Add Port - Digital Network Port** dialog box.
11. In the **Add Printer Wizard**, check that the port you created is available and selected. Click **Next**.
12. Enter a name for your printer and click **Next.**
13. Click **Finish**.
14. Select the **new printer** icon in the **Printers** window
15. Select **Properties** from the **File** menu.
16. Select the **Details** tab from the **Properties** dialog box, and click **New Driver**.
17. Respond **Yes** in the **Printers** warning box.
18. In the **Select Device** dialog box, set the appropriate printer driver and finish installing your printer.

To verify that the printer is ready to accept jobs, open the **Properties** dialog box for the printer, select the **General** tab, and click **Print Test Page**.

9.7 TCP Socket Connections

If custom queuing software has been designed on a host, raw TCP/IP socket or telnet connections can be made directly to the *RapidPrint 500* parallel port. Opening a TCP session to port 3001 will form a direct connection to the parallel port on the *RapidPrint 500.* If Telnet IAC interpretation is needed, form a connection to port 2001. If the port is in use, the connection will be refused.

NOTE: *For more information about TCP socket connections, refer to the RapidPrint 500 Reference Manual.*

10 - Additional Configuration

10.1 Overview

This chapter discusses some additional configurable attributes on the *RapidPrint 500*. These aspects include system passwords, server name, service names, and port characteristics.

10.2 System Passwords

There are two important passwords on the *RapidPrint 500*: the privileged password and the login password.

NOTE: *If you choose to change either password, the new password must be no more than 6 alphanumeric characters. For security purposes, you should use a mix of letters and numbers in each password.*

10.2.1 Privileged Password

Changing any server or port setting requires privileged user status. EZCon prompts you for the privileged password when it is needed. If you are not using EZCon, you must enter the **Set Privileged** command at the `Local>` prompt to become the privileged user. The default privileged password on *RapidPrint 500* is **system**.

```
Local> SET PRIVILEGED
Password> system (not echoed)
Local>>
```

The prompt changes to reflect privileged user status. Only one user can be the privileged user at a time. If another user is currently logged into the *RapidPrint 500* as the privileged user, use the **Set Privileged Override** command to forcibly become the privileged user.

To change the privileged password, use the **Set/Define Server Privileged Password** command. See the example below.

```
Local> SET PRIVILEGED
Password> system (not echoed)
Local>> DEFINE SERVER PRIVILEGED PASSWORD “walrus”
```

10.2.2 Login Password

The login password is required for remote console logins. The default login password is **access**. To change the login password, use the **Set/Define Server**

Login Password command. Following is an example of changing the login password.

```
Local> SET PRIVILEGED
Password> system (not echoed)
Local>> DEFINE SERVER LOGIN PASSWORD “badger”
```

The login password is also used to log the *RapidPrint 500* into NetWare file servers. If the login password is changed, NetWare print queue setups must also be changed to reflect the new password. See *Using PCONSOLE* in Chapter 8.

10.3 Server and Service Names

Changing the server name automatically changes the names of the default services. The default server name (MPS_*xxxxxx*) can be changed using the **Set Server Name** and **Define Server Name** commands. Since the default service names are based on the server name, the server name can be up to 12 alphanumeric and underscore characters.

Example:

```
Local>> SET SERVER NAME biolab
Local>> DEFINE SERVER NAME biolab
```

In the example above, the server name is changed to **BIOLAB** and the default service names will automatically be changed to **BIOLAB_TEXT**, **BIOLAB_PCL**, and **BIOLAB_PS**.

Note that host queues may have to be reconfigured if the server and service names are changed.

10.4 Autosensing Printers

The DEClaser 3500 (and many other printers) support autoselection of job types. When autoselection is supported, print jobs can be queued to the MPS_*xxxxxx*_PS and MPS_*xxxxxx*_TEXT services in any order; the printer will automatically change its mode to fit the service being used.

NOTE: *Refer to your printer's documentation to determine if your printer supports autoselection of job types.*

10.5 Port Characteristics

By default, the parallel port has the following characteristics:

```
Port 1 :                    Username: Physical Port 1 (Idle)
Access: Remote              Local Switch: None
Backward: None              Port Name: Port_1
Break Ctrl: Local           Session Limit: N/A
Forward: None               Printer Type: Centronics

Printer Status: Online

Authorized Groups: 0 (Current) Groups: 0
Characteristics: Printer
```

The only parallel port characteristics that can be configured are **Bitronics** and **DSRlogout**.

10.5.1 Bitronics

By default, the `Bitronics` characteristic is **disabled**. If a printer that supports Bitronics mode is connected to the *RapidPrint 500* parallel port, the `Bitronics` characteristic must be enabled. To do this, use the following commands:

```
Local>> DEFINE PORT 1 BITRONICS ENABLED
Local>> LOGOUT PORT 1
```

NOTE: *Consult your printer's documentation to determine if your printer supports Bitronics mode or bi-directional parallel port.*

Notice the **Logout Port 1** command in the example above. This forces the new Bitronics setting to take effect.

10.5.2 DSRlogout

By default, when the printer connected to the *RapidPrint 500* is powered off, the current print job remains in the print queue. When the printer is powered on again, the job will be printed.

When the DSRlogout characteristic is enabled, the printer will abort the current print job (delete it from the print queue) when it is powered off. This characteristic is **disabled** by default.

> **NOTE:** *The DSRlogout characteristic has only been tested with the HP LaserJet 3 and LaserJet 4 printers. Enabling DSRlogout will work reliably with these printers. If you are not using a LaserJet 3 or LaserJet 4 and would like to enable the DSRlogout characteristic, use caution to prevent data loss.*

To enable DSRlogout, use the following command:

```
Local>> DEFINE PORT 1 DSRLOGOUT ENABLED
Local>> LOGOUT PORT 1
```

A - Technical Support

A.1 Overview

If you are experiencing an error that is not described in Appendix B, *Troubleshooting*, or you cannot fix the error, contact your dealer or RapidPrint Technical Support at the address or phone number listed below. Technical support is also available via the Internetat **http://www.printers.digital.com**.

Digital Equipment Corporation
200 Forest Street
Marlboro, MA 01752-3011

Toll free 800-354-9000
For country-specific telephone numbers, see the*Warranty Card*.

A.2 Problem Report Procedure

If you have problems with the*RapidPrint 500* or have suggestions for improving the product, contact RapidPrint Technical Support.

When you report a problem, provide the following information:

- Your name, and your company name, address, and phone number.
- Product model number.
- Serial number of the unit.
- Software version. (Use the**Show Server** command to display the software version.)
- 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. (Try to include information on user and network activity at the time of the problem.)

B - Troubleshooting

B.1 Overview

This appendix describes how to overcome numerous problems related to the following:

- Power-up procedure
- Printing using host software
- BOOTP
- RARP
- PostScript printers

See the following tables for troubleshooting information:

- Power-up, see Table B-1
- Basic printing problems, see Table B-2
- AppleTalk host, see Table B-3.
- LPD host, see Table B-4
- VMS host when using a port name, see Table B-5
- VMS host when using a service name, see Table B-6
- NetWare host (bindery mode), see Table B-7
- NetWare host (NDS), see Table B-8
- NDS printing errors, see Table B-9
- NDS errors from the file server, see Table B-10
- BOOTP, see Table B-11
- RARP, see Table B-12
- PostScript printer, see Table B-13

If you cannot solve your problem after reading this appendix, contact RapidPrint Technical Support. Contact information is in Appendix A.

B.2 Power-Up Troubleshooting

Table B-1 describes several possible error situations if the unit does not display the welcome message or the LEDs do not flash.

Table B-1: Power-Up Error Situations

Error Condition	Error Display (if applicable)	Cause	Remedy
Power-up diagnostic failure	The ACT LED is solid red for 3 seconds, then another color for one second.	Usually a hardware failure.	Note which LED is blinking and its color; then contact *RapidPrint* technical support.
Power-up error detected		If the error is non-fatal, the *RapidPrint 500* boot does not try to load the Flash ROM code.	Briefly press the Test button on the front panel. A brief description of the problem is queued to the parallel port and printed.
Network error	The ACT LED blinks yellow 2-3 times per second.	Boot failure occurred.	Once booted and running normally, the ACT LED blinks once every 2 seconds..
Attempts to download new code from a network host	The ACT LED blinks yellow 2-3 times per second.		Reload Flash ROM. Refer to Appendix D.

B.3 Basic Printing Problems

Table B-2: Printing Problems

Action	Explanation
Verify the physical connection.	To test a non-PostScript printer, use the **Test Port 1 Count 100** command; the "1" represents the parallel port. This sends 100 lines of test data out the parallel port. If data was lost or corrupted on the printer, contact Digital or your distributor. For PostScript printers, see page B-16.
Verify service characteristics.	Use the **Show Service Local Characteristics** command from a network login to the *RapidPrint 500* to see if the desired *RapidPrint 500* service is available. If the service rating is zero, the parallel port is in use. Verify that appropriate protocols are enabled on the service.
Verify that the IP address is unique to the unit.	There is a duplicate IP address on the network if: • Telnet/rlogin connections fail soon after connecting. • ARP requests do not resolve a host known to be working. • The server loses its IP address when booting or does not allow a new IP address to be configured.
Monitor *RapidPrint 500* queue status and port counters.	Use the **Show/Monitor Queue** command to see if a queue entry is in the job list. If a queue entry is not on the *RapidPrint 500,* see the appropriate host section in this Appendix. If an active queue entry appears, use the **Monitor Port 1 Counters** command. If the output byte counter is not incrementing, verify the connection between the *RapidPrint 500* and the printer.

B.3.1 AppleTalk Host Troubleshooting

Table B-3: AppleTalk Host Troubleshooting

Action	Explanation
Verify that the printer is available to be selected in the Chooser.	If the printer is not available in the Chooser, the printer may be configured in the wrong zone. See page 5-2.
Verify that a consistent version of the LaserPrep file is used.	If this is not possible, try testing from only one workstation to reduce version conflicts until printing is working.
Verify that the LaserWriter driver is not corrupt.	If the queue was working and stops, try reinstalling the LaserWriter driver.
Verify bidirectional communication.	Lock the printer in PostScript mode and issue the **Test Service PostScript Count *n*** command. This command sends a job to the printer and waits for the response.

B.3.2 LPD Host Troubleshooting

Table B-4: LPD Host Troubleshooting

Action	Explanation
Verify that the *RapidPrint 500* IP address and name were entered properly in the host file.	Telnet to the *RapidPrint 500* using the name in the host file. Verify that the *RapidPrint 500* name is resolvable and that the *RapidPrint 500* is reachable via the network.
Verify that jobs which appear in the host queue reach the *RapidPrint 500.*	From within the LPC administrative utility, become superuser on the host, and clear and reset the host queue using the following commands: **abort queue_name, clean queue_name, enable queue_name, and start queue_name**. These commands kill the currently executing daemon, remove all old entries in the queue, enable the queue to accept new entries, and restart job processing.

B.3.3 VMS 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 hexadecimal result code, the code can be translated by issuing the following commands:

```
$ SHOW QUEUE/FULL/ALL   queue_name
$ SET MESSAGE SYS$MESSAGE:NETWRKMSG.EXE
$ EXIT %X nnnnnnnn
```

Note the error code *nnnnnnnn*.

Table B-5: VMS Host Troubleshooting When Using a Port Name

Action	Explanation
Verify that the specified node name matches the server's node name.	Use the **Show Server** command on the *RapidPrint 500.*
Verify that the specified port name matches the port's name.	Use the **List Port 1** command on the *RapidPrint 500* where Port 1 is the parallel port.

When configuring a LAT device on a VMS host using a service, check the areas described in Table B-6.

Table B-6: VMS Host Troubleshooting When Using a Service Name

Action	Explanation
Verify that the specified node name matches the server's node name.	Use the **Show Server** command on the *RapidPrint* 500.
Verify that the service name matches the service name.	Use the **Show Service Local Characteristics** command on the *RapidPrint 500.*
Verify that the desired service is available.	Use the **Show Service Local Characteristics** command from a network login. If the service rating is zero, the parallel port is in use.
Verify that the LAT characteristic has been enabled on the service.	Use the **Show Service Local Characteristics** command from a network login.
Verify that the LAT symbiont is specified as the queue process on the VMS host.	Use the VMS command**Show Queue/Full *queue_name*** to see the queue characteristics.
If you are using DCPS, verify the bidirectional path to the printer and verify that the printer is locked into PostScript mode.	Lock the printer in PostScript mode and issue the **Test Service PostScript Count *n*** command. This command sends a job to the printer and waits for the response.

If a connection attempt was unsuccessful when initially configuring a LTA device, the LAT host software may have recorded an invalid state. Deleting and re-creating the LTA device may be required to successfully connect to the *RapidPrint 500.*

B.3.4 NetWare Host Troubleshooting

Table B-7: NetWare Host Troubleshooting (Bindery Mode)

Action	Explanation
Verify that the server and queue names appear and match the server and service name.	Use PCONSOLE.
Check to see if *the RapidPrint 500* is scanning too many file servers.	Configure the access list to scan only for jobs on the file servers of interest. To configure the NetWare access list, see page 8-1.

Digital assumes that the Novell queue was created using PCONSOLE's Quick Setup option. If you experience NDS printing problems, perform the procedures described in Table B-8.

Table B-8: NetWare Host Troubleshooting (NDS)

Action	Explanation
Verify that the NetWare access table will allow access to the specified file server.	By default, only local (non-routed) file servers are scanned for queues. See page 8-1 for more information.
Verify that the login password on the *RapidPrint 500* and the queue password on the file server match.	If the passwords do not match, the *RapidPrint 500* cannot log into the file servers to scan for jobs.
Verify that the print server successfully attached to the queue.	Type **Netstat** at the Local> prompt. This displays information about file servers, printers, and queues that the print server found. If a queue is in JobPoll, the print server successfully attached to the queue.
Verify that the DSTree, DSContext, and DSLicense are correct.	Type **Show Protocol NetWare NDS**. This command shows the tree and the context that you configured, a failure code, and an NDS error code for each NDS 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.0=exotic.) DSLicense should be `yes`. Tables B-9 and B-10 show the failure codes and the NDS error codes that may appear.
Verify that the printer and queue changes that you made propagate through the NDS tree.	It may take a few minutes for the changes to propagate through the NDS tree. If the print server does not attach, reboot the server.

B.3.5 NDS Troubleshooting

Table B-9: NDS Printing Errors

Failure Code	Meaning	Remedy
0	Success	
1	Print server ran out of memory.	Cycle power on the box. If the problem persists, disable the unused protocols and change the NetWare access list to include only file servers that have print queues associated with them.
2	Invalid resolved offset.	Report the problem to RapidPrint Technical Support.
3	Resolved name was referred to another server.	Report the problem to RapidPrint Technical Support.
4	No printers found for the print server.	Be sure there are printers for the print server and the printer names match the service names on the print server.
5	No queue found for the printer.	Be sure that the printers have associated queues.
6	Login failed.	Be sure there is a print server object configured with the same name as the print server.

Table B-9 (Continued): NDS Printing Errors

Failure Code	Meaning	Remedy
7	Authentication failed.	Be sure the login password on the print server is the same as the password for the print server object. If the login password on the print server is the default (access), there should be no password for the print server object.
8	Print server can not attach to queue.	Check the directory services partitions, replicas, and volumes to make sure that the file server where the queue actually lives has the information about the print server and printers.

Table B-10: NDS Errors from the File Server

Code Failure	Meaning	Remedy
0	Success	
0xfffffda7	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.
0xfffffda5	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.
0xfffffd69	DS Database is locked.	An administrator is probably updating the database. Wait a few minutes and issue the**Set Protocol NetWare Reset** command.
0xfffffd63	The password is invalid.	Be sure the password for the print server object under PCONSOLE is the same as the login password for the print server. If the login password on the print server is the default (access), there should be no password for the print server object. If the login password is different from the default, the password for the print server object should match.

Table B-10 (Continued): NDS Errors from the File Server

Code Failure	Meaning	Remedy
0xfffffd54	Secure NCP violation.	The file server is probably requiring NCP packet signature, which is not currently supported. The NCP packet signature level needs to be turned down so that it is not required from the server.

B.4 BOOTP Troubleshooting

If the BOOTP request is failing and you have configured your host to respond to the request, there are a few areas you can quickly check.

Table B-11: BOOTP Troubleshooting

Area to Check	Explanation
Is BOOTP in the host's /etc/services file?	BOOTP must be an uncommented line in the /etc/services file as a real TCP/IP service.
Is the *RapidPrint 500* in the host's /etc/hosts file?	The *RapidPrint 500* must be in this file for the host to answer a BOOTP or TFTP request.
Is the download file in the correct directory? Is it world-readable?	The download file must be in the correct directory and must be world-readable. Specify the complete pathname for the download file in the BOOTP configuration file or add a default pathname to the download filename.
Are the *RapidPrint 500* and the host in the same IP network?	Some hosts do not allow BOOTP replies across IP networks. Use a host running a different operating system or change the *RapidPrint 500* to be in the same IP network as the host.

B.5 RARP Troubleshooting

Table B-12: RARP Troubleshooting

Area to Check	Explanation
Are the *RapidPrint 500* name and hardware address in the host's /etc/ethers file?	The *RapidPrint 500* and it's hardware address must be in this file for the host to answer a RARP request.
Are the *RapidPrint 500* and its IP address in the /etc/ hosts file?	The *RapidPrint 500* and it's IP address must be in this file for the host to answer a RARP request.
Does the host's operating system start a RARP server at boot time?	Many systems do not start a RARP server at boot time. Check the host's RARPD documentation for details or use the **ps** command to see if there is a RARPD process running.

B.6 PostScript Problems

PostScript printers can create problems, such as silently aborting jobs if they detect an error.
The following procedures start at the most basic troubleshooting level and progressively work up to printing from the host system.

Table B-13: PostScript Troubleshooting

Action	Explanation
Verify that the *RapidPrint 500* is communicating with the printer.	To test a PostScript printer, use the **Test Port 1 PostScript Count 2** command. This sends two pages of PostScript data out the parallel port. Watch the printer indicators to verify that the *RapidPrint 500* is communicating with the printer. If the printer can do bidirectional communication (via a Bitronics interface), use the command **Test Service MPS_*xxxxxx*_PS PostScript Count 5**. This transfers data to and from the printer. Disable autoselection and configure the printer as a PostScript printer for this test.
Verify that the printer is configured to use 8-bit characters.	If special characters or bitmaps are not printing correctly, the printer may be configured to use 7-bit characters.
Verify service characteristics.	To display service characteristics, use the **Show Service Characteristics** command. If the service rating is zero, the parallel port is in use. Verify that the PostScript characteristic was enabled on the service being used. Verify that the appropriate protocols for the service are enabled.

Table B-13 (Continued): PostScript Troubleshooting

Action	Explanation
Monitor port counters.	If PostScript jobs appear to print but nothing comes out of the printer, verify the amount of data sent from the host. Then use the **Zero Counter All** command to zero the counters. Issue the appropriate print command from the host system. After the job has completed, issue the **Show Port 1 Counters** command. The bytes output value should be approximately 171 bytes greater than the size of the file on the host system. These numbers are only approximate, but show that data is flowing to the printer.

B.6.1 Printing Bitmap Graphics

If files that contain embedded bitmap graphics print incorrectly, bitmaps are being sent as binary data. Binary data cannot be printed via serial or parallel interfaces. Most major application packages have provisions to print bitmap graphics using either binary bitmaps (for printers directly connected to a network via AppleTalk) or ASCII bitmaps (for printers connected via a serial port or parallel port, as is the case with the *RapidPrint 500*).

If the application you are using does not have this provision, contact the application vendor. They may have an upgraded version or a “patch” that you can apply to add the provisions to print bitmap graphics using ASCII bitmaps.

C - Pinouts

C.1 Printer Connector Pinout

Table C-1 shows the pin connections of the *RapidPrint 500* printer connector. Some manufacturers changed pin functions or polarity on their printers, so adapters may be necessary. Refer to printer documentation for interfacing details. The *RapidPrint 500* printer connector is an IEEE Standard 1284-1994 Type B connector, commonly known as a "Centronics" 36-pin parallel connector.

Table C-1: Printer Connector Pinout

Pin	Signal	Pin	Signal
1	Data Strobe-	19	Ground
2	Data Bit 1	20	Ground
3	Data Bit 2	21	Ground
4	Data Bit 3	22	Ground
5	Data Bit 4	23	Ground
6	Data Bit 5	24	Ground
7	Data Bit 6	25	Ground
8	Data Bit 7	26	Ground
9	Data Bit 8	27	Ground
10	Acknowledge-	28	Ground
11	Busy	29	Ground
12	Paper End	30	Ground
13	Select	31	Initialize-
14	Autofeed-	32	Error-
15		33	Ground
16	Ground	34	
17		35	
18	+5V	36	Select Inhibit

NOTE: *Pin 18 applies only to Models DSTRP-BX and DSTRP-BY.*

- Active low signal

D - Updating Software

D.1 Overview

The latest version of the *RapidPrint 500* software and documentation are available on the Internet in the *RapidPrint 500* home page in the Digital Printing Systems InfoCenter at **http://www.printers.digital.com**. When you visit the InfoCenter, select **Software Drivers** and look for *RapidPrint 500.*

D.2 Reloading *RapidPrint 500* Software

The *RapidPrint 500* stores its software in Flash ROM. This software controls the initialization process, the operation of the *RapidPrint 500*, and the processing of commands. The contents of Flash ROM can be updated by downloading a new version of the operational software.

The *RapidPrint 500* can be reloaded from network hosts using NetWare, TCP/IP, or MOP. Reloading instructions are in this appendix. 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 MPS.SYS. (A copy of this file is provided with the *RapidPrint 500* on the distribution CD-ROM.) This file must be accessible when updating Flash ROM.
- The MPS.SYS download file should be world-readable on the host, regardless of which download method is used. In addition, there is a 15 character length limit for the pathname and an 11 character limit for the filename.

  NOTE: *It is very important to check the RapidPrint 500 settings before using the Initialize Reload command. Ensure that you are loading the correct software file.*

- **Define** commands are used because configuration done with **Set** commands are cleared when the *RapidPrint 500* boots. Use the **List Server Boot** command to check the *RapidPrint 500* settings before using the **Initialize Reload** command.

The reloading sequence is as follows:

1. If BOOTP or RARP is enabled on the *RapidPrint 500*, it requests assistance from a BOOTP or RARP server before starting the download attempts. The *RapidPrint 500* will then try TFTP, NetWare, and MOP booting, in that order, provided that it has enough information to try each download method.
2. Downloading and rewriting the Flash ROM will take approximately two minutes from the time the **Initialize** command is issued. If more than two minutes has elapsed and the server has not successfully booted, press the button on the front panel of the *RapidPrint 500*. A brief page will be queued to the parallel port and printed, describing the problem.
3. If the download file could not be found or accessed, the *RapidPrint 500* can still be booted with the code in Flash ROM. As noted in Chapter 2, the ACT LED will blink quickly while the *RapidPrint 500* 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-4.*

D.2.1 NetWare

The MPS.SYS file should be placed in the login directory on the NetWare file server. The *RapidPrint 500* 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 *RapidPrint 500*, specify the file server name, filename, and path:

```
Local>> DEFINE SERVER NETWARE LOADHOST    fileserver
Local>> DEFINE SERVER SOFTWARE   sys:\login\mps.sys
Local>> LIST SERVER BOOT
Local>> INITIALIZE RELOAD
```

D.2.2 TCP/IP

Downloading uses the TFTP (Trivial File Transfer Protocol) and optionally BOOTP and RARP. The *RapidPrint 500* will do a BOOTP or a RARP query each time it boots. If a host provides BOOTP and RARP support, it can be used to set the *RapidPrint 500* IP address and loadhost information. Add the *RapidPrint 500* name, IP address, hardware address, and download path and filename to the BOOTP and RARP file (usually **/etc/bootptab**).

Some BOOTP and TFTP implementations require a specific directory for the MPS.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 MPS.SYS file in the directory.

If BOOTP cannot be used to configure the *RapidPrint 500* IP parameters, configure them by hand using the commands listed below.

> **NOTE:** *For instructions on how to log into the RapidPrint 500 and enter these commands, refer to Chapter 9, TCP/IP Configuration.*

```
Local>> DEFINE SERVER IPADDRESS   xxx.xxx.xxx.xxx
Local>> DEFINE SERVER SOFTWARE "/  tftpboot/MPS.SYS"
Local>> DEFINE SERVER LOADHOST   xxx.xxx.xxx.xxx
Local>> LIST SERVER BOOT
Local>> INITIALIZE RELOAD
```

The path and filename are case-sensitive and must be enclosed by quotation marks (" "). If attempting to boot across an IP router, the router must be configured to perform proxy ARPing for the *RapidPrint 500.*

D.2.3 MOP

Copy the MPS.SYS file to the MOM$LOAD directory. The MPS.SYS filename is the only parameter that the *RapidPrint 500* 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 following command:

```
Local>> INITIALIZE RELOAD
```

> **NOTE:** *If the error message "xxx byte record too large," is displayed on the VAX console, the MPS.SYS file was not transferred in binary mode.*

D.3 Troubleshooting Flash ROM Updates

Many of the problems that occur when updating Flash ROM can be solved by performing the procedures described in Table D-1.

Table D-1: Troubleshooting Flash ROM Updates

Protocol	Area to Check
NetWare	Make sure the file is in the login directory. Since the *RapidPrint 500* cannot actually log into the file server, it has very limited access to the server directories.
TFTP	Check the file and directory permissions. Make sure the loadhost name and address are specified correctly and that their case matches the case of the filenames on the host system. Ensure that the host has TFTP enabled. Many systems have TFTP disabled by default.
MOP	The Ethernet circuit must have the service characteristic enabled. Verify that the MOM$LOAD search path includes the directory containing the MPS.SYS file. Verify that the files were transferred in Binary mode.

E - Specifications

E.1 Power Specifications

The twisted pair (10BaseT) has the power specifications shown in Table E-1.

Table E-1: 10BaseT Power Specifications

Model DSTRP-AX (with power cord)	**Model DSTRP-BX (no power cord)**
Nominal adapter input voltage: 110 volts AC (North American Model) 220 volts AC (International Model)	Maximum power consumption: .3 amps at 5 volts (1.5 watts)
Nominal adapter output voltage: 6 volts DC	
Maximum operating current: 700 mA at 6 volts	
Maximum power consumption: 5 watts	

The ThinWire (10Base2) has the power specifications shown in Table E-2.

Table E-2: 10Base2 Power Specifications

Model DSTRP-AY (with power cord)	**Model DSTRP-BY (no power cord)**
Nominal adapter input voltage: 110 volts AC (North American Model) 220 volts AC (International Model)	Maximum power consumption: .3 amps at 5 volts (1.5 watts)
Nominal adapter output voltage: 6 volts DC	
Maximum operating current: 700 mA at 6 volts	
Maximum power consumption: 5 watts	

E.2 Temperature Limitations

NOTE: *Rapid temperature changes may affect operation. Therefore, do not operate the RapidPrint 500 near heating or cooling devices, large windows, or doors that open to the outside.*

Operating range: 5° to 50°C (41° to 122°F)
Storage range: -40° to 66°C (-40° to 151°F)
Maximum temperature change per hour: 20°C (36°F)

E.3 Altitude Limitations

Operating: 2.4 km (8000 ft)
Storage: 9.1 km (30,000 ft)
If you are operating the *RapidPrint 500* above 2.4 km (8000 ft), decrease the operating temperature rating by 1.8°C for each 1000 m (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)